# Graded Quiz Bank

## Table of Contents

For each topic, Visible Body created three graded multiple-choice quizzes.

- **Quiz 1** aligns with Bloom's Taxonomy Level 1 (knowledge).
- **Quiz 2** aligns with Bloom's Taxonomy Level 2 (comprehension).
- **Quiz 3** includes 5 questions from Quiz 1 and 5 questions from Quiz 2, so it aligns with Bloom's Taxonomy Levels 1 and 2.

<table>
<thead>
<tr>
<th>System</th>
<th>Quiz 1</th>
<th>Quiz 2</th>
<th>Quiz 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cells and Tissue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Structure and Function</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Structure and Function Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Structure and Function Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Structure and Function Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Life Cycle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Life Cycle Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Life Cycle Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Life Cycle Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissues Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissues Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tissues Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Integumentary System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integumentary System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integumentary System Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integumentary System Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integumentary System Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Skeletal System and Joints</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Bones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Bones Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Bones Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Bones Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Tissue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Tissue Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Tissue Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Tissue Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial Skeleton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial Skeleton Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial Skeleton Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial Skeleton Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendicular Skeleton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendicular Skeleton Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendicular Skeleton Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendicular Skeleton Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Muscle Tissue and Muscular System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skeletal Muscle Tissue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skeletal Muscle Tissue Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skeletal Muscle Tissue Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skeletal Muscle Tissue Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth and Cardiac Muscle Tissue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth and Cardiac Muscle Tissue Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth and Cardiac Muscle Tissue Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth and Cardiac Muscle Tissue Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nervous System and Special Senses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous Tissue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous Tissue Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous Tissue Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous Tissue Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal Cord and Spinal Nerves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal Cord and Spinal Nerves Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal Cord and Spinal Nerves Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal Cord and Spinal Nerves Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranial Nerves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranial Nerves Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranial Nerves Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranial Nerves Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic and Autonomic Nervous System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic and Autonomic Nervous System Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic and Autonomic Nervous System Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic and Autonomic Nervous System Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Senses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Senses Multiple Choice Quiz 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Senses Multiple Choice Quiz 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Senses Multiple Choice Quiz 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Quiz Bank by System (Dissection) (page 132)
- Cells and Tissue
- Integumentary System
- Skeletal System and Joints
  - Bone Tissue
  - Axial Skeleton
  - Appendicular Skeleton
  - Joints
- Muscle Tissue and Muscular System
  - Skeletal Muscle Tissue
  - Smooth and Cardiac Muscle Tissue
  - Muscular System
- Nervous System and Special Senses
  - Nervous Tissue
  - Spinal Cord and Spinal Nerves
  - Brain
  - Cranial Nerves
  - Skin Sensory Receptors
  - Eye
  - Ear
  - Cochlea
  - Tongue
  - Papillae
- Endocrine System
- Circulatory System
  - Heart
  - Blood Vessels and Circulation
- Lymphatic System
- Respiratory System
  - Upper Respiratory System
  - Lower Respiratory System
  - Respiration
- Digestive System
  - Oral Cavity
  - Esophagus and Stomach
  - Accessory Organs of Digestion
  - Small and Large Intestines
- Urinary System
  - Kidney Anatomy and Physiology
  - Urine Storage and Elimination
- Reproductive System
  - Male Reproductive System
  - Female Reproductive System

3 Atlas Quizzes (Dissection) (page 138)
- Circulatory System
  - Head and Neck (Arteries)
  - Circle of Willis
  - Upper Limb (Arteries)
  - Thorax (Arteries)
  - Abdomen I (Arteries)
  - Abdomen II (Arteries)
  - Intestines (Arteries)
  - Pelvis (Arteries)
  - Leg (Arteries)
  - Foot (Arteries)
  - Head and Neck (Veins)
  - Venous Sinuses
  - Upper Limb (Veins)
  - Thorax (Veins)
  - Abdomen (Veins)
  - Intestines (Veins)
  - Pelvis (Veins)
  - Leg (Veins)
  - Foot (Veins)
  - Pulm. Circulation
- Coronary Circulation
- Heart Chambers
- Heart Valves
- Heart Conduction
- Digestive System
  - Overview, Digestive
  - Mouth, Upper Tract (Digestive System)
  - Mouth (Digestive System)
  - Salivary Glands
  - Teeth (Digestive System)
  - Upper Tract (Digestive System)
  - Stomach
  - Liver
  - Pancreas
  - Gall Bladder
  - Peritoneal Cavity
  - Intestinal Tract
  - Small Intestine
  - Large Intestine
- Muscular System
  - Eye Expression (Muscular System)
  - Mouth Expression (Muscular System)
  - Nose Expression (Muscular System)
  - Scalp Expression (Muscular System)
  - Extraocular (Muscular System)
  - Tongue (Muscular System)
  - Mastication (Muscular System)
  - Neck I (Muscular System)
  - Laryngeal (Muscular System)
  - Shoulder Joint (Muscular System)
  - Arm (Muscular System)
  - Anterior Forearm (Muscular System)
  - Posterior Forearm (Muscular System)
  - Superficial Hand (Muscular System)
• Deep Hand (Muscular System)  
• Erector Spinae (Muscular System)  
• Neck II (Muscular System)  
• Transversospinalis (Muscular System)  
• Anterior Thorax (Muscular System)  
• Intercostals (Muscular System)  
• Posterior Thorax (Muscular System)  
• Abdomen (Muscular System)  
• Hip (Muscular System)  
• Inner Hip (Muscular System)  
• Pelvic Floor (M) (Muscular System)  
• Pelvic Floor (F) (Muscular System)  
• Anterior Upper Leg (Muscular System)  
• Medial Upper Leg (Muscular System)  
• Posterior Upper Leg (Muscular System)  
• Lower Leg I (Muscular System)  
• Lower Leg II (Muscular System)  
• Foot (Muscular System)  
• Head (Muscular System)  
• Neck and Laryngeal (Muscular System)  
• Shoulder and Arm (Muscular System)  
• Forearm and Hand (Muscular System)  
• Back (Muscular System)  
• Thorax (Muscular System)  
• Pelvis, Abdomen (Muscular System)  
• Hip and Upper Leg (Muscular System)  
• Lower Leg and Foot (Muscular System)  

Nervous System  
• Overview, Nervous  
• Cranial Nerves  
• Cervical Plexus  
• Brachial Plexus  
• Lumbar Plexus  
• Sacral Plexus  
• Lower Leg (Nervous System)  

• Central Nervous  
• Cerebellum  
• Diencephalon  
• Cerebrum  
• Limbic System  
• Pituitary Gland  
• Thoracic Nerves  

Reproductive System  
• Overview, Repro. (M)  
• External Genitalia (M)  
• Internal Genitalia (M)  
• Repro. Ducts (M)  
• Overview, Repro. (F)  
• External Genitalia (F)  
• Internal Genitalia (F)  
• Urinary & Repro. (M)  
• Urinary & Repro. (F)  

Respiratory System  
• Overview, Respiratory  
• Upper Respiratory  
• Lower Respiratory  
• Digestive, Respiratory  
• Nasal Cavity  
• Trachea & Bronchi  
• Larynx  
• Lungs, Exterior  
• Pulmonary Circuit  
• Full Respiratory  

Skeletal System  
• Skull  
• Teeth (Skeletal System)  
• Laryngeal (Skeletal System)  
• Thoracic Cage  
• Sternum  
• Vertebral Column  

• Girdles (Skeletal System)  
• Upper Limb (Skeletal System)  
• Hand (Skeletal System)  
• Lower Limb (Skeletal System)  
• Foot (Skeletal System)  

Urinary System  
• Overview, Urinary (M)  
• Overview, Urinary (F)  
• Kidneys  
• Urinary & Repro. (M)  
• Urinary & Repro. (F)  

Bony Landmark Quizzes (Dissection) (page 158)  
• Fibula Landmarks Dissection Quiz  
• Tibia Landmarks Dissection Quiz  
• Femur Landmarks Dissection Quiz  
• Pubis Landmarks Dissection Quiz  
• Ischium Landmarks Dissection Quiz  
• Ilium Landmarks Dissection Quiz  
• Ulna Landmarks Dissection Quiz  
• Radius Landmarks Dissection Quiz  
• Humerus Landmarks Dissection Quiz  
• Clavicle Landmarks Dissection Quiz  
• Scapula Landmarks Dissection Quiz  
• Lumbar Spine Landmarks Dissection Quiz  
• Thoracic Spine Landmarks Dissection Quiz  
• Cervical Spine Landmarks Dissection Quiz  
• Lacrimal Bone Landmarks Dissection Quiz  
• Palatine Bone Landmarks Dissection Quiz  
• Mandible Landmarks Dissection Quiz  
• Maxilla Landmarks Dissection Quiz
Ethmoid Bone Landmarks Dissection Quiz
Sphenoid Bone Landmarks Dissection Quiz
Frontal Bone Landmarks Dissection Quiz
Temporal Bone Landmarks Dissection Quiz
Occipital Bone Landmarks Dissection Quiz

A&P Pre-Lab and Post-Lab Quizzes (page 163)

Skeletal System Overview Quizzes
- Pre-Lab Quiz: Skeletal System Overview
- Pre-Lab Quiz: Types of Bones
- Pre-Lab Quiz: Bone Tissue
- Pre-Lab Quiz: Flat and Long Bone Formation
- Pre-Lab Quiz: Bone Fractures and Osteoporosis
- Pre-Lab Quiz: Joints

Axial Skeleton Pre-Lab Quizzes
- Pre-Lab Quiz: Skull, Cranial Bones
- Pre-Lab Quiz: Skull, Facial Skeleton
- Pre-Lab Quiz: Skull, Cavities and Foramina
- Pre-Lab Quiz: Vertebral Column
- Pre-Lab Quiz: Thoracic Cage
- Pre-Lab Quiz: Thoracic and Abdominal Muscles

Axial Skeleton Multiple Choice Quiz 3
Axial Skeleton Dissection Quiz

Axial Skeleton Post-Lab Quizzes
- Post-Lab Multiple Choice Quiz: Axial Skeleton
- Axial Skeleton Dissection Quiz

Appendicular Skeleton Pre-Lab Quizzes
- Pre-Lab Quiz: Pectoral Girdle
- Pre-Lab Quiz: The Upper Limb
- Pre-Lab Quiz: The Pelvic Girdle
- Pre-Lab Quiz: The Lower Limb

Appendicular Skeleton Multiple Choice Quiz 3
Appendicular Skeleton Dissection Quiz

Appendicular Skeleton Post-Lab Quizzes
- Post-Lab Multiple Choice Quiz: Appendicular Skeleton
- Appendix: Skeleton Dissection Quiz

Muscular System Overview Quizzes
- Pre-Lab Quiz: Muscular System Overview
- Pre-Lab Quiz: Muscle Types
- Pre-Lab Quiz: Skeletal Muscle Function and Action Potentials
- Pre-Lab Quiz: Cross Bridge Formation
- Pre-Lab Quiz: Skeletal Muscle Interactions and Attachments
- Pre-Lab Quiz: Skeletal Muscles Acting as Levers

Head and Neck Muscles Pre-Lab Quizzes
- Pre-Lab Quiz: Facial Expression Muscles
- Pre-Lab Quiz: Mastication Muscles
- Pre-Lab Quiz: Tongue Muscles
- Pre-Lab Quiz: Mandible Depression Muscles
- Pre-Lab Quiz: Laryngeal Muscles
- Pre-Lab Quiz: Neck Muscles
- Pre-Lab Quiz: Head and Neck Muscles
- Pre-Lab Quiz: Thoracic and Abdominal Muscles
- Pre-Lab Dissection Quiz: Thoracic and Abdominal Muscles

Thoracic and Abdominal Muscles Post-Lab Quizzes
- Post-Lab Multiple Choice Quiz: Thoracic and Abdominal Muscles
- Post-Lab Dissection Quiz: Thoracic and Abdominal Muscles

Upper Limb Muscles Pre-Lab Quizzes
- Pre-Lab Quiz: Shoulder Muscles
- Pre-Lab Quiz: Forearm Muscles
- Pre-Lab Quiz: Wrist and Hand Muscles
- Pre-Lab Quiz: Upper Limb Muscles
- Pre-Lab Dissection Quiz: Upper Limb Muscles

Upper Limb Muscles Post-Lab Quizzes
- Post-Lab Multiple Choice Quiz: Upper Limb Muscles
- Post-Lab Dissection Quiz: Upper Limb Muscles

Lower Limb Muscles Pre-Lab Quizzes
- Pre-Lab Quiz: Hip and Gluteal Muscles
- Pre-Lab Quiz: Thigh Muscles
- Pre-Lab Quiz: Lower Leg Muscles
- Pre-Lab Quiz: Foot Muscles

Lower Limb Muscles Post-Lab Quizzes
- Post-Lab Multiple Choice Quiz: Lower Limb Muscles
- Post-Lab Dissection Quiz: Lower Limb Muscles
• Pre-Lab Multiple Choice Quiz: Lower Limb Muscles
• Pre-Lab Dissection Quiz: Lower Limb Muscles
 Lower Limb Muscles Post-Lab Quizzes
• Post-Lab Multiple Choice Quiz: Lower Limb Muscles
• Post-Lab Dissection Quiz: Lower Limb Muscles
 Nervous System and Special Senses Overview Quizzes
• Pre-Lab Quiz: Nervous System Overview
• Pre-Lab Quiz: The Central and Peripheral Nervous Systems
• Pre-Lab Quiz: Neuron Anatomy and Function
• Pre-Lab Quiz: Special Sensory Organs
• Pre-Lab Quiz: Sensory Processing in the Brain
 Cranial Nerves Pre-Lab Quizzes
• Pre-Lab Quiz: Cranial Nerves Overview
• Pre-Lab Quiz: Special Sensory Cranial Nerves
• Pre-Lab Quiz: Motor Cranial Nerves
• Pre-Lab Quiz: Mixed Cranial Nerves
• Cranial Nerves Multiple Choice Quiz 3
• Cranial Nerves Dissection Quiz
 Cranial Nerves Post-Lab Quizzes
• Post-Lab Multiple Choice Quiz: Cranial Nerves
• Cranial Nerves Dissection Quiz
 Hearing and Equilibrium Pre-Lab Quizzes
• Pre-Lab Quiz: Ear Anatomy Overview
• Pre-Lab Quiz: Outer Ear Anatomy
• Pre-Lab Quiz: Middle Ear Anatomy
• Pre-Lab Quiz: Inner Ear Anatomy
• Pre-Lab Quiz: Hearing and the Auditory Pathway
• Pre-Lab Quiz: Equilibrium and the Equilibrium Pathway
• Pre-Lab Multiple Choice Quiz: Hearing and Equilibrium
• Pre-Lab Dissection Quiz: Hearing and Equilibrium
 Hearing and Equilibrium Post-Lab Quizzes
• Post-Lab Multiple Choice Quiz: Hearing and Equilibrium
• Post-Lab Dissection Quiz: Hearing and Equilibrium
 Vision Pre-Lab Quizzes
• Pre-Lab Quiz: Eye Anatomy Overview
• Pre-Lab Quiz: Layers of the Eye
• Pre-Lab Quiz: The Lacrimal Apparatus
• Pre-Lab Quiz: The Retina and Photoreceptors
• Pre-Lab Quiz: Vision and the Vision Pathway
• Pre-Lab Multiple Choice Quiz: Vision
• Pre-Lab Dissection Quiz: Vision
 Vision Post-Lab Quizzes
• Post-Lab Multiple Choice Quiz: Vision
• Post-Lab Dissection Quiz: Vision
 Olfaction and Taste Pre-Lab Quizzes
• Pre-Lab Quiz: Olfactory Anatomy
• Pre-Lab Quiz: Olfaction and the Olfactory Pathway
• Pre-Lab Quiz: Tongue Anatomy
• Pre-Lab Quiz: Papillae and Taste Buds
• Pre-Lab Quiz: The Taste Pathway
• Pre-Lab Multiple Choice Quiz: Olfaction and Taste
• Pre-Lab Dissection Quiz: Olfaction
• Pre-Lab Dissection Quiz: Taste
 Olfaction and Taste Post-Lab Quizzes
• Post-Lab Multiple Choice Quiz: Olfaction and Taste
• Post-Lab Dissection Quiz: Olfaction
• Post-Lab Dissection Quiz: Taste
 Heart Pre-Lab Quizzes
• Pre-Lab Quiz: Heart Overview
• Pre-Lab Quiz: Location of the Heart
• Pre-Lab Quiz: Heart Anatomy
• Pre-Lab Quiz: The Cardiac Cycle
• Pre-Lab Quiz: Conduction System
• Heart Multiple Choice Quiz 3
• Heart Dissection Quiz
 Heart Post-Lab Quizzes
• Post-Lab Quiz: Heart
• Heart Dissection Quiz
 Respiratory System Pre-Lab Quizzes
• Pre-Lab Quiz: Respiratory System Overview
• Pre-Lab Quiz: Upper Respiratory Structures
• Pre-Lab Quiz: Lower Respiratory Structures
• Pre-Lab Quiz: Inhalation Muscles
• Pre-Lab Quiz: Exhalation Muscles
• Upper Respiratory System Multiple Choice Quiz 3
• Lower Respiratory System Multiple Choice Quiz 3
• Respiration Multiple Choice Quiz 3
<table>
<thead>
<tr>
<th>Upper Respiratory System Dissection Quiz</th>
<th>Lower Respiratory System Dissection Quiz</th>
<th>Respiration Dissection Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory System Post-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Lab Quiz: Respiratory System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Respiratory System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Respiratory System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiration Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digestive System Pre-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Digestive Overview</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Alimentary Canal Anatomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Digestive Secretions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Chewing, Swallowing, and Peristalsis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Upper Digestive System Muscles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Cavity Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esophagus and Stomach Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessory Organs of Digestion Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small and Large Intestines Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digestive System Post-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Lab Quiz: Digestive System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Cavity Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Reproductive System Pre-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Female Reproductive Anatomy Overview</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: The Ovaries and Oogenesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Ovulation, Fertilization, and Implantation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: The Vagina and External Genitalia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Female Sex Hormones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Reproductive System Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Reproductive System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Reproductive System Post-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Lab Quiz: Female Reproductive System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Reproductive System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Pre-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Male Reproductive Anatomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: The Testes and Spermatogenesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: The Reproductive Ducts and the Urethra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: The Accessory Glands and Semen Production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: The Penis and the Male Sexual Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Lab Quiz: Male Sex Hormones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quiz Title</td>
<td>Content</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Post-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Lab Multiple Choice Quiz: Male Reproductive System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Post-Lab Quizzes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Lab Multiple Choice Quiz: Male Reproductive System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Reproductive System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample A&amp;P Course Quizzes</td>
<td>(page 259)</td>
<td></td>
</tr>
<tr>
<td>01 Cells - An Introduction: What are cells?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cells Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Cell Membrane: Insane in the membrane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diffusion, Osmosis, Tonicity, and the Plasma Membrane Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03 Cell Organelles: Journey to the center of the cell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Structure Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organelles Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04 Cell Functions: What do cells do?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transcription and Translation Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 Cell Division: How do we make more cells?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitosis and Meiosis Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitosis and Meiosis Short Answer Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 The Integument: What is under our skin?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integumentary System Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 Bone Tissue Introduction: Why do we have bones?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Tissue Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Types Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08 Axial Skeleton - Skull: What does your skull say about you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skull Bones Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09 Axial Skeleton - Vertebrae and Ribs: What bones are in the thorax?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial Skeleton Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Appendicular Skeleton: The leg bone's connected to the…</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendicular Skeleton Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial Skeleton Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Joints: How do bones interact with one another?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joints Multiple Choice Quiz 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Muscles - Tissue and Contraction: How do muscles work?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle Function Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle Function Short Answer Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Muscle Anatomy: How do we move?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facial Muscles Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal and Back Muscles Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arm Muscles Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skeletal Muscle Tissue Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendicular Skeleton Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Nervous System: How does your nervous system control your body?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action Potentials Short Answer Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal Cord and Spinal Nerves Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Special Senses: How do we sense the environment around us?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smell and Taste Short Answer Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tongue and Papillae Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye Structures Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ear Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Senses Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Endocrine System: How do we maintain homeostasis?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeostasis Short Answer Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocrine Hormone Action Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocrine Organs and Function Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocrine Organs and Functions Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 Circulatory System: How do we move things around our systems?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Structure and Function Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Function Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Structures Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Vessels and Circulation Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Lymphatic System and Immunity: How do we fight pathogens?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphatic System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphatic System and Immunity Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 Respiration: How do we get oxygen into our systems and CO₂ out?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Respiratory System Dissection Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Respiratory Structures Multiple Choice Quiz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Lower Respiratory Structures Multiple Choice Quiz
• Lower Respiratory System Dissection Quiz
• Respiration Multiple Choice Quiz 3
• Hemoglobin Short Answer Quiz

20 Digestion: How do we turn food into molecules our systems can use?
• Digestion: To the Stomach Multiple Choice Quiz
• Digestion: From the Stomach Multiple Choice Quiz
• Digestion Dissection Quiz
• Digestion Short Answer Quiz

21 Urinary System: How do we maintain osmotic balance?
• Kidneys, Nephrons, and Urine Production Multiple Choice Quiz
• Urinary Dissection Quiz
• Urine Storage Multiple Choice Quiz

22 Reproduction: Do you come from the land down under?
• Male Reproductive System Dissection Quiz
• Female Reproductive System Dissection Quiz
• Genitalia and Gamete Production Multiple Choice Quiz
• Fetal Development Multiple Choice Quiz
Quiz Bank by System (Multiple Choice)
Cells and Tissue

Cell Structure and Function Multiple Choice Quiz 1

1. Within the plasma membrane, the lipid tails are
   a. Attracted to water.  ✔
   b. Not dissolved by water.
   c. So full of water that they remain stagnant.
   d. Composed of water.

2. Inside the cytoplasm are structures called _____, which perform essential cellular functions.
   a. Amino acids  
   b. Plasma membranes  
   c. Cytosol  
   d. Organelles  ✔

3. Which of the following is true regarding a mature red blood cell?
   a. It has a single nucleus.  ✔
   b. It has multiple nuclei.
   c. It does not have a nucleus at all.
   d. It shares a nucleus with other cells.

4. When the cell needs to move molecules from an area of low concentration to one of high concentration, it uses specialized channels or carriers in the cell membrane. This process expends energy and is called
   a. Active transport.  ✔
   b. Passive transport.
   c. Mitosis.
   d. Replication.

5. Diffusion of water across a cell's plasma membrane is called
   a. Mitosis.  
   b. Meiosis.
   c. Osmosis.  ✔
   d. Cytokinesis.

6. In a hypertonic solution, there is a greater concentration of water inside the cell than outside it. As a result, the cell
   a. Swells and may even burst.  ✔
   b. Shrinks as water flows out.
   c. Functions correctly.
   d. Maintains homeostasis.

7. All of the following are true of ribosomes except
   a. They are small organelles contained in cells.
   b. They can float freely in the cytosol.  ✔
   c. They contain more than 50 proteins.
   d. They are primarily involved in the process of diffusion.

8. All protein building occurs through two principal steps, which are
   a. Transcription and translation.  ✔
   b. Mitosis and meiosis.
   c. Osmosis and diffusion.
   d. Active transport and passive transport.

9. The assembly of the protein's amino acid chain occurs in the _____ and is facilitated by _____.
   a. Nucleus, cytoplasm  ✔
   b. Cytoplasm, ribosomes
   c. Ribosomes, cytoplasm
   d. Nucleus, ribosomes

10. All of the following are functions proteins have in the body except
    a. Contracting muscles.  ✔
    b. Acting as hormones.
    c. Preventing all substances from crossing cell membranes.
    d. Transporting substances across cell membranes.

Cell Structure and Function Multiple Choice Quiz 2

1. Which of the following is a similarity between the rough endoplasmic reticulum and the smooth endoplasmic reticulum?
   a. Both transport materials for cellular growth.  ✔
   b. Both are found in the same amounts, regardless of the cell type.
   c. Both primarily synthesize lipids.
   d. Both contain protein-synthesizing ribosomes.

2. All of the following explain the role of mitochondria in the cell except
   a. They support the high metabolic demands of the muscles, liver, and kidneys.  ✔
   b. They provide the main source of a cell's energy.
   c. They produce lipids.
   d. They generate most of a cell's ATP through aerobic respiration.

3. Which of the following explains why the phospholipid molecules of the plasma membrane arrange themselves with the heads facing outward toward the cytosol and extracellular fluid and the tails facing inward toward each other?
   a. The head is hydrophobic, and the tails are hydrophilic.  ✔
   b. The head is hydrophilic, and the tails are hydrophobic.
   c. This arrangement creates a fully permeable barrier to let various materials pass in and out of the cell.
   d. This arrangement blocks all materials from passing in and out of the cell.
4. Which of the following is an accurate comparison of passive transport and active transport?
   a. Passive transport uses ATP to move molecules across a cell membrane, whereas active transport uses a hydrostatic pressure gradient to push molecules from a higher-pressure area to a lower-pressure area.
   b. Passive transport occurs through protein pumps or endocytosis, whereas active transport occurs through osmosis or diffusion.
   c. In passive transport, cells use energy to move molecules through their passive membranes, whereas in active transport, cells let their active membranes pull molecules through.
   d. In passive transport, certain molecules move through the cell's selectively permeable membrane without the cell using any energy, whereas in active transport, cells use specialized channels or carriers to move molecules across the membrane.

5. Which of the following explains how the direction of osmosis depends on the concentration of the solution around the cell?
   a. In an isotonic solution, the cell swells and may burst; in a hypotonic solution, water intake and output is balanced; and in a hypertonic solution, water flows out and the cell shrinks.
   b. In an isotonic solution, water input and output is balanced; in a hypotonic solution, water flows out and the cell shrinks; and in a hypertonic solution, the cell swells and may burst.
   c. In an isotonic solution, water input and output is balanced; in a hypotonic solution, the cell swells and may burst; and in a hypertonic solution, water flows out and the cell shrinks.
   d. In an isotonic solution, water flows out and the cell shrinks; in a hypotonic solution, the cell swells and may burst; and in a hypertonic solution, water input and output is balanced.

6. How would you describe a key difference in the functions of lysosomes and peroxisomes?
   a. Lysosomes break down and digest unneeded cellular components, while peroxisomes process and neutralize toxins.
   b. Lysosomes process and neutralize toxins, while peroxisomes break down and digest unneeded cellular components.
   c. In the case of unhealthy or damaged cells, peroxisomes can kill a cell by releasing its enzymes into the cell's cytoplasm, while lysosomes don't have this self-destruct mechanism.
   d. Peroxisomes contain acid hydrolase enzymes that break down and recycle cell structures, while lysosomes contain catalase, which breaks down hydrogen peroxide.

7. How would you describe cellular respiration to someone who doesn't understand the concept?
   a. Cellular respiration is the process of moving substances across the plasma membrane.
   b. Cellular respiration uses osmosis, diffusion, and filtration to conduct various cellular activities.
   c. Cellular respiration is a series of processes that take place within a cell to break down glucose to make ATP.
   d. Cellular respiration is the process of breaking down damaged cells and building new cells to replace them.

8. Which of the following describes the main functions of transcription and translation?
   a. Transcription synthesizes a protein within the ribosome, while translation synthesizes a strand of mRNA that is complementary to the gene of interest.
   b. Transcription synthesizes a strand of mRNA that is complementary to the gene of interest, while translation synthesizes a protein within the ribosome.
   c. Transcription is the process of creating proteins from the template of a cell's genetic code, while translation is the process of creating lipids.
   d. Transcription forms a linear chain of amino acids, while translation unzips a DNA molecule and uses its template to create a rRNA molecule.

9. Which of the following is a similarity among DNA replication, transcription, and translation?
   a. They all consist of three stages: initiation, elongation, and termination.
   b. They all result in the creation of new DNA molecules.
   c. They all build polypeptide chains.
   d. They all use codons to directly encode amino acids.

10. All of the following are ways RNA differs from DNA except
    a. Most types of RNA are single-stranded and contain no complementary strand.
    b. The ribose sugar in RNA contains an additional oxygen atom compared with DNA.
    c. Its structure is completely different from that of DNA.
    d. Instead of the base thymine, RNA contains the base uracil.
Cell Structure and Function Multiple Choice Quiz 3

1. Inside the cytoplasm are structures called _____, which perform essential cellular functions.
   a. Amino acids
   b. Plasma membranes
   c. Cytosol
   ✔️ d. Organelles

2. Which of the following is true regarding a mature red blood cell?
   a. It has a single nucleus.
   b. It has multiple nuclei.
   ✔️ c. It does not have a nucleus at all.
   d. It shares a nucleus with other cells.

3. Diffusion of water across a cell’s plasma membrane is called
   a. Mitosis.
   b. Meiosis.
   ✔️ c. Osmosis.
   d. Cytokinesis.

4. In a hypertonic solution, there is a greater concentration of water inside the cell than outside it. As a result, the cell
   a. Swells and may even burst.
   ✔️ b. Shrinks as water flows out.
   c. Functions correctly.
   d. Maintains homeostasis.

5. The assembly of the protein’s amino acid chain occurs in the _____ and is facilitated by _____.
   a. Nucleus, cytoplasm
   ✔️ b. Cytoplasm, ribosomes
   c. Ribosomes, cytoplasm
   d. Nucleus, ribosomes

6. Which of the following is a similarity between the rough endoplasmic reticulum and the smooth endoplasmic reticulum?
   a. Both transport materials for cellular growth.
   b. Both are found in the same amounts, regardless of the cell type.
   c. Both primarily synthesize lipids.
   d. Both contain protein-synthesizing ribosomes.

7. All of the following explain the role of mitochondria in the cell except
   a. They support the high metabolic demands of the muscles, liver, and kidneys.
   b. They provide the main source of a cell’s energy.
   ✔️ c. They produce lipids.
   d. They generate most of a cell’s ATP through aerobic respiration.

8. Which of the following is an accurate comparison of passive transport and active transport?
   a. Passive transport uses ATP to move molecules across a cell membrane, whereas active transport uses a hydrostatic pressure gradient to push molecules from a higher-pressure area to a lower-pressure area.
   b. Passive transport occurs through protein pumps or endocytosis, whereas active transport occurs through osmosis or diffusion.
   c. In passive transport, cells use energy to move molecules through their passive membranes, whereas in active transport, cells let their active membranes pull molecules through.
   ✔️ d. In passive transport, certain molecules move through the cell’s selectively permeable membrane without the cell using any energy, whereas in active transport, cells use specialized channels or carriers to move molecules across the membrane.

9. Which of the following describes the main functions of transcription and translation?
   a. Transcription synthesizes a protein within the ribosome, while translation synthesizes a strand of mRNA that is complementary to the gene of interest.
   ✔️ b. Transcription synthesizes a strand of mRNA that is complementary to the gene of interest, while translation synthesizes a protein within the ribosome.
   c. Transcription is the process of creating proteins from the blueprint of a cell’s genetic code, while translation is the process of creating lipids.
   d. Transcription forms a linear chain of amino acids, while translation unzips a DNA molecule and uses its template to create a rRNA molecule.

10. All of the following are ways RNA differs from DNA except
    a. Most types of RNA are single-stranded and contain no complementary strand.
    b. The ribose sugar in RNA contains an additional oxygen atom compared with DNA.
    ✔️ c. Its structure is completely different from that of DNA.
    d. Instead of the base thymine, RNA contains the base uracil.

Cell Life Cycle Multiple Choice Quiz 1

1. All of the following occur during the interphase of the cell cycle except cells
   a. Prepare for division.
   b. Synthesize proteins.
   c. Create copies of their organelles.
   ✔️ d. Create two daughter cells.
2. Which phase of the cell cycle involves dividing genetic material, breaking the cell nucleus into two fully functional nuclei?
   a. G1 phase ✓
   b. Mitosis
   c. Cytokinesis
d. Interphase

3. Of the three types of filaments that form the cytoskeleton, ____ are the thickest.
   ✔ a. Microtubules
   b. Microfilaments
c. Intermediate filaments
d. Cytofilaments

4. After the synthesis phase of interphase, how many chromatids are there in the cell?
   a. 46 ✓
   b. 23
c. 92
d. 86

5. During mitosis, pairs of sister chromatids are separated from one another, forming individual chromosomes that are pulled to opposite ends of the cell. This phase is called
   a. Telophase.
   b. Metaphase.
c. Prophase.
d. Anaphase. ✓

6. What occurs during cytokinesis?
   a. The cytoplasm and cell body are divided into two new cells. ✓
   b. The contents of the nucleus are equitably pulled apart and distributed between the cell's two halves.
   c. The cell grows and makes the necessary preparations for mitosis.
   d. The cells temporarily stop dividing and rest.

7. Because each sex cell is ____ and genetically unique, it can combine with another sex cell during fertilization to create offspring with genetic variation.
   a. Diploid
   b. Haploid.
   c. Receptive
d. Adaptive

8. What are the male gametes called?
   a. Testes
   b. Testosterone. ✓
c. Sperm
d. Ovaries

9. All of following are parts of the spermatic cord except
   a. Sperm. ✓
   b. Lymphatic vessels.
   c. Nerves.
   d. Arteries.

10. The female sex cells are produced through meiosis in the
    a. Uterus.
    b. Cervix.
c. Testes.
d. Ovaries. ✓

Cell Life Cycle Multiple Choice Quiz 2

1. Which of the following describes what occurs during the elongation stage of DNA replication?
   a. Two complementary strands are separated, much like unzipping a zipper. ✓
   b. The two original strands of DNA are bound in a complementary strand.
   c. Special enzymes untwist and separate two strands of DNA.
d. DNA polymerase brings in the correct bases to complement the template strand, synthesizing a new strand base by base.

2. How would you explain why the DNA replication process is called "semiconservative"?
   a. It is semiconservative because half of the original DNA molecule is conserved in each new DNA molecule. ✓
   b. It is semiconservative because, whenever possible, both halves of the original DNA molecule are conserved and recycled in the new DNA molecule.
   c. It is semiconservative because it has mechanisms in place to minimize any mistakes made during the process.
d. It is semiconservative because the process replicates only the cells that need to be replaced.

3. Which of the following outlines the cell cycle in the correct order?
   a. Mitosis, interphase, cytokinesis
   b. Cytokinesis, mitosis, interphase
   c. Interphase, mitosis, cytokinesis ✓
d. Interphase, cytokinesis, mitosis
4. Which of the following is a major difference between interphase and mitosis and cytokinesis?

✔ a. During interphase, the cell is not dividing, while during mitosis and cytokinesis, the cell is dividing.
b. During interphase, the cell is dividing, while during mitosis and cytokinesis, the cell is not dividing.
c. During interphase, the cell stops growing and performing its normal functions, while during mitosis and cytokinesis, the cell resumes these activities.
d. During interphase, the cells simply rest, while during mitosis and cytokinesis, cells grow and create copies of their organelles, replicate their DNA, and synthesize proteins.

5. How would you describe mitosis to a peer who isn’t familiar with the process?

✔ a. As the cell performing its normal functions and preparing for division
b. As the process through which a cell divides the genetic information within its nucleus into two identical copies within independent nuclei
c. As the process through which the cell grows and replicates its DNA
d. As the cell’s rest period between growth phases

6. Which of the following are the major stages that make up mitosis, in the correct order?

✔ a. Metaphase, telophase, anaphase, prophase
b. Telophase, anaphase, metaphase, prophase
c. Prophase, metaphase, telophase, anaphase
d. Prophase, metaphase, anaphase, telophase

7. If a cell completes mitosis but doesn’t undergo cytokinesis, this would result in a larger cell with more than one nucleus. What is the implication of such cells?

✔ a. This can be an unwanted aberration and might be a sign of cancerous cells.
b. This is a rare occurrence and can be a sign that certain cells have evolved into supercells.
c. This is a common occurrence that doesn’t have any negative health implications.
d. This is a common occurrence in twins that must be monitored closely.

8. Which of the following is a major difference between prophase and telophase?

✔ a. Nucleoli appear during prophase and disappear during telophase.
b. The mitotic spindle breaks apart during prophase, and it invades the nuclear area during telophase.
c. The loosely packed chromatin coils and condenses into visible chromosomes during prophase, and the chromosomes uncoil to return to loosely packed chromatin during telophase.
d. The cell starts to split in half during prophase, and it forms an X-shape during telophase.

9. Which of the following is a major difference between mitosis and meiosis?

✔ a. Meiosis involves one cell division, while mitosis involves two.
b. Meiosis produces somatic cells, while mitosis produces sex cells.
c. Meiosis produces diploid cells, while mitosis produces haploid cells.
d. Meiosis produces four genetically unique cells, while mitosis produces two identical clones of the parent.

10. All of the following describe the testes except

✔ a. They produce male gametes.
b. They produce the sex hormone testosterone.
c. They are homologous to the ovaries of females.
d. They use mitosis to produce male sex cells.

Cell Life Cycle Multiple Choice Quiz 3

1. All of the following are parts of the spermatic cord except

✔ a. Sperm.
b. Lymphatic vessels.
c. Nerves.
d. Arteries.

2. All of the following describe the testes except

✔ a. They produce male gametes.
b. They produce the sex hormone testosterone.
c. They are homologous to the ovaries of females.
d. They use mitosis to produce male sex cells.

3. Of the three types of filaments that form the cytoskeleton, _____ are the thickest.

✔ a. Microtubules
b. Microfilaments
c. Intermediate filaments
d. Cytofilaments

4. Because each sex cell is _____ and genetically unique, it can combine with another sex cell during fertilization to create offspring with genetic variation.

✔ a. Diploid
b. Haploid
c. Receptive
d. Adaptive
5. What occurs during cytokinesis?
✔ a. The cytoplasm and cell body are divided into two new cells.
  b. The contents of the nucleus are equitably pulled apart and distributed between the cell's two halves.
  c. The cell grows and makes the necessary preparations for mitosis.
  d. The cells temporarily stop dividing and rest.

6. How would you explain why the DNA replication process is called “semiconservative”?
✔ a. It is semiconservative because half of the original DNA molecule is conserved in each new DNA molecule.
  b. It is semiconservative because, whenever possible, both halves of the original DNA molecule are conserved and recycled in the new DNA molecule.
  c. It is semiconservative because it has mechanisms in place to minimize any mistakes made during the process.
  d. It is semiconservative because the process replicates only the cells that need to be replaced.

7. All of the following occur during the interphase of the cell cycle except cells
✔ a. Prepare for division.
  b. Synthesize proteins.
  d. Create two daughter cells.
  c. Create copies of their organelles.

8. Which of the following outlines the cell cycle in the correct order?
✔ a. Mitosis, interphase, cytokinesis
  b. Cytokinesis, mitosis, interphase
  c. Interphase, mitosis, cytokinesis
  d. Interphase, cytokinesis, mitosis

9. Which of the following is a major difference between prophase and telophase?
✔ a. Nucleoli appear during prophase and disappear during telophase.
  b. The mitotic spindle breaks apart during prophase, and it invades the nuclear area during telophase.
  c. The loosely packed chromatin coils and condenses into visible chromosomes during prophase, and the chromosomes uncoil to return to loosely packed chromatin during telophase.
  d. The cell starts to split in half during prophase, and it forms an X-shape during telophase.

10. How would you describe mitosis to a peer who isn't familiar with the process?
✔ a. As the cell performing its normal functions and preparing for division
  b. As the process through which a cell divides the genetic information within its nucleus into two identical copies within independent nuclei
  c. As the process through which the cell grows and replicates its DNA
  d. As the cell's rest period between growth phases

Tissues Multiple Choice Quiz 1

1. The microscopic study of tissue appearance, organization, and function is called
✔ a. Anatomy.
  b. Physiology.
  c. Histology.
  d. Biology.

2. All of the following are functions of the skin except
✔ a. Protecting the body from foreign objects.
  c. Contributing to the regulation of body temperature and water loss.
  d. Releasing digestive enzymes.

3. Which of the following is the body's largest and heaviest organ? 
✔ a. Skin
  b. Heart
  c. Brain
  d. Kidneys

4. Which of the following functions of epithelial tissues aids in digestion?
✔ a. The secretion and release of mucus and specific chemical compounds
  b. The cushioning of the body's internal organs
  c. The regulation of body temperature
  d. The regulation of the body's water loss

5. All of the following are examples of the functions of connective tissues except
✔ a. Tendons attaching muscles to bones.
  b. The skeleton supporting the body's positions.
  c. The intestines secreting enzymes to digest food.
  d. Specialized cells defending the body from microorganisms.

6. Which of the following is not considered one of the three main types of muscle tissue?
✔ a. Striated
  b. Skeletal
  c. Smooth
  d. Cardiac
7. Nervous tissue consists of cells called _____, which pass information, and cells that support them, called _____.
   a. Nuclei, dendrites
   b. Axons, microtubules
   ✔ c. Neurons, neuroglia
   d. Cerebrospinal nerves, neuroglia

8. Which of the following is the most complex and highly organized body system?
   a. Muscular system
   b. Skeletal system
   c. Epithelial system
   ✔ d. Nervous system

9. All of the following are part of the multistep process through which the body repairs injuries except
   ✔ a. The body limits inflammation, so it can easily access the damaged tissue and initiate repair.
   b. Platelets form a meshlike clot to prevent blood loss.
   c. Mast cells release histamine to dilate blood vessels and increase blood flow to the repair site.
   d. Fibroblasts help build new tissue by secreting collagen.

10. Which of the following describes inflammation's role in the process of healing an injury?
    a. Inflammation causes further damage to the injured area.
    b. Inflammation destroys cells that are no longer needed by the body.
    c. Inflammation persists after the injury is healed to prevent further injury.
    ✔ d. Inflammation limits the extent of the injury.

Tissues Multiple Choice Quiz 2

1. How would you explain the avascular nature of epithelial tissues to another student who needs clarification on this concept?
   a. Epithelial cells release mucus and specific chemical compounds, but they do not allow any materials to cross their barriers.
   ✔ b. No blood vessels cross the basement membrane to enter the tissue, and nutrients must come by diffusion or absorption from underlying tissues or the surface.
   c. Several main blood vessels supply the tissue with nutrients and specific chemical compounds needed to perform its functions.
   d. Epithelial cells transport materials to the acidic environment of the stomach.

2. Which of the following indicates the layers of skin, from superficial to deep?
   a. Dermis, hypodermis, epidermis
   ✔ b. Epidermis, hypodermis, dermis
   c. Epidermis, dermis, hypodermis
   d. Hypodermis, dermis, epidermis

3. Which of the following is a difference between endocrine and exocrine glands?
   ✔ a. Endocrine glands release secretions directly into the surrounding tissues and fluids, while exocrine glands release secretions through a duct that opens to the external environment.
   b. Endocrine glands release mucus, sweat, saliva, and breast milk, while exocrine glands release hormones.
   c. Endocrine glands secrete into the lumen of the gastrointestinal tract, while exocrine glands secrete into the interstitial fluid, bloodstream, and cells with receptors.
   d. Endocrine glands include goblet cells in the intestines, while exocrine glands include the anterior pituitary, thymus, adrenal cortex, and gonads.

4. Which of the following is true regarding how epithelial tissue and connective tissue relate to each other?
   a. Both are composed of cells, ground substance, and protein fibers.
   ✔ b. Unlike epithelial tissue, which is composed of cells closely packed with little or no extracellular space in between, connective tissue cells are dispersed in a matrix.
   c. Although their structures are different, both include a large amount of extracellular material between cells.
   d. Neither of them provide protection as a main function.
5. If you were to explain the functions of blood to a peer, you could include all of the following except
   a. It transports oxygen from the lungs to body cells.
   b. It protects the body from pathogens.
   c. It clots to prevent blood loss at sites of injury.
   ✔ d. It transports waste carbon dioxide from the lungs to body cells.

6. Which of the following is a difference between tendons and ligaments?
  ✔ a. Tendons attach muscle to bone, while ligaments attach bone to bone.
   b. Ligaments attach muscle to bone, while tendons attach bone to bone.
   c. Tendons are connective tissues, while ligaments are epithelial tissues.
   d. Ligaments are muscle tissue, while tendons are not.

7. Which of the following statements accurately compares voluntary and involuntary muscle movement?
   a. Voluntary muscle movement means that contractions of the muscle cause bones to move, while involuntary muscle movement means that bones cause muscles to move.
   ✔ b. Voluntary muscle movement is not under conscious control, while involuntary muscle movement is under conscious control.
   c. Voluntary muscle movement is under conscious control, while involuntary muscle movement is not.
   d. Voluntary muscle movement occurs when muscles shorten and generate a pulling force, while involuntary muscle movement occurs when muscles lengthen and generate a pushing force.

8. Which of the following distinguishes smooth muscle from skeletal and cardiac muscle?
   a. It is nonstriated.
   ✔ b. It is striated.
   c. It contracts voluntarily.
   d. It contracts on its own intrinsic rhythm without any external stimulation.

9. Which of the following describes how signals pass through a typical single neuron?
   a. Signals pass from the cell body to the dendrites and axons and then down to the dendrite and axon terminals.
   ✔ b. Signals pass from the dendrites through the cell body and down the axon to the axon terminals.
   c. Signals pass from the axon terminals to the axon and then through the cell body to the dendrites.
   d. Signals pass from the axons down to the axon terminals and then through the dendrites to the cell body.

10. Which of the following describes how the healing process is different for superficial versus deeper wounds?
    ✔ a. Superficial wounds are repaired by the cells of the wounded tissue, while deeper wounds form scar tissue and cause the tissue to lose its normal function.
    b. Superficial wounds are repaired by the formation of scar tissue, while deeper wounds are repaired by the formation of fibrous clots.
    c. Superficial wounds are repaired by the formation of scar tissue, while deeper wounds are repaired by the cells of the wounded tissue.
    d. Superficial wounds often require sutures to avoid scarring, while deeper wounds require invasive regenerative therapy to create new cells similar to the injured cells.

Tissues Multiple Choice Quiz 3

1. Which of the following distinguishes smooth muscle from skeletal and cardiac muscle?
   a. It is nonstriated.
   ✔ b. It is striated.
   c. It contracts voluntarily.
   d. It contracts on its own intrinsic rhythm without any external stimulation.

2. Which of the following is the most complex and highly organized body system?
   a. Muscular system
   ✔ b. Skeletal system
c. Epithelial system
d. Nervous system

3. Which of the following functions of epithelial tissues aids in digestion?
   a. The secretion and release of mucus and specific chemical compounds
   ✔ b. The cushioning of the body’s internal organs
   c. The regulation of body temperature
   d. The regulation of the body’s water loss

4. Nervous tissue consists of cells called _____, which pass information, and cells that support them, called _____.
   a. Nuclei, dendrites
   b. Axons, microtubules
   ✔ c. Neurons, neuroglia
d. Cerebrospinal nerves, neuroglia
5. All of the following are part of the multistep process through which the body repairs injuries except
   ✔ a. The body limits inflammation, so it can easily access the damaged tissue and initiate repair.
   b. Platelets form a meshlike clot to prevent blood loss.
   c. Mast cells release histamine to dilate blood vessels and increase blood flow to the repair site.
   d. Fibroblasts help build new tissue by secreting collagen.

6. How would you explain the avascular nature of epithelial tissues to another student who needs clarification on this concept?
   a. Epithelial cells release mucus and specific chemical compounds, but they do not allow any materials to cross their barriers.
   ✔ b. No blood vessels cross the basement membrane to enter the tissue, and nutrients must come by diffusion or absorption from underlying tissues or the surface.
   c. Several main blood vessels supply the tissue with nutrients and specific chemical compounds needed to perform its functions.
   d. Epithelial cells transport materials to the acidic environment of the stomach.

7. All of the following are functions of the skin except
   a. Protecting the body from foreign objects.
   ✔ b. Cushioning the internal organs.
   c. Contributing to the regulation of body temperature and water loss.
   d. Releasing digestive enzymes.

8. Which of the following statements accurately compares voluntary and involuntary muscle movement?
   a. Voluntary muscle movement means that contractions of the muscle cause bones to move, while involuntary muscle movement means that bones cause muscles to move.
   ✔ b. Voluntary muscle movement is under conscious control, while involuntary muscle movement is not under conscious control.
   c. Voluntary muscle movement is under conscious control, while involuntary muscle movement occurs when muscles shorten and generate a pulling force, while involuntary muscle movement occurs when muscles lengthen and generate a pushing force.

9. Which of the following describes how signals pass through a typical single neuron?
   ✔ a. Signals pass from the cell body to the dendrites and axons and then down to the dendrite and axon terminals.
   b. Signals pass from the dendrites through the cell body and down the axon to the axon terminals.
   c. Signals pass from the axon terminals to the axon and then through the cell body to the dendrites.
   d. Signals pass from the axons down to the axon terminals and then through the dendrites to the cell body.

10. Which of the following is a difference between endocrine and exocrine glands?
    ✔ a. Endocrine glands release secretions directly into the surrounding tissues and fluids, while exocrine glands release secretions through a duct that opens to the external environment.
    b. Endocrine glands release mucus, sweat, saliva, and breast milk, while exocrine glands release hormones.
    c. Endocrine glands secrete into the lumen of the gastrointestinal tract, while exocrine glands secrete into the interstitial fluid, bloodstream, and cells with receptors.
    d. Endocrine glands include goblet cells in the intestines, while exocrine glands include the anterior pituitary, thymus, adrenal cortex, and gonads.

Integumentary System

Integumentary System Multiple Choice Quiz 1

1. All of the following are cell types included in the epidermis except
   a. Keratinocytes.
   b. Fibroblasts.
   ✔ c. Melanocytes.
   d. Merkel cells.

2. Which of the following is a layer of the epidermis?
   a. Stratum reticulare
   ✔ b. Subcutaneous layer
   c. Stratum spinosum
   d. Stratum papillare
Integumentary System Multiple Choice Quiz 2

1. Which of the following distinguishes the epidermis from the dermis?
   a. The epidermis is connective tissue, whereas the dermis is fatty tissue.
   ✔ b. The epidermis is fatty tissue, whereas the dermis is connective tissue.
   c. The epidermis is connective tissue, whereas the dermis is epithelial tissue.
   d. The epidermis is epithelial tissue, whereas the dermis is connective tissue.

2. If your instructor asked you to identify the correct order of the epidermis layers, from deep to superficial, which of the following would you choose?
   a. Stratum basale, stratum spinosum, stratum granulosum, stratum corneum
   ✔ b. Stratum corneum, stratum granulosum, stratum spinosum, stratum basale
   c. Stratum basale, stratum corneum, stratum granulosum, stratum basale
   d. Stratum spinosum, stratum granulosum, stratum corneum, stratum basale

3. All of the following are functions of the dermis except
   ✔ a. Storing fat.
   b. Storing water.
   c. Regulating body temperature.
   d. Producing Vitamin D.

4. Perspiration from _____ sweat glands aids in thermoregulation by releasing heat from the body, whereas _____ sweat glands are active during emotional sweating and sexual activities.
   a. Acinar, sebaceous
   ✔ b. Sebaceous, acinar
   c. Apocrine, eccrine
   d. Eccrine, apocrine

5. Which of the following causes skin cells to produce vitamin D?
   a. Gamma radiation from sunlight
   ✔ b. Ultraviolet radiation from sunlight
   c. Exposure to bacteria, viruses, and fungi
   d. Enzymes produced by liver and kidney activities

6. A _____ is a region of skin that sends sensory information through a single pair of spinal nerves.
   a. Dendrite
   b. Corpuscle
   ✔ c. Papilla
   d. Dermatome

7. Hair has all the following functions except
   a. Cushioning and insulating the body.
   ✔ b. Protecting the nose, ears, and eyes from small particles.
   c. Keeping moisture from leaving the body.
   d. Aiding in the perception of touch.

8. Which part of the nail consists of epidermal cells that divide to produce new nail cells, allowing the nail to grow?
   a. Nail matrix
   ✔ b. Nail root
   c. Cuticle
   d. Lunula

9. During the proliferative phase of wound-healing, _____ build new tissue by secreting _____ that takes the shape of the original tissue.
   a. Neutrophils, keratin
   ✔ b. Fibroblasts, collagen
   c. Mast cells, histamine
   d. Platelets, collagen

10. Which of the following occurs with deep wounds?
    ✔ a. Scar tissue forms and the tissue loses its normal function.
    b. Scar tissue forms but the tissue regains its normal function.
    c. Cells of the wounded tissue repair it without forming scar tissue.
    d. White blood cells and platelets form a fibrous clot that functions like normal tissue.

Integumentary System Multiple Choice Quiz 2

1. Which of the following distinguishes the epidermis from the dermis?
   a. The epidermis is connective tissue, whereas the dermis is fatty tissue.
   ✔ b. The epidermis is fatty tissue, whereas the dermis is connective tissue.
   c. The epidermis is connective tissue, whereas the dermis is epithelial tissue.
   d. The epidermis is epithelial tissue, whereas the dermis is connective tissue.

2. If your instructor asked you to identify the correct order of the epidermis layers, from deep to superficial, which of the following would you choose?
   a. Stratum basale, stratum spinosum, stratum granulosum, stratum corneum
   ✔ b. Stratum corneum, stratum granulosum, stratum spinosum, stratum basale
   c. Stratum basale, stratum corneum, stratum granulosum, stratum basale
   d. Stratum spinosum, stratum granulosum, stratum corneum, stratum basale

3. All of the following are functions of the dermis except
   a. Storing fat.
   ✔ b. Storing water.
   c. Regulating body temperature.
   d. Producing Vitamin D.

4. Perspiration from _____ sweat glands aids in thermoregulation by releasing heat from the body, whereas _____ sweat glands are active during emotional sweating and sexual activities.
   a. Acinar, sebaceous
   ✔ b. Sebaceous, acinar
   c. Apocrine, eccrine
   d. Eccrine, apocrine

5. Which of the following causes skin cells to produce vitamin D?
   a. Gamma radiation from sunlight
   ✔ b. Ultraviolet radiation from sunlight
   c. Exposure to bacteria, viruses, and fungi
   d. Enzymes produced by liver and kidney activities

6. A _____ is a region of skin that sends sensory information through a single pair of spinal nerves.
   a. Dendrite
   b. Corpuscle
   ✔ c. Papilla
   d. Dermatome

7. Hair has all the following functions except
   a. Cushioning and insulating the body.
   ✔ b. Protecting the nose, ears, and eyes from small particles.
   c. Keeping moisture from leaving the body.
   d. Aiding in the perception of touch.

8. Which part of the nail consists of epidermal cells that divide to produce new nail cells, allowing the nail to grow?
   a. Nail matrix
   ✔ b. Nail root
   c. Cuticle
   d. Lunula

9. During the proliferative phase of wound-healing, _____ build new tissue by secreting _____ that takes the shape of the original tissue.
   a. Neutrophils, keratin
   ✔ b. Fibroblasts, collagen
   c. Mast cells, histamine
   d. Platelets, collagen

10. Which of the following occurs with deep wounds?
    ✔ a. Scar tissue forms and the tissue loses its normal function.
    b. Scar tissue forms but the tissue regains its normal function.
    c. Cells of the wounded tissue repair it without forming scar tissue.
    d. White blood cells and platelets form a fibrous clot that functions like normal tissue.

Integumentary System Multiple Choice Quiz 2

1. Which of the following distinguishes the epidermis from the dermis?
   a. The epidermis is connective tissue, whereas the dermis is fatty tissue.
   ✔ b. The epidermis is fatty tissue, whereas the dermis is connective tissue.
   c. The epidermis is connective tissue, whereas the dermis is epithelial tissue.
   d. The epidermis is epithelial tissue, whereas the dermis is connective tissue.
4. If you were explaining the skin's touch receptors to a friend who doesn't understand them, your explanation should include all of the following points except
   a. Meissner's corpuscles—located in the dermal papillae of hairless skin such as fingertips, nipples, lips, soles, clitoris, tip of the penis, and tip of the tongue—detect light touch, pressure, and vibration.
✔
   b. Sebaceous glands—located in most parts of the skin—detect light touch, pressure, and vibration.
   c. Merkel cells—located in the stratum basale of the fingertips, lips, hands, and external genitalia—transmit signals related to touch.
   d. Pacinian corpuscles—located in the mammary glands, pancreas, urinary bladder, and genital organs—transmit signals related to vibration and pressure.

5. If you were giving an oral presentation on the different components that originate in the reticular region of the dermis, which of the following points would you not want to include?
   a. Melanocytes produce the pigment melanin, which absorbs ultraviolet rays and determines skin color.
   b. Sebaceous glands secrete sebum, which coats the surface of hairs, lubricates the skin, prevents excess evaporation, and hinders the growth of some bacteria.
   c. Sudoriferous glands produce sweat, which allows the body to regulate its temperature by cooling the skin as it evaporates.
   d. Hair follicles produce hair, which decreases the loss of heat from the scalp, protects the eyes and ears from foreign particles, and helps sense light touch.

6. What distinguishes the first cervical spinal nerve from the sacral, lumbar, and thoracic spinal nerves?
   a. It has its own dermatome.
   b. Its region is innervated by the vagus cranial nerve (CN X), rather than a dermatome.
   c. Its region is innervated by both a dermatome and the trigeminal cranial nerve (CN V).
   ✔
   d. Its region is innervated by the trigeminal cranial nerve (CN V), rather than a dermatome.

7. Which of the following is a shared characteristic of hair and nails?
   a. Both consist of roots, follicles, and shafts.
   ✔
   b. Both are made of dead epidermal cells that have been converted to keratin.
   c. Both have sensory functions due to sensory innervation in their follicles.
   d. Both originate deep in the hypodermis.

8. If your instructor asked you to explain what causes goosebumps, which of the following would you likely say?
   a. In the follicle, new hair cells develop and push existing cells upward, producing goosebumps.
   b. Sebaceous glands release sebum onto the hair, and when this sebum touches the skin, it produces goosebumps.
   ✔
   c. Smooth muscle called the arrector pili is attached to the hair and can contract to pull the hair upright, producing goosebumps.
   d. When an object makes direct and forceful contact with the hairs, the nervous reaction that occurs produces goosebumps.

9. If your friend asked you to explain how different types of cells are involved in tissue repair, you would likely include all of the following in your explanation except
   a. Merkel cells from torn vessels work to form a mesh-like clot that prevents blood loss.
   b. Mast cells release histamine that dilates blood vessels and increases blood flow to the repair site.
   c. White blood cells called neutrophils and macrophages work to consume bacteria and remove damaged tissue and debris.
   ✔
   d. Fibroblasts build new tissue by secreting collagen that takes the shape of the original tissue.

10. Which of the following accurately compares the tissue repair process for deep and superficial wounds?
   a. Both superficial and deep wounds result in the formation of scar tissue.
   b. Both superficial and deep wounds are repaired by cells of the wounded tissue, and the tissue loses its normal function.
   ✔
   c. Deep wounds result in the formation of scar tissue, whereas superficial wounds do not.
   d. Blood vessels carry white blood cells and platelets to the site of deep wounds to form a fibrous clot, whereas superficial wounds do not require clots.
**Integumentary System Multiple Choice Quiz 3**

1. Which of the following is a shared characteristic of hair and nails?
   a. Both consist of roots, follicles, and shafts. [✔]
   b. Both are made of dead epidermal cells that have been converted to keratin.
   c. Both have sensory functions due to sensory innervation in their follicles.
   d. Both originate deep in the hypodermis.

2. A _____ is a region of skin that sends sensory information through a single pair of spinal nerves.
   a. Dendrite
   b. Corpuscle
   c. Papilla [✔]
   d. Dermatome

3. All of the following are functions of the dermis except [✔]
   a. Storing fat.
   b. Storing water.
   c. Regulating body temperature.
   d. Producing Vitamin D.

4. Perspiration from _____ sweat glands aids in thermoregulation by releasing heat from the body, whereas _____ sweat glands are active during emotional sweating and sexual activities.
   a. Acinar, sebaceous
   b. Sebaceous, acinar
   c. Apocrine, eccrine [✔]
   d. Eccrine, apocrine

5. All of the following are cell types included in the epidermis except
   a. Keratinocytes.
   b. Fibroblasts.
   c. Melanocytes.
   d. Merkel cells. [✔]

6. All of the following statements accurately compare two types of skin cells except
   a. Both fibroblast cells and keratinocytes produce fibrous proteins.
   b. Langerhans cells assist in immune responses, whereas Merkel cells detect touch stimuli. [✔]
   c. Both melanocytes and Langerhans cells detect touch stimuli.
   d. Melanocytes produce a pigment that determines skin color, whereas keratinocytes produce a fibrous protein that protects skin and tissue.

7. During the proliferative phase of wound-healing, _____ build new tissue by secreting _____ that takes the shape of the original tissue.
   a. Neutrophils, keratin
   b. Fibroblasts, collagen
   c. Mast cells, histamine
   d. Platelets, collagen [✔]

8. If your instructor asked you to explain what causes goosebumps, which of the following would you likely say?
   a. In the follicle, new hair cells develop and push existing cells upward, producing goosebumps.
   b. Sebaceous glands release sebum onto the hair, and when this sebum touches the skin, it produces goosebumps.
   c. Smooth muscle called the arrector pili is attached to the hair and can contract to pull the hair upright, producing goosebumps. [✔]
   d. When an object makes direct and forceful contact with the hairs, the nervous reaction that occurs produces goosebumps.

9. Which of the following accurately compares the tissue repair process for deep and superficial wounds?
   a. Both superficial and deep wounds result in the formation of scar tissue. [✔]
   b. Both superficial and deep wounds are repaired by cells of the wounded tissue, and the tissue loses its normal function.
   c. Deep wounds result in the formation of scar tissue, whereas superficial wounds do not.
   d. Blood vessels carry white blood cells and platelets to the site of deep wounds to form a fibrous clot, whereas superficial wounds do not require clots.
10. Which of the following distinguishes the epidermis from the dermis?
   a. The epidermis is connective tissue, whereas the dermis is fatty tissue.
   b. The epidermis is fatty tissue, whereas the dermis is epithelial tissue.
   c. The epidermis is connective tissue, whereas the dermis is epithelial tissue.
   ✔ d. The epidermis is epithelial tissue, whereas the dermis is connective tissue.

Skeletal System and Joints

Types of Bones Multiple Choice Quiz 1

1. All of the following are types of bones in the skeleton except
   a. Sesamoid bones.
   b. Irregular bones.
   ✔ c. Regular bones.
   d. Short bones.

2. Which of the following is a flat bone?
   a. Patella
   b. Femur
   c. Ulna
   ✔ d. Sternum

3. The tibia and fibula are _____ bones.
   a. Long
   ✔ b. Short
   c. Flat
   d. Sesamoid

4. All of the following are long bones except
   a. The humerus.
   ✔ b. The carpals.
   c. The metacarpals.
   d. The phalanges.

5. Which of the following are short bones?
   a. Metatarsals
   b. Cranial bones
   c. Ribs
   ✔ d. Tarsals

6. Which of the following is true of short bones?
   ✔ a. Short bones are cube-shaped, being approximately equal in length, width, and thickness.
   b. Short bones function as levers, moving when muscles contract.
   c. Short bones vary in shape and structure, depending on their location in the body.
   d. Short bones reinforce tendons, protecting them from stress and wear.

7. Which of the following bones varies in shape and structure?
   a. Ribs
   b. Carpals
   ✔ c. Vertebrae
   d. Cranial

8. The pelvic bones are _____ bones.
   a. Short
   ✔ b. Irregular
   c. Sesamoid
   d. Flat

9. Which of the following is a sesamoid bone?
   a. Patella
   ✔ b. Femur
   c. Humerus
   d. Sternum

10. Which of the following is a characteristic of sesamoid bones?
    a. They only exist in the axial skeleton.
    b. They are thin and curved.
    ✔ c. They protect internal organs.
    d. They form in tendons.

Types of Bones Multiple Choice Quiz 2

1. Which of the following is an accurate comparison between flat bones and long bones?
   ✔ a. Flat bones protect internal organs, whereas long bones absorb stress and support body weight.
   b. Flat bones absorb stress and support body weight, whereas long bones protect internal organs.
   c. Both flat bones and long bones support body weight.
   d. Both flat bones and long bones protect internal organs.

2. If a friend asked you to explain the function of specific flat bones, your explanation might include all of the following except
   a. Cranial bones protect the brain.
   ✔ b. The ribs protect the heart.
   c. The vertebrae protect the spinal cord.
   d. The ribs protect the lungs.

3. If you were giving an oral report on the functions of long bones, which of the following would you likely include?
   a. Long bones protect internal organs such as the brain, heart, and lungs.
   b. Long bones support the weight of the body and facilitate movement.
   ✔ c. Long bones reinforce tendons, protecting them from wear and tear.
   d. Long bones provide stability and support, as well as some limited motion.
4. Which of the following is a similarity between long bones and short bones?
   a. Both are longer than they are wide.
   b. Both are found mainly in the axial skeleton.
   c. Both are approximately equal in length, width, and thickness.
   ✔ d. Both are found only in the appendicular skeleton.

5. If you were describing the bones in the hand to a friend, which two types of bones would your description include?
   a. Flat and irregular bones
   ✔ b. Long and short bones
   c. Sesamoid and short bones
   d. Irregular and long bones

6. If you were giving an oral report on the structure and functions of irregular bones, your report should include all of the following except
   ✔ a. Irregular bones are small and round and embedded in tendons.
   b. Irregular bones tend to have complex shapes.
   c. Irregular bones include the vertebrae, which support the spinal cord and protect it from compressive forces.
   d. Irregular bones include the pelvic bones, which support the vertebral column.

7. Which of the following differentiates irregular bones from the other types of bones?
   a. Irregular bones are the largest bones in the body.
   ✔ b. Irregular bones do not have any set functions.
   c. Irregular bones do not have easily characterized shapes.
   d. Irregular bones are only found in the knee.

8. If you were discussing the characteristics of sesamoid bones, which of the following would you include in your discussion?
   a. They have complex shapes.
   ✔ b. They develop inside tendons.
   c. Their primary function is maintaining balance.
   d. They are approximately equal in length, width, and thickness.

9. If you were explaining how the various types of bones provide protection to other body structures, your explanation might include all of the following except
   a. The ribs are flat bones that protect the heart and lungs.
   b. The vertebrae are irregular bones that protect the spinal cord from compressive forces.
   c. The patellae are sesamoid bones that protect tendons by helping them overcome compressive forces.
   ✔ d. The cranial bones are sesamoid bones that protect the brain.

10. If you were explaining the shapes of the various types of bones, which of the following would you include in your explanation?
    ✔ a. Sesamoid bones are small and round.
    b. Long bones are thin and curved.
    c. Short bones have a cylinder-like shape.
    d. Flat bones are flattened and round.

3. If you were giving an oral report on the structure and functions of irregular bones, your report should include all of the following except
    a. Irregular bones are small and round and embedded in tendons.
    b. Irregular bones tend to have complex shapes.
    c. Irregular bones include the vertebrae, which support the spinal cord and protect it from compressive forces.
    d. Irregular bones include the pelvic bones, which support the vertebral column.

5. All of the following are types of bones in the skeleton except
   a. Sesamoid bones.
   b. Irregular bones.
   ✔ c. Regular bones.
   d. Short bones.

4. The tibia and fibula are _____ bones.
   ✔ a. Long
   b. Short
   c. Flat
   d. Sesamoid

Types of Bones Multiple Choice Quiz 3

1. Which of the following bones varies in shape and structure?
   a. Ribs
   b. Carpals
   ✔ c. Vertebrae
   d. Cranial

2. If you were explaining the shapes of the various types of bones, which of the following would you include in your explanation?
   a. Sesamoid bones are small and round.
   b. Long bones are thin and curved.
   ✔ c. Short bones have a cylinder-like shape.
   d. Flat bones are flattened and round.
6. Which of the following is true of short bones?

✔ a. Short bones are cube-shaped, being approximately equal in length, width, and thickness.

b. Short bones function as levers, moving when muscles contract.

c. Short bones vary in shape and structure, depending on their location in the body.

d. Short bones reinforce tendons, protecting them from stress and wear.

7. Which of the following is an accurate comparison between flat bones and long bones?

✔ a. Flat bones protect internal organs, whereas long bones absorb stress and support body weight.

b. Flat bones absorb stress and support body weight, whereas long bones protect internal organs.

c. Both flat bones and long bones support body weight.

d. Both flat bones and long bones protect internal organs.

8. Which of the following is a characteristic of sesamoid bones?

✔ a. They only exist in the axial skeleton.

b. They are thin and curved.

c. They protect internal organs.

d. They form in tendons.

9. If you were describing the bones in the hand to a friend, which two types of bones would your description include?

✔ a. Flat and irregular bones

b. Long and short bones

c. Sesamoid and short bones

d. Irregular and long bones

10. If you were explaining how the various types of bones provide protection to other body structures, your explanation might include all of the following except

✔ a. The ribs are flat bones that protect the heart and lungs.

b. The vertebrae are irregular bones that protect the spinal cord from compressive forces.

c. The patellae are sesamoid bones that protect tendons by helping them overcome compressive forces.

d. The cranial bones are sesamoid bones that protect the brain.

Bone Tissue Multiple Choice Quiz 1

1. Yellow bone marrow consists mostly of

✔ a. Fat.

b. Protein.

c. Bone.

d. Blood cells.

2. Red bone marrow is found in all of the following except

✔ a. Flats bones.

b. The ends of long bones.

c. In the medullary cavity of long bones.

d. In networks of spongy bone tissue.

3. A long bone consists of a shaft, or _____, and a(n) _____ at each end.

✔ a. Epiphysis, diaphysis

b. Diaphysis, epiphysis

c. Periosteum, diaphysis

d. Medullary cavity, periosteum

4. Compact bone tissue is made up of structural units called

✔ a. Trabeculae.

b. Red bone marrow.

c. Periosteum.

d. Osteons.

5. All of the following are components of an osteon except

✔ a. Lamellae.

b. Lacunae.

c. Trabeculae.

d. Canaliculi.

6. Which of the following is the function of osteocytes?

✔ a. To maintain bone tissue structure and sense bone health

b. To break down bone matrix

c. To synthesize bone matrix

d. To divide into multiple bone cells

7. The formation of flat bone from connective tissue occurs through the process of

✔ a. Cartilage templates.

b. Bone remodeling.

c. Endochondral ossification.

d. Intramembranous ossification.

8. During long bone formation, _____ lay down bone material, replacing _____.

✔ a. Osteoblasts, hyaline cartilage

b. Osteoblasts, chondroblasts

c. Chondroblasts, hyaline cartilage

d. Chondroblasts, osteoblasts
9. In _____ fractures, one end of a broken bone is driven into the other end.
   a. Comminuted
   b. Compound
   ✔️ c. Impacted
   d. Greenstick

10. In the process of bone repair, _____ penetrate the area and build a callus that bridges the broken bone.
   a. Osteoclasts
   ✔️ b. Fibroblasts
   c. Osteoblasts
   d. Osteocytess

Bone Tissue Multiple Choice Quiz 2

1. All of the following statements accurately compare yellow and red bone marrow except
   a. Yellow bone marrow is mostly found in the flat bones of the axial skeleton, whereas red bone marrow is mostly found in the long bones of the appendicular skeleton.
   ✔️ b. Yellow bone marrow consists mostly of fat, whereas red bone marrow contains blood cells.
   c. Both yellow and red bone marrow are found mostly in spongy bone tissue.
   d. Both yellow and red bone marrow are found mainly in the ends of long bones.

2. Which of the following lists the layers of a long bone from exterior to interior?
   a. Bone marrow, medullary cavity, spongy bone, compact bone
   b. Compact bone, medullary cavity, bone marrow, spongy bone
   c. Spongy bone, compact bone, medullary cavity, bone marrow
   ✔️ d. Compact bone, spongy bone, medullary cavity, bone marrow

3. Which of the following explains the difference between the structure of compact bone and spongy bone?
   a. Compact bone tissue is made up of structural units called osteons, whereas spongy bone tissue is made up of a lattice of struts called trabeculae.
   b. Compact bone tissue is made up of a lattice of struts called trabeculae, whereas spongy bone tissue is made up of structural units called osteons.
   c. Compact bone tissue is made up of trabeculae and red bone marrow, whereas spongy bone tissue is made up of Haversian systems and yellow bone marrow.
   d. Compact bone tissue is filled with red bone marrow, whereas spongy bone tissue is filled with yellow bone marrow.

4. Which of the following accurately compares the different types of bone cells?
   a. Osteoclasts synthesize bone matrix, osteocytes break down bone matrix, and osteoblasts maintain bone tissue structure.
   b. Osteocytes synthesize bone matrix, osteoblasts break down bone matrix, and osteoclasts maintain bone tissue structure.
   ✔️ c. Osteoblasts synthesize bone matrix, osteoclasts break down bone matrix, and osteocytes maintain bone tissue structure.
   d. Osteoblasts synthesize bone matrix, osteocytes break down bone matrix, and osteoclasts maintain bone tissue structure.

5. If you were explaining flat bone formation to a friend who does not understand the process, all of the following would likely be included in your explanation except
   a. Certain mesenchymal cells within embryonic fibrous connective tissue develop into osteoblasts.
   ✔️ b. Osteoclasts cluster together, secrete bone matrix, and develop into osteocytes.
   c. Osteocytes deposit calcium and other mineral salts that harden the forming bone matrix.
   d. A fibrous covering called periosteum forms on the bone's surface.

6. Which of the following accurately compares endochondral ossification and intramembranous ossification?
   a. Endochondral ossification is the process of forming flat bones, whereas intramembranous ossification is the process of forming long bones.
   ✔️ b. Intramembranous ossification occurs in the adult skeleton, whereas endochondral ossification occurs in the embryonic skeleton.
   c. Intramembranous ossification is the process in which hyaline cartilage is replaced with bone and grows, whereas endochondral ossification is the process of flat bones developing from connective tissue.
   d. Endochondral ossification is the process in which hyaline cartilage is replaced with bone and grows, whereas intramembranous ossification is the process of flat bones developing from connective tissue.
7. If you were explaining long bone formation to a friend who does not understand the process, which of the following would you likely include in your explanation?
   a. Osteoclasts cluster together, secrete bone matrix, and develop into osteocytes. ✔
   b. Blood vessels penetrate the hyaline cartilage and deliver osteoblasts, which lay down bone material.
   c. Osteoclasts deposit calcium and other mineral salts that harden the forming bone matrix.
   d. Certain mesenchymal cells within embryonic fibrous connective tissue develop into osteocytes.

8. Which of the following statements accurately compares two types of fractures?
   ✔ a. A greenstick fracture is a partial break, whereas a comminuted fracture occurs when a bone is crushed into three or more pieces.
   b. A compound fracture is when one end of a broken bone is driven into the other end, whereas an impacted fracture occurs when the broken bone ends pierce the skin.
   c. A simple fracture is a partial break, whereas a greenstick fracture occurs when the broken bone ends pierce the skin.
   d. A comminuted fracture is a break beneath the skin, whereas an impacted fracture occurs when a bone is crushed.

9. If you were giving an oral report on bone repair, all of the following would be points in your presentation except
   ✔ a. Blood at the fracture site clots and becomes a hematoma.
   b. Osteoclasts remove dead bone tissue.
   c. Osteocytes transform the fibrocartilaginous callus into bone.
   d. Fibroblasts penetrate the area and build a fibrocartilaginous callus.

10. If a friend asked you to explain osteoporosis, which of the following might be a point you would make?
    a. Osteoporosis is a condition in which bone tissue is generated too quickly, resulting in bone pain and tenderness.
    b. Osteoporosis is a condition in which old bone tissue accumulates in the bone, resulting in bone pain, tenderness, and weakened and brittle bones.
    ✔ c. Osteoporosis is a condition in which osteoblasts generate unhealthy bone tissue, resulting in bone pain and tenderness.
    d. Osteoporosis is a condition in which overall tissue loss within bones results in bone pain, tenderness, and weakened and brittle bones.

Bone Tissue Multiple Choice Quiz 3

1. The formation of flat bone from connective tissue occurs through the process of
   a. Cartilage templates.
   b. Bone remodeling.
   ✔ c. Endochondrial ossification.
   d. Intramembranous ossification.

2. All of the following are components of an osteon except
   a. Lamellae.
   b. Lacunae.
   ✔ c. Trabeculae.
   d. Canaliculi.

3. Which of the following explains the difference between the structure of compact bone and spongy bone?
   ✔ a. Compact bone tissue is made up of structural units called osteons, whereas spongy bone tissue is made up of a lattice of struts called trabeculae.
   b. Compact bone tissue is made up of a lattice of struts called trabeculae, whereas spongy bone tissue is made up of structural units called osteons.
   c. Compact bone tissue is made up of trabeculae and red bone marrow, whereas spongy bone tissue is made up of Haversian systems and yellow bone marrow.
   d. Compact bone tissue is filled with red bone marrow, whereas spongy bone tissue is filled with yellow bone marrow.

4. Which of the following accurately compares the different types of bone cells?
   ✔ a. Osteoclasts synthesize bone matrix, osteocytes break down bone matrix, and osteoblasts maintain bone tissue structure.
   b. Osteoclasts synthesize bone matrix, osteoblasts break down bone matrix, and osteocytes maintain bone tissue structure.
   c. Osteoblasts synthesize bone matrix, osteoclasts break down bone matrix, and osteocytes maintain bone tissue structure.
   d. Osteoblasts synthesize bone matrix, osteoclasts break down bone matrix, and osteocytes maintain bone tissue structure.

5. During long bone formation, _____ lay down bone material, replacing _____.
   ✔ a. Osteoblasts, hyaline cartilage
   b. Osteoblasts, chondroblasts
   c. Chondroblasts, hyaline cartilage
   d. Chondroblasts, osteoblasts
6. In _____ fractures, one end of a broken bone is driven into the other end.
   a. Comminuted
   b. Compound
   ✔ c. Impacted
   d. Greenstick

7. If a friend asked you to explain osteoporosis, which of the following might be a point you would make?
   a. Osteoporosis is a condition in which bone tissue is generated too quickly, resulting in bone pain and tenderness.
   b. Osteoporosis is a condition in which old bone tissue accumulates in the bone, resulting in bone pain, tenderness, and weakened and brittle bones.
   ✔ c. Osteoporosis is a condition in which osteoblasts generate unhealthy bone tissue, resulting in bone pain and tenderness.
   d. Osteoporosis is a condition in which overall tissue loss within bones results in bone pain, tenderness, and weakened and brittle bones.

8. All of the following statements accurately compare yellow and red bone marrow except
   a. Yellow bone marrow is mostly found in the flat bones of the axial skeleton, whereas red bone marrow is mostly found in the long bones of the appendicular skeleton.
   ✔ b. Yellow bone marrow consists mostly of fat, whereas red bone marrow contains blood cells.
   c. Both yellow and red bone marrow are found mostly in spongy bone tissue.
   d. Both yellow and red bone marrow are found mainly in the ends of long bones.

9. If you were giving an oral report on bone repair, all of the following would be points in your presentation except
   a. Blood at the fracture site clots and becomes a hematoma.
   b. Osteoclasts remove dead bone tissue.
   ✔ c. Osteocytes transform the fibrocartilaginous callus into bone.
   d. Fibroblasts penetrate the area and build a fibrocartilaginous callus.

10. A long bone consists of a shaft, or _____, and a(n) _____ at each end.
    a. Epiphysis, diaphysis
    ✔ b. Diaphysis, epiphysis
    c. Periosteum, diaphysis
    d. Medullary cavity, periosteum

Axial Skeleton Multiple Choice Quiz 1

1. All of the following are part of the axial skeleton except
   a. The skull.
   ✔ b. The arm.
   c. The vertebral column.
   d. The thoracic cage.

2. Which cranial bone is connected to all four major skull sutures?
   a. Temporal bones
   b. Frontal bone
   ✔ c. Parietal bones
   d. Occipital bone

3. Which bone is part of the orbit and the nasal septum?
   a. Ethmoid
   ✔ b. Frontal bone
   c. Palatine bones
   d. Lacrimal bones

4. Which of the cranial bones is connected to all four major skull sutures?
   a. Temporal bones
   b. Frontal bone
   ✔ c. Parietal bones
   d. Occipital bone

5. Which of the following facial bones is the only movable bone(s) in the skull?
   a. Maxillae
   b. Nasal bones
   ✔ c. Vomer
   d. Mandible

6. All of the following are foramina of the skull except
   a. The hypoglossal canal.
   ✔ b. The foramen minimal.
   c. The foramen magnum.
   d. The foramen lacerum.

7. Which bone is part of the orbit and the nasal septum?
   a. Ethmoid
   ✔ b. Frontal bone
   c. Palatine bones
   d. Lacrimal bones

8. The vertebral column consists of all of the following except
   a. 24 vertebrae.
   b. The coccyx.
   ✔ c. The hyoid.
   d. The sacrum.

9. Which part of the spine includes the atlas and axis?
   a. Sacral spine
   b. Thoracic spine
   c. Lumbar spine
   ✔ d. Cervical spine
10. Ribs 1–7 are called _____ ribs because they articulate directly to the sternum.
   a. False
   ✔ b. True
   c. Secondary
d. Vertebrochondral

Axial Skeleton Multiple Choice Quiz 2

1. If your instructor asked you to list the cranial bones from anterior to posterior, which of the following would be correct?
   ✔ a. Frontal, ethmoid, sphenoid, parietal, temporal, occipital
   b. Occipital, temporal, parietal, sphenoid, frontal, ethmoid
c. Temporal, frontal, parietal, occipital, ethmoid, sphenoid
d. Frontal, occipital, parietal, temporal, sphenoid, ethmoid

2. If you were explaining the location of the skull sutures to a friend, you would likely include all of the following except
   a. The lambdoid suture is between the occipital and parietal bones.
   ✔ b. The coronal suture is between the frontal and parietal bones.
c. The squamous sutures are between the temporal and parietal bones.
d. The sagittal suture is between the temporal and parietal bones.

3. If you were giving an oral report on the facial skeleton, which of the following details would you likely include?
   ✔ a. All of the bones in the facial skeleton are paired.
   b. The 14 bones of the facial skeleton form the entrances to the respiratory and digestive tracts.
c. The facial bones are the occipital, parietal, temporal, frontal, sphenoid, and ethmoid bones.
d. The maxillae are the largest facial bones.

4. Which of the following lists the auditory ossicles, from inner to outer?
   ✔ a. Malleus, incus, stapes
   b. Incus, malleus, stapes
c. Stapes, incus, malleus
d. Stapes, malleus, incus

5. If you were explaining the purpose of the foramina of the skull to a friend, which of the following would you likely include in your explanation?
   ✔ a. The foramina are holes that allow for the passage of blood vessels, nerves, and the spinal cord.
   b. The foramina are fibrous membranes that allow the skull to enlarge to accommodate the growing brain.
c. The foramina are immobile joints where cranial bones are connected with dense fibrous tissue.
d. The foramina are ligaments that facilitate movement of the skull.

6. From superior to inferior, which of the following lists the sections of the vertebral column in the correct order?
   ✔ a. Sacral, lumbar, thoracic, cervical
   b. Cervical, lumbar, sacral, thoracic
c. Thoracic, lumbar, sacral, cervical
d. Cervical, thoracic, lumbar, sacral

7. If your friend asked you to explain the ligaments of the spine that support and reinforce the joints of the vertebral column, your explanation might include all of the following points except
   a. The vertebral bodies are connected by anterior and posterior longitudinal ligaments.
   ✔ b. The atlanto-occipital membranes, the alar ligaments, the transverse ligament of the atlas, and the tectorial membranes reinforce the craniovertebral joints.
c. The vertebral bodies are connected by the alar ligaments and the transverse ligament of the atlas.
d. The vertebral arches are connected by the ligamenta flava, the interspinous ligaments, the supraspinous ligament, the nuchal ligament, and the intertransverse ligaments.

8. If you were explaining the atlas to a friend, you might include all of the following points except
   a. Unlike other vertebrae, the atlas does not have a body or spinous process.
   ✔ b. The atlas is the second of the cervical vertebrae.
c. The atlas has four synovial articulations allowing for gliding, moving in an anteroposterior direction, and rotation.
d. The atlas is the first of the cervical vertebrae.
9. How does the sacrum differ in the male and female body?
   a. In the female, the sacrum is longer and narrower than in the male and directed more obliquely forward, decreasing the size of the pelvic cavity.
   b. In the male, the sacrum is shorter and wider than in the female and directed more obliquely forward, decreasing the size of the pelvic cavity.
   c. In the male, the sacrum is shorter and wider than in the female and directed more obliquely backward, increasing the size of the pelvic cavity.
   d. In the female, the sacrum is shorter and wider than in the male and directed more obliquely backward, increasing the size of the pelvic cavity.

10. How does the female’s thoracic cage differ from that of the male?
   a. The female’s thoracic cage has a greater capacity, and the sternum is longer and lower.
   ✔ b. The female’s thoracic cage has a lesser capacity, and the sternum is shorter and higher.
   c. The female’s thoracic cage has a greater capacity, and the sternum is wider and lower.
   d. The female’s thoracic cage is shorter and higher, but it has the same capacity.

Axial Skeleton Multiple Choice Quiz 3

1. All of the following are key landmarks of the temporal bone except
   ✔ a. The foramen ovale.
   b. The external auditory meatus.
   c. The styloid process.
   d. The mandibular fossa.

2. Which of the following lists the auditory ossicles, from inner to outer?
   a. Malleus, incus, stapes
   b. Incus, malleus, stapes
   ✔ c. Stapes, incus, malleus
   d. Stapes, malleus, incus

3. If you were explaining the purpose of the foramina of the skull to a friend, which of the following would you likely include in your explanation?
   ✔ a. The foramina are holes that allow for the passage of blood vessels, nerves, and the spinal cord.
   b. The foramina are fibrous membranes that allow the skull to enlarge to accommodate the growing brain.
   c. The foramina are immobile joints where cranial bones are connected with dense fibrous tissue.
   d. The foramina are ligaments that facilitate movement of the skull.

4. All of the following are part of the axial skeleton except
   a. The skull.
   ✔ b. The arm.
   c. The vertebral column.
   d. The thoracic cage.

5. Ribs 1–7 are called _____ ribs because they articulate directly to the sternum.
   a. False
   ✔ b. True
   c. Secondary
   d. Vertebrochondral

6. If you were explaining the location of the skull sutures to a friend, you would likely include all of the following except
   a. The lambdoid suture is between the occipital and parietal bones.
   b. The coronal suture is between the frontal and parietal bones.
   ✔ c. The squamous sutures are between the temporal and parietal bones.
   d. The sagittal suture is between the temporal and parietal bones.

7. Which part of the spine includes the atlas and axis?
   a. Sacral spine
   b. Thoracic spine
   c. Lumbar spine
   ✔ d. Cervical spine

8. If your friend asked you to explain the ligaments of the spine that support and reinforce the joints of the vertebral column, your explanation might include all of the following points except
   a. The vertebral bodies are connected by anterior and posterior longitudinal ligaments.
   b. The atlanto-occipital membranes, the alar ligaments, the transverse ligament of the atlas, and the tectorial membranes reinforce the craniovertebral joints.
   ✔ c. The vertebral bodies are connected by the alar ligaments and the transverse ligament of the atlas.
   d. The vertebral arches are connected by the ligamenta flava, the interspinous ligaments, the supraspinous ligament, the nuchal ligament, and the intertransverse ligaments.
9. Which bone is part of the orbit and the nasal septum?
   ✔ a. Ethmoid
   b. Frontal bone
   c. Palatine bones
   d. Lacrimal bones

10. How does the sacrum differ in the male and female body?
   a. In the female, the sacrum is longer and narrower than in the male and directed more obliquely forward, decreasing the size of the pelvic cavity.
   b. In the male, the sacrum is shorter and wider than in the female and directed more obliquely forward, decreasing the size of the pelvic cavity.
   ✔ c. In the male, the sacrum is shorter and wider than in the female and directed more obliquely backward, increasing the size of the pelvic cavity.
   d. In the female, the sacrum is shorter and wider than in the male and directed more obliquely backward, increasing the size of the pelvic cavity.

Appendicular Skeleton Multiple Choice Quiz 1

1. All of the following are part of the appendicular skeleton except
   ✔ a. The neck.
   b. The shoulder girdle.
   c. The pelvic girdle.
   d. The legs.

2. The clavicle articulates with all of the following except
   a. The cartilage of the first rib.
   b. The acromion of the scapula.
   ✔ c. The manubrium of the sternum.
   d. The humerus.

3. Which of the following is a muscle of the shoulder girdle?
   a. The intercostals
   b. The triceps brachii
   ✔ c. The coracobrachialis
   d. The biceps brachii

4. The humerus articulates with all of the following except
   a. The clavicle.
   ✔ b. The radius.
   c. The glenoid cavity of the scapula.
   d. The ulna.

5. Carpal tunnel syndrome occurs when
   a. A carpal bone is fractured, causing bleeding in the carpal tunnel.
   ✔ b. Inflammation of the synovial membranes surrounding the flexor tendons compress the median nerve.
   c. The flexor reticulum spasms, tightening the carpal tunnel.
   d. The median nerve sends signals to the carpal tunnel, causing bleeding and inflammation.

6. All of the following are part of the pelvic girdle except
   a. The ilium.
   b. The pubis.
   ✔ c. The ischium.
   d. The coccyx.

7. Which of the following is the longest bone in the body?
   a. Tibia
   b. Humerus
   ✔ c. Femur
   d. Sternum

8. All of the following are bones of the lower limb except
   a. The fibula.
   ✔ b. The metacarpals.
   c. The tarsals.
   d. The patella.

9. All of the following are tarsal bones except
   a. The triquetral.
   b. The navicular.
   ✔ c. The calcaneus.
   d. The cuboid.

10. What is the primary role of the arches of the foot?
    a. Toe protection
    b. Posture
    c. Ankle protection
    ✔ d. Shock absorption

Appendicular Skeleton Multiple Choice Quiz 2

1. If you were to explain why the skeletal muscles play an important role in bone stabilization in the shoulder girdle, which of the following would you likely say?
   a. The shoulder girdle does not have any skeletal connections, so it relies solely on muscles to support and position it correctly.
   ✔ b. The shoulder girdle's only connection with the rest of the skeleton is between the clavicle and manubrium, so it relies on muscles to support and position it correctly.
   c. Although the shoulder girdle connects with the sternum and humerus, most of its support and positioning comes from muscles.
   d. Although the shoulder girdle connects with the sternum and several ribs, most of its support and positioning comes from muscles.
2. Which of the following is a difference between the shoulder girdle and pelvic girdle?
   a. The pelvic girdle connects to the axial skeleton, whereas the shoulder girdle does not.
   b. The shoulder girdle connects to the axial skeleton, whereas the pelvic girdle does not.
   c. The shoulder girdle is rigid, whereas the pelvic girdle is light and capable of great mobility.
   ✔ d. The pelvic girdle is rigid, whereas the shoulder girdle is light and capable of great mobility.

3. Which of the following accurately compares the radius and ulna?
   a. The radius is smaller and thinner than the ulna.
   ✔ b. The radius is located on the medial side of the forearm, whereas the ulna is located on the lateral side.
   c. The radius provides rotational movement of the forearm, whereas the ulna provides flexion of the forearm.
   d. The radius provides flexion of the forearm, whereas the ulna provides rotational movement of the forearm.

4. If your instructor asked you to list the distal and proximal carpal bones, which of the following would be an accurate list?
   a. The scaphoid, trapezoid, capitate, and triquetral are distal carpal bones, whereas the trapezium, hamate, lunate, and pisiform are proximal carpal bones.
   ✔ b. The trapezium, hamate, scaphoid, and triquetral are distal carpal bones, whereas the trapezoid, capitate, lunate, and pisiform are proximal carpal bones.
   c. The trapezium, trapezoid, capitate, and hamate are distal carpal bones, whereas the scaphoid, lunate, triquetral, and pisiform are proximal carpal bones.
   d. The trapezium, trapezoid, capitate, and hamate are proximal carpal bones, whereas the scaphoid, lunate, triquetral, and pisiform are distal carpal bones.

5. Which of the following is a type of bone that is present in both the upper and lower limbs?
   a. Phalanges
   b. Tarsals
   c. Carpals
   d. Metacarpals
   ✔ e. Tarsals

6. Which of the following accurately compares the male and female pelvis?
   a. The female pelvis is deeper than the male pelvis.
   ✔ b. The female pelvic brim is larger and wider than the male pelvic brim.
   c. The female has a pubic arch angle of less than 90 degrees, whereas the male has a pubic arch angle of more than 90 degrees.
   d. The female pelvis has a smaller pelvic brim and a narrower pelvic outlet than that of the male pelvis.

7. If your instructor asked you to compare the structure of the upper and lower extremities, which of the following might you say?
   a. There are no similarities in the structures of the upper and lower extremities.
   b. Both the upper and lower extremities are divided into two regions.
   ✔ c. Both the upper and lower extremities are divided into four regions.
   d. The upper and lower extremities have a similar structure, with a large bone articulating with two smaller bones via a joint.

8. All of the following are similarities between the radius in the forearm and the fibula in the leg except
   a. The radius is the longest bone in the arm, and the fibula is the longest bone in the leg.
   ✔ b. Both run parallel to another bone, the ulna in the arm and the tibia in the leg.
   c. The radius is the lateral bone in the forearm, and the fibula is the lateral bone in the leg.
   d. The radius is the smaller bone in the forearm, and the fibula is the smaller bone in the leg.

9. If you were giving an oral report on the arches of the foot, you would include all of the following points except
   a. The transverse arch helps distribute body weight from side to side within the foot, thus allowing it to accommodate uneven terrain.
   ✔ b. The longitudinal arch runs from the calcaneus to the heads of the metatarsals.
   c. The transverse arch runs from the calcaneus to the heads of the metatarsals.
   d. The longitudinal arch has a medial and lateral part.

10. If your instructor asked you to list the bones of the lower limb, from thigh to foot, which of the following would be the correct order?
    a. Phalanges, metatarsals, tarsals, tibia and fibula, patella, femur
    ✔ b. Femur, patella, tibia and fibula, tarsals, metatarsals, phalanges
    c. Tibia and fibula, patella, femur, tarsals, metatarsals, phalanges
    d. Patella, femur, tarsals, metatarsals, tibia and fibula, phalanges
Appendicular Skeleton Multiple Choice Quiz 3

1. Which of the following is the longest bone in the body?
   a. Tibia
   b. Humerus
   ✔ c. Femur
   d. Sternum

2. Which of the following is a difference between the shoulder girdle and pelvic girdle?
   a. The pelvic girdle connects to the axial skeleton, whereas the shoulder girdle does not.
   b. The shoulder girdle connects to the axial skeleton, whereas the pelvic girdle does not.
   ✔ c. The shoulder girdle is rigid, whereas the pelvic girdle is light and capable of great mobility.
   d. The pelvic girdle is rigid, whereas the shoulder girdle is light and capable of great mobility.

3. Carpal tunnel syndrome occurs when
   a. A carpal bone is fractured, causing bleeding in the carpal tunnel.
   ✔ b. Inflammation of the synovial membranes surrounding the flexor tendons compress the median nerve.
   c. The flexor reticulum spasms, tightening the carpal tunnel.
   d. The median nerve sends signals to the carpal tunnel, causing bleeding and inflammation.

4. Which of the following accurately compares the male and female pelvis?
   a. The female pelvis is deeper than the male pelvis.
   ✔ b. The female pelvic brim is larger and wider than the male pelvic brim.
   c. The female has a pubic arch angle of less than 90 degrees, whereas the male has a pubic arch angle of more than 90 degrees.
   d. The female pelvis has a smaller pelvic brim and a narrower pelvic outlet than that of the male pelvis.

5. All of the following are tarsal bones except
   a. The triquetral.
   ✔ b. The navicular.
   c. The calcaneus.
   d. The cuboid.

6. Which of the following is a type of bone that is present in both the upper and lower limbs?
   a. Phalanges
   ✔ b. Tarsals
   c. Carpals
   d. Metacarpals

7. If you were giving an oral report on the arches of the foot, you would include all of the following points except
   a. The transverse arch helps distribute body weight from side to side within the foot, thus allowing it to accommodate uneven terrain.
   ✔ b. The longitudinal arch runs from the calcaneus to the heads of the metatarsals.
   c. The transverse arch runs from the calcaneus to the heads of the metatarsals.
   d. The longitudinal arch has a medial and lateral part.

8. If your instructor asked you to compare the structure of the upper and lower extremities, which of the following might you say?
   a. There are no similarities in the structures of the upper and lower extremities.
   b. Both the upper and lower extremities are divided into two regions.
   ✔ c. Both the upper and lower extremities are divided into four regions.
   d. The upper and lower extremities have a similar structure, with a large bone articulating with two smaller bones via a joint.

9. Which of the following is a muscle of the shoulder girdle?
   a. The intercostals
   b. The triceps brachii
   ✔ c. The coracobrachialis
   d. The biceps brachii

10. All of the following are part of the appendicular skeleton except
   a. The neck.
   b. The shoulder girdle.
   ✔ c. The pelvic girdle.
   d. The legs.

Joints Multiple Choice Quiz 1

1. Which of the following is a way that joints can be classified?
   a. The number of bones connected
   b. The location in the body
   c. The shape of the bones connected
   ✔ d. The range of movement provided

2. An immobile joint is also known as a _____ joint.
   a. Syndesmosis
   ✔ b. Synarthrosis
   c. Symphyses
   d. Synovial
3. Which of the following is an example of a synchondrosis joint?
   a. The joint between the first pair of ribs and the sternum
   ✔ b. The fibrous joints that occur only in the skull
   c. The fibrous articulations between the teeth and the mandible
   d. The distal joint between the tibia and fibula

4. A _____ is a joint where a ligament connects two bones, allowing for a little movement.
   a. Synovial
   ✔ b. Synarthrosis
   c. Syndesmosis
   d. Symphysis

5. Intervertebral discs are fibrocartilaginous pads that connect the vertebrae, also known as
   a. Synovial joints.
   ✔ b. Symphyses.
   c. Syndesmoses.
   d. Synarthroses.

6. All of the following are synovial joints except
   a. The distal joint between the tibia and fibula.
   ✔ b. The elbow joint.
   c. The atlanto-axial joints.
   d. The hip joint.

7. Which of the following motions are associated with hinge joints?
   a. Side-to-side movements
   b. Rotational movements
   c. Anterior–posterior and medial–lateral movements
   ✔ d. Flexion and extension

8. The joint between the radius and the carpal bones is an example of a _____ joint.
   a. Hinge
   ✔ b. Condyloid
   c. Saddle
   d. Gliding

9. Which of the following joints is a ball-and-socket joint?
   a. Hip joint
   ✔ b. Elbow joint
   c. Intervertebral joints
   d. Atlanto-axial joints

10. As people age, degeneration of the articular cartilage is most common in all of the following joints except
   a. The shoulder joint.
   b. The elbow joint.
   ✔ c. The intervertebral joints.
   d. The knee joint.

Joints Multiple Choice Quiz 2

1. If you were explaining sutures to a friend who is unfamiliar with this type of joint, you should include all of the following points except
   a. The most prominent suture is the joint connecting the mandible to the temporal bone.
   b. Sutures are nonmoving joints.
   c. Sutures have serrated edges that lock together with fibers of connective tissue.
   ✔ d. Sutures are strong and fracture-resistant.

2. If a friend asked you to explain the different types of synarthroses, which of the following might be included in your explanation?
   a. Sutures are immovable fibrous joints between the teeth and the mandible or maxilla.
   b. Syndermoses are immovable cartilaginous joints that only occur in the skull.
   c. Gomphoses are immovable cartilaginous joints between the ribs and sternum.
   ✔ d. Gomphoses are immovable fibrous joints between the teeth and the mandible or maxilla.

3. Which of the following is a difference between syndesmoses and symphyses?
   a. Syndesmoses are cartilaginous joints, whereas symphyses are fibrous joints.
   ✔ b. Syndesmoses are fibrous joints, whereas symphyses are cartilaginous joints.
   c. Syndesmoses allow for slight movement, whereas symphyses allow for no movement.
   d. Syndesmoses allow for full movement, whereas symphyses allow for slight movement.

4. If you were explaining the structure of synovial joints to a friend, which of the following might you say?
   a. Synovial joints occur when ligaments connect two bones, allowing for a little movement.
   b. Synovial joints consist of fibrocartilaginous pads that connect two bones, allowing for some movement.
   ✔ c. Synovial joints are characterized by the presence of an articular capsule between the two joined bones, often supported by surrounding ligaments.
   d. Synovial joints are immovable fibrous joints that occur only in the skull.
5. Which of the following is a similarity between the carpal joints and the tarsal joints?
✔ a. They are both gliding joints.
   b. They are both hinge joints.
   c. They are both pivot joints.
   d. They are both immovable joints.

6. If you were explaining to a friend how the wrist joint moves, you would include all of the following motions in your explanation except
c. Flexion.
✔ d. Abduction.

7. If your instructor asked you to explain why thumbs are opposable, which of the following might you say?
✔ a. The thumb's hinge joint lets it cross over the palm, making it opposable.
   b. The thumb's saddle joint lets it cross over the palm, making it opposable.
   c. The thumb's ball-and-socket joint lets it rotate 360 degrees, making it opposable.
   d. The thumb's gliding joint lets it move side to side, making it opposable.

8. Which of the following most accurately distinguishes ball-and-socket joints from other types of synovial joints?
✔ a. Ball-and-socket joints have the greatest range of motion.
   b. Ball-and-socket joints are the least likely to develop arthritis.
   c. Ball-and-socket joints have the least range of motion.
   d. Ball-and-socket joints are the only ones that allow for rotation motions.

9. If your instructor asked you to list the ligaments that stabilize the knee joint, you should include all of the following except
c. The anterior cruciate ligament.
   d. The posterior cruciate ligament.

10. If you were explaining osteoarthritis to a friend who does not understand this condition, which of the following would you likely include in your explanation?
   a. Osteoarthritis occurs when too much articular cartilage is produced, causing pain and inflammation.
   c. Osteoarthritis occurs when unhealthy joint cartilage is formed, causing pain and inflammation.
   d. Osteoarthritis occurs when articular cartilage degenerates, causing pain and inflammation.

Joints Multiple Choice Quiz 3

1. A _____ is a joint where a ligament connects two bones, allowing for a little movement.
   a. Synovial
   b. Synarthrosis
   c. Syndesmosis
   ✔ d. Symphysis

2. Which of the following most accurately distinguishes ball-and-socket joints from other types of synovial joints?
✔ a. Ball-and-socket joints have the greatest range of motion.
   b. Ball-and-socket joints are the least likely to develop arthritis.
   c. Ball-and-socket joints have the least range of motion.
   d. Ball-and-socket joints are the only ones that allow for rotation motions.

3. If your instructor asked you to list the ligaments that stabilize the knee joint, you should include all of the following except
c. The annular ligament.
   d. The posterior cruciate ligament.

4. If your instructor asked you to explain why thumbs are opposable, which of the following might you say?
   a. The thumb's hinge joint lets it cross over the palm, making it opposable.
   c. The thumb's ball-and-socket joint lets it rotate 360 degrees, making it opposable.
   d. The thumb's gliding joint lets it move side to side, making it opposable.

5. Which of the following motions are associated with hinge joints?
   a. Side-to-side movements
   b. Rotational movements
   c. Anterior–posterior and medial–lateral movements
   ✔ d. Flexion and extension
6. Which of the following is a way that joints can be classified?
   ✔ a. The number of bones connected
   b. The location in the body
   c. The shape of the bones connected
   d. The range of movement provided

7. If you were explaining sutures to a friend who is unfamiliar with this type of joint, you should include all of the following points except
   ✔ a. The most prominent suture is the joint connecting the mandible to the temporal bone.
   b. Sutures are nonmoving joints.
   c. Sutures have serrated edges that lock together with fibers of connective tissue.
   d. Sutures are strong and fracture-resistant.

8. As people age, degeneration of the articular cartilage is most common in all of the following joints except
   a. The shoulder joint.
   b. The elbow joint.
   ✔ c. The intervertebral joints.
   d. The knee joint.

9. If a friend asked you to explain the different types of synarthroses, which of the following might be included in your explanation?
   a. Sutures are immovable fibrous joints between the teeth and the mandible or maxilla.
   b. Sychrondoses are immovable cartilaginous joints that only occur in the skull.
   ✔ c. Gomphoses are immovable cartilaginous joints between the ribs and sternum.
   d. Gomphoses are immovable fibrous joints between the teeth and the mandible or maxilla.

10. All of the following are synovial joints except
    ✔ a. The distal joint between the tibia and fibula.
    b. The elbow joint.
    c. The atlanto-axial joints.
    d. The hip joint.

Muscle Tissue and Muscular System

Skeletal Muscle Tissue Multiple Choice Quiz 1

1. The pectoralis major is innervated by the _____ and supplied with blood by the _____.
   ✔ a. Brachial plexus, thoracoacromial artery
   b. Lumbosacral plexus, axillary vein
   c. Abdominal aortic plexus, cephalic vein
   d. Cavernous plexus, subclavian artery

2. The thoracoacromial artery divides into all of the following branches except
   a. The pectoral.
   b. The deltoid.
   ✔ c. The axillary.
   d. The acromial.

3. The striated appearance of skeletal muscles is created by the arrangement of ____ inside the cells that form muscle tissue.
   a. Lipids and minerals
   b. Neurons and neurotransmitter receptors
   c. Capillaries and nerves
   ✔ d. Actin and myosin

4. Which body system initiates the process of muscle contraction?
   a. Muscular system
   b. Skeletal system
   ✔ c. Nervous system
   d. Endocrine system

5. Surrounding the myofibrils are membranous sacs called the
   a. Endoplasmic reticulum.
   b. Sarcoplasmic reticulum.
   ✔ c. Neuromuscular reticulum.
   d. Sarcolemma reticulum.

6. Sarcomeres contain thick filaments, which consist of _____, and thin filaments, which consist of _____.
   a. Calcium, sodium
   b. Sodium, calcium
   c. Actin, myosin
   ✔ d. Myosin, actin

7. The musculocutaneous nerve supplies all of the following except
   a. The biceps brachii.
   b. The coracobrachialis.
   ✔ c. The serratus anterior muscle.
   d. The elbow joint.

8. A layer of connective tissue called the _____ protects each skeletal muscle.
   a. Epimysium
   b. Fascicle
   c. Myofibril
   d. Filament

9. What are the bundles of muscle fibers that compose muscle tissue called?
   a. Myofibrils
   b. Filaments
   c. Sarcomeres
   ✔ d. Fascicles
10. Which of the following creates a muscle contraction?
✔ a. When the thick and thin filaments of a sarcomere slide across each other
b. When the thick and thin filaments pair up and form myofibrils
c. When a chemical message passes from the muscle fiber into the motor neuron
d. When the myofibrils organize into repeating segments called sarcomeres

3. All of the following are common properties among skeletal, cardiac, and smooth muscle except
a. They all exhibit the quality of excitability.
b. They all begin the process of contracting when actin is pulled by myosin.
✔ c. They all look the same because actin and myosin always have the same microscopic organization.
d. They all have the qualities of elasticity, extensibility, and contractility.

4. If one of your friends asked you to explain how body movement occurs, which of the following steps would not be included in your explanation?
a. The neuron releases a neurotransmitter called acetylcholine.
✔ b. Acetylcholine binds to receptors on the muscle and begins a chemical reaction within its fibers.
c. Impulses from the nervous system move away from the neuromuscular junction.
d. The muscle filaments slide across each other and the muscle shortens, or contracts.

6. Which of the following describes the relationship between acetylcholine and sodium ions?
✔ a. There is no relationship between acetylcholine and sodium ions.
b. When acetylcholine binds to its receptors, they open, allowing an influx of sodium ions into the muscle fiber.
c. The presence of sodium ions is necessary for acetylcholine to bind to its receptors.
d. Sodium ions at the neuromuscular junction enable the release of acetylcholine.

7. All of the following are steps in the cross-bridge formation process except
a. Sodium ions stimulate the sarcolemma and generate an action potential that travels through the transverse tubules.
✔ b. Calcium ions released from the sarcoplasmic reticulum power the movement of the myosin head.
c. The myosin head binds to actin.
d. ADP and phosphate power the movement of the myosin head.

8. Which of the following describes the relationship between myosin and actin?
✔ a. When actin binds to a protein complex, it shifts and exposes myosin-binding sites.
b. When the energy powers of myosin and actin combine, it is called the power stroke.
c. When the myosin heads bind to actin, the cross bridges are established.
d. Myosin and actin do not interact at all in the muscle contraction process.
9. Which of the following describes the motion myosin heads must complete for muscles to contract?
✔ a. Myosin heads must pull the actin at the binding sites, detach, re-cock, attach to more binding sites, pull, detach, re-cock, etc.
 b. Myosin heads must continually remain activated for muscles to contract.
 c. Myosin heads must stay bound to actin for muscles to continue to contract.
 d. Myosin heads must be pulled by actin at the binding sites and stay attached to the actin for muscles to contract.

10. Which of the following describes how messages travel from the brain to muscles?
✔ d. A signal begins in the brain and travels down the spinal cord to peripheral nerves until it reaches a muscle.

Skeletal Muscle Tissue Multiple Choice Quiz 3

1. A layer of connective tissue called the ______ protects each skeletal muscle.
✔ a. Epimysium  
b. Fascicle  
c. Myofibril  
d. Filament

2. Which of the following creates a muscle contraction?
✔ a. When the thick and thin filaments of a sarcomere slide across each other  
b. When the thick and thin filaments pair up and form myofibrils  
c. When a chemical message passes from the muscle fiber into the motor neuron  
d. When the myofibrils organize into repeating segments called sarcomeres

3. Surrounding the myofibrils are membranous sacs called the ______.
✔ a. Endoplasmic reticulum  
b. Sarcoplasmic reticulum  
c. Neuromuscular reticulum  
d. Sarcolemma reticulum

4. Sarcomeres contain thick filaments, which consist of ______, and thin filaments, which consist of ______.
✔ a. Calcium, sodium  
b. Sodium, calcium  
c. Actin, myosin  
d. Myosin, actin

5. All of the following are steps in the cross-bridge formation process except
✔ a. Calcium ions released from the sarcoplasmic reticulum bind to a protein complex causing it to shift and expose myosin-binding sites.
 b. Calcium ions released from the sarcoplasmic reticulum power the movement of the myosin head.
 c. The myosin head binds to actin.
 d. ADP and phosphate power the movement of the myosin head.

6. All of the following are common properties among skeletal, cardiac, and smooth muscle except
✔ a. They all exhibit the quality of excitability.
 b. They all begin the process of contracting when actin is pulled by myosin.
 c. They all look the same because actin and myosin always have the same microscopic organization.
 d. They all have the qualities of elasticity, extensibility, and contractility.

7. If one of your friends asked you to explain how body movement occurs, which of the following steps would not be included in your explanation?
✔ c. Impulses from the nervous system move away from the neuromuscular junction.

8. Which of the following describes the relationship between myosin and actin?
✔ c. When the myosin head binds to actin, the cross-bridge is established.

9. Which body system initiates the process of muscle contraction?
✔ c. Nervous system  
d. Endocrine system
10. Which of the following describes how messages travel from the brain to muscles?
   a. A signal begins in the brain and travels through the veins until it reaches a muscle.
   b. A signal begins in the brain and is transmitted directly into muscle tissue.
   c. A signal begins in the brain and travels in transport vesicles to a muscle.
   ✔️ d. A signal begins in the brain and travels down the spinal cord to peripheral nerves until it reaches a muscle.

**Smooth and Cardiac Muscle Tissue Multiple Choice Quiz 1**

1. Smooth muscle lines all of the following body structures except
   a. The blood vessels of the circulatory system.
   b. The urinary organs.
   ✔️ c. The brain.
   d. The reproductive organs.

2. Which of the following provides for muscle control of the flow of urine out of the body?
   ✔️ a. Two sphincters
   b. Ureters
   c. Kidneys
   d. Bladder and urethra

3. Smooth muscle contractions are _____ actions managed by impulses that travel through the _____ nervous system to the smooth muscle tissue.
   a. Voluntary, autonomic
   b. Voluntary, central
   c. Involuntary, central
   ✔️ d. Involuntary, autonomic

4. Peristaltic waves in the esophagus force a food mass toward the stomach as part of the process of
   a. Chewing.
   b. Eating.
   ✔️ c. Swallowing.
   d. Chemical digestion.

5. Which smooth muscle layer is found in the stomach but not in the rest of the alimentary canal?
   a. Longitudinal layer
   b. Oblique layer
   c. Epithelial layer
   d. Circular layer

6. As the bronchi branch into secondary and tertiary bronchi and bronchioles, they get
   a. Larger.
   b. Wider.
   ✔️ c. Narrower.
   d. Thicker.

7. What is the function of the coronary arteries?
   a. They provide blood supply to the limbs.
   ✔️ b. They provide blood supply to the heart tissue.
   c. They carry deoxygenated blood from the heart tissue into the right atrium.
   d. They carry oxygenated blood from the heart tissue into the right atrium.

8. All of the following are steps to electrical impulses in the conduction system except
   a. The initiation of the impulse at the atrioventricular node.
   ✔️ b. The passage of the impulse into the bundle of His.
   c. The culmination of the signal at the Purkinje fibers.
   d. The pause of the impulse at the atrioventricular node.

9. Which layer of the heart wall adheres the heart to the pericardium, a sac of tissue that protects the heart from friction as it beats?
   a. Myocardium
   b. Endocardium
   ✔️ c. Epicardium
   d. Exocardium

10. _____ are specialized cardiac muscle cells that directly control heart rate.
   a. Sarcomeres
   b. Desmosomes
   c. Epithelial cells
   ✔️ d. Pacemaker cells

**Smooth and Cardiac Muscle Tissue Multiple Choice Quiz 2**

1. If you were giving an oral report on the role smooth muscle plays in the process of digestion, which of the following points would you include in your presentation?
   ✔️ a. Through mechanical and chemical processes that occur in the alimentary canal—a musculomembranous tube that extends from the mouth to the anus—food is digested, nutrients are extracted, and waste is expelled.
   b. The esophagus performs mechanical digestion by churning ingested food and breaking it down with gastric secretions.
   c. The majority of digestion and nutrient absorption occurs in the stomach.
   d. The chemical digestion of food doesn't begin until it reaches the intestines.
2. If one of your friends asked you to explain the way smooth muscle functions in specific organs, you could make all the following points except
   a. The smooth muscle in the digestive tract contracts and relaxes in peristaltic waves that move food from the mouth through the stomach and the intestines.
   ✔ b. The smooth muscle in the brain contracts and relaxes to move neurons to their activation sites.
   c. The smooth muscle in artery walls relaxes and contracts as pressure changes move changing volumes of blood through the vessel.
   d. The smooth muscle of the uterus allows for great contraction.

3. If a patient asks you why her stomach sometimes seems to vary in size, shape, and position, you could tell her that these variations are due to all of the following except
   a. The stage of digestion.
   ✔ b. The degree of development of the gastric musculature.
   c. The nutrient content of her food.
   d. The condition of the adjacent intestines.

4. Which of the following is the correct order of the smooth muscle layers of the stomach wall, from interior to exterior?
   ✔ a. Oblique, circular, longitudinal
   b. Oblique, longitudinal, circular
   c. Longitudinal, circular, oblique
   d. Circular, oblique, longitudinal

5. How would you explain the path exhaled oxygen-poor and carbon dioxide-rich air takes to leave the body?
   a. It takes a direct path from the bronchioles to the trachea.
   b. It is diffused from the bronchioles directly into the circulation system, leaving the body through sweat glands.
   ✔ c. It passes through the trachea into the larynx, and then it passes through the right or left bronchi into the secondary and tertiary bronchi and the bronchioles in the lungs.
   d. It passes through the bronchioles and tertiary and secondary bronchi in the lungs to the right or left bronchi, and then it goes into the larynx and up through the trachea to pass out of the body via the mouth or nose.

6. Which of the following describes how the tunica media differs between arteries and veins?
   a. It is thinner in arteries than in veins.
   ✔ b. It is thicker in arteries than in veins.
   c. It is more elastic in veins than in arteries.
   d. It contracts more regularly in arteries than in veins.

7. If you were to describe the myocardium to a friend who is unfamiliar with its structure, which of the following would you be most likely to say?
   a. It is a visceral layer of serous pericardium.
   ✔ b. It is a thin, smooth membrane of connective tissue and elastic fibers.
   c. It is a conical pouch.
   d. It is made up of muscular fibers attached to fibrous rings.

8. How does cardiac muscle differ from skeletal muscle?
   a. It is striated.
   b. It is organized into sarcomeres.
   ✔ c. Its fibers are shorter.
   d. Its fibers are not connected to each other.

9. Which of the following correctly lists the layers of the heart wall, from outermost to innermost?
   ✔ a. Epicardium, myocardium, endocardium
   b. Epicardium, endocardium, myocardium
   c. Myocardium, endocardium, epicardium
   d. Endocardium, myocardium, epicardium

10. If one of your peers asked you to explain the main function of the myocardium, how would you explain it?
    a. It lines the inner surface of the heart, protecting it as it contracts.
    b. It adheres the heart to the pericardium, a sac of tissue that protects the heart from friction as it beats.
    ✔ c. It contracts voluntarily in response to signals from motor neurons.
    d. It creates the pumping action that distributes blood throughout the cardiovascular system.

Smooth and Cardiac Muscle Tissue Multiple Choice Quiz 3

1. If one of your peers asked you to explain the main function of the myocardium, how would you explain it?
   a. It lines the inner surface of the heart, protecting it as it contracts.
   b. It adheres the heart to the pericardium, a sac of tissue that protects the heart from friction as it beats.
   c. It contracts voluntarily in response to signals from motor neurons.
   ✔ d. It creates the pumping action that distributes blood throughout the cardiovascular system.
2. Which smooth muscle layer is found in the stomach but not in the rest of the alimentary canal?
   a. Longitudinal layer ✔
   b. Oblique layer
c. Epithelial layer
d. Circular layer

3. Which layer of the heart wall adheres the heart to the pericardium, a sac of tissue that protects the heart from friction as it beats?
   a. Myocardium
   b. Endocardium
   c. Epicardium
   d. Exocardium
   ✔

4. _____ are specialized cardiac muscle cells that directly control heart rate.
   a. Sarcomeres
   b. Desmosomes
c. Epithelial cells
   ✔ d. Pacemaker cells

5. If you were giving an oral report on the role smooth muscle plays in the process of digestion, which of the following points would you include in your presentation?
   a. Through mechanical and chemical processes that occur in the alimentary canal—a musculomembranous tube that extends from the mouth to the anus—food is digested, nutrients are extracted, and waste is expelled.
b. The esophagus performs mechanical digestion by churning ingested food and breaking it down with gastric secretions.
c. The majority of digestion and nutrient absorption occurs in the stomach.
d. The chemical digestion of food doesn't begin until it reaches the intestines.
   ✔

6. Smooth muscle contractions are _____ actions managed by impulses that travel through the _____ nervous system to the smooth muscle tissue.
   a. Voluntary, autonomic
   b. Voluntary, central
c. Involuntary, central
   ✔ d. Involuntary, autonomic

7. How would you explain the path exhaled oxygen-poor and carbon dioxide-rich air takes to leave the body?
   a. It takes a direct path from the bronchioles to the trachea.
b. It is diffused from the bronchioles directly into the circulation system, leaving the body through sweat glands.
c. It passes through the trachea into the larynx, and then it passes through the right or left bronchi into the secondary and tertiary bronchi and the bronchioles in the lungs.
   ✔ d. It passes through the bronchioles and tertiary and secondary bronchi in the lungs to the right or left bronchi, and then it goes into the larynx and up through the trachea to pass out of the body via the mouth or nose.

8. Smooth muscle lines all of the following body structures except
   a. The blood vessels of the circulatory system.
b. The urinary organs.
c. The brain.
   ✔ d. The reproductive organs.

9. How does cardiac muscle differ from skeletal muscle?
   a. It is striated.
b. It is organized into sarcomeres.
   c. Its fibers are shorter.
   ✔ d. Its fibers are not connected to each other.

10. If you were to describe the myocardium to a friend who is unfamiliar with its structure, which of the following would you be most likely to say?
    a. It is a visceral layer of serous pericardium.
b. It is a thin, smooth membrane of connective tissue and elastic fibers.
c. It is a conical pouch.
   ✔ d. It is made up of muscular fibers attached to fibrous rings.

Muscular System Multiple Choice Quiz 1

1. Which of the following are paired and opposing muscle actions?
   a. Elevation, supination
   b. Pronation, flexion
   c. Depression, extension
   ✔ d. Elevation, depression

2. In elbow extension, the _____ is the agonist and the _____ is the antagonist.
   a. Triceps brachii, biceps brachii
   b. Biceps brachii, triceps brachii
   c. Brachioradialis, extensor digitorum
   d. Brachialis, brachioradialis

3. In elbow flexion, the biceps brachii pulls the _____ upward toward the humerus.
   a. Ulna
   ✔ b. Radius
c. Extensor digitorum
d. Scapula

4. The motion of standing on tiptoe uses a _____ lever system.
   a. Third-class
   b. First-class
   c. Second-class
   ✔ d. Fourth-class
5. The superior and inferior _____ muscles roll the eye down and up.
   a. Rectus
   b. Ocular
   c. Orbiter
   ✔ d. Oblique

6. All of the following muscles elevate the mandible during mastication except
   a. The deep masseter.
   b. The superficial masseter.
   ✔ c. The pterygoid muscles.
   d. The temporalis.

7. Which of the following muscles is involved in neck flexion?
   ✔ a. Sternocleidomastoid
   b. Masseters
   c. Temporalis
   d. Inferior oblique

8. All of the following are muscles of the rotator cuff except
   a. The supraspinatus.
   b. The teres minor.
   ✔ c. The teres major.
   d. The subscapularis.

9. Which of the following is not a prime mover of knee flexion and thigh extension?
   a. Biceps femoris
   ✔ b. Rectus femoris
   c. Semimembranosus
   d. Semitendinosus

10. Which of the following muscles is involved in maintaining upright posture?
    a. Iliacus
    b. Psoas minor
    ✔ c. Psoas major
    d. Tensor fasciae latae

---

Muscular System Multiple Choice Quiz 2

1. Which of the following accurately describes how muscles function as agonists versus antagonists?
   a. A muscle that performs the paired and opposing action is called an agonist, whereas a muscle that contracts to generate the main force of an action is called an antagonist.
   ✔ b. A muscle that contracts to generate the main force of an action is called an agonist, whereas a muscle that performs the paired and opposing action is called an antagonist.
   c. A muscle that performs a normal, routine movement is called an agonist, whereas a muscle that performs an abnormal, risky movement is called an antagonist.
   d. A muscle that performs a passive movement is called an agonist, whereas a muscle that performs an active movement is called an antagonist.

2. Which of the following statements would you use to explain what happens when a muscle contracts to a friend who does not understand this concept?
   a. When a muscle contracts, one end of the muscle lengthens and moves one bone toward the other.
   c. When a muscle contracts, the belly or middle part of the muscle lengthens and moves one bone away from the other.
   ✔ d. When a muscle contracts, the belly or middle part of the muscle shortens and moves one bone toward the other.

3. Which of the following accurately describes the location of the muscle's insertion point and the origin point?
   a. Both the muscle's insertion point and origin point are located on the moveable bone.
   b. Both the muscle's insertion point and origin point are located on the fixed bone.
   ✔ c. The muscle's insertion point is on the moveable bone, whereas the origin point is on the fixed bone.
   d. The muscle's insertion point is on the fixed bone, whereas the origin point is on the moveable bone.

4. If you wanted to demonstrate a first-class lever system to your peers, which childhood toy would you use as a basis for your demonstration and which body motion would you use as an example?
   a. A swing set, a leg kick
   b. A slide, a squat
   c. A yo-yo, a handshake
   ✔ d. A see-saw, a chin raise

5. Which of the following correctly explains one of the lever systems?
   a. In a second-class lever system, the fulcrum is in the middle and the load and effort are on opposite sides.
   b. In a first-class lever system, the fulcrum is on one end, the effort is on the opposite end, and the load is in the center.
   ✔ c. In a third-class lever system, the fulcrum is on one end, the load is on the opposite end, and the effort is in the middle.
   d. In a third-class lever system, the fulcrum is in the middle and the load and effort are on opposite sides.
6. If you were explaining the functions of the abdominal muscles to a friend while studying for an exam, which of the following would not be included in your explanation?
✓ a. They extend the vertebral column.
b. They aid in forced respiration.
c. They compress and protect the viscera.
d. They rotate the trunk.

7. Which of the following statements accurately compares the diaphragm and the internal intercostals?
   a. The diaphragm is the prime mover of expiration, whereas the internal intercostals assist in forced inspiration.
   ✓ b. The diaphragm is the prime mover of inspiration, whereas the internal intercostals assist in forced expiration.
   c. The diaphragm assists the external intercostals, which are the prime movers of expiration, whereas the internal intercostals are the prime movers of inspiration.
   d. The diaphragm is the prime mover of forced inspiration, whereas the internal intercostals assist in normal inspiration.

8. If you and your friends were discussing the muscles that flex and extend different body parts, and they asked you which muscle allows you to point at something of interest, which muscle would you indicate?
   a. Extensor pollicis longus
   ✓ b. Extensor pollicis brevis
   c. Extensor indicis
   d. Extensor digiti minimi

9. Which of the following accurately describes the four plantar layers?
✓ a. Plantar layer 1 muscles flex and abduct the toes, plantar layer 2 muscles flex the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles abduct and adduct the toes.
   b. Plantar layer 1 muscles adduct the toes, plantar layer 2 muscles flex and adduct the toes, plantar layer 3 muscles abduct and adduct the toes, and plantar layer 4 muscles flex the toes.
   c. Plantar layer 1 muscles flex and adduct the toes, plantar layer 2 muscles flex and adduct the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles flex the toes.
   d. Plantar layer 1 muscles flex and abduct the toes, plantar layer 2 muscles abduct and adduct the toes, plantar layer 3 muscles abduct and adduct the toes, and plantar layer 4 muscles flex and abduct the toes.

10. Which of the following accurately compares the impact the interior and lateral lower leg have on the ankle? Muscles of the anterior lower leg _____ the ankle, and muscles in the lateral lower leg _____ the ankle.
    a. Plantarflex, extend
    ✓ b. Dorsiflex, stabilize
    c. Plantarflex, dorsiflex
    d. Stabilize, extend

Muscular System Multiple Choice Quiz 3

1. All of the following muscles elevate the mandible during mastication except
   a. The deep masseter.
   b. The superficial masseter.
   ✓ c. The pterygoid muscles.
   d. The temporalis.

2. All of the following are muscles of the rotator cuff except
   a. The supraspinatus.
   ✓ b. The teres minor.
   c. The teres major.
   d. The subscapularis.

3. If you were explaining the functions of the abdominal muscles to a friend while studying for an exam, which of the following would not be included in your explanation?
✓ a. They extend the vertebral column.
   b. They aid in forced respiration.
   c. They compress and protect the viscera.
   d. They rotate the trunk.

4. Which of the following accurately describes the location of the muscle's insertion point and the origin point?
   a. Both the muscle's insertion point and origin point are located on the moveable bone.
   b. Both the muscle's insertion point and origin point are located on the fixed bone.
   ✓ c. The muscle's insertion point is on the moveable bone, whereas the origin point is on the fixed bone.
   d. The muscle's insertion point is on the fixed bone, whereas the origin point is on the moveable bone.

5. Which of the following muscles is involved in maintaining upright posture?
   a. Iliacus
   ✓ b. Psoas minor
   c. Psoas major
   d. Tensor fasciae latae
6. If you wanted to demonstrate a first-class lever system to your peers, which childhood toy would you use as a basis for your demonstration and which body motion would you use as an example?
   a. A swing set, a leg kick
   b. A slide, a squat
   c. A yo-yo, a handshake
   ✔ d. A see-saw, a chin raise

7. In elbow extension, the _____ is the agonist and the _____ is the antagonist.
   a. Triceps brachii, biceps brachii
   b. Biceps brachii, triceps brachii
   c. Brachioradialis, extensor digitorum
   ✔ d. Brachialis, brachioradialis

8. Which of the following statements accurately compares the diaphragm and the internal intercostals?
   a. The diaphragm is the prime mover of expiration, whereas the internal intercostals assist in forced inspiration.
   ✔ b. The diaphragm is the prime mover of inspiration, whereas the internal intercostals assist in forced expiration.
   c. The diaphragm assists the external intercostals, which are the prime movers of expiration, whereas the internal intercostals are the prime movers of inspiration.
   d. The diaphragm is the prime mover of forced inspiration, whereas the internal intercostals assist in normal inspiration.

9. Which of the following accurately describes the four plantar layers?
   ✔ a. Plantar layer 1 muscles flex and abduct the toes, plantar layer 2 muscles flex the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles abduct and adduct the toes.
   b. Plantar layer 1 muscles adduct the toes, plantar layer 2 muscles flex and abduct the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles abduct and adduct the toes.
   c. Plantar layer 1 muscles flex and adduct the toes, plantar layer 2 muscles abduct and adduct the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles flex the toes.
   b. Plantar layer 1 muscles flex and adduct the toes, plantar layer 2 muscles abduct and adduct the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles adduct and abduct the toes.

10. The motion of standing on tiptoe uses a _____ lever system.
    a. Third-class
    b. First-class
    ✔ c. Second-class
    d. Fourth-class

Nervous System and Special Senses

Nervous Tissue Multiple Choice Quiz 1

1. Nervous tissue forms the structures of the
   a. Spinal cord.
   b. Lungs.
   c. Heart.
   d. Intestines.
   ✔

2. A typical neuron consists of a(n)
   a. Soma, many axons, and one dendrite.
   b. Axon and many somas and dendrites.
   c. Soma, many dendrites, and one axon.
   d. Dendrite and many somas and axons.
   ✔

3. Which of the following surrounds some (or many) axons, providing insulation that increases conduction speed?
   a. Gray matter
   b. Dendrites
   c. A Ranvier node
   d. A myelin sheath
   ✔

4. All of the following are types of neuroglial cells in the central nervous system except
   a. Satellite cells.
   b. Microglia.
   c. Astrocytes.
   d. Oligodendrocytes.
   ✔

5. The resting neuron has a net _____ charge inside the cell and a net _____ charge outside it.
   a. Positive, negative
   b. Negative, positive
   c. Neutral, negative
   d. Positive, neutral
   ✔

6. In the neuron, when a depolarizing signal reaches the _____, the change in polarity triggers the release of neurotransmitters from the presynaptic cell.
   a. Dendrites
   b. Axon
   c. Soma
   d. Axon terminal
   ✔
7. Neurotransmitters are chemicals released at synapses that regulate the activity of all of the following except
   a. Muscles.
   ✔ b. Bones.
   c. Other neurons.
   d. Glands.

8. Acetylcholine is a widespread neurotransmitter that is found in all of the following except
   ✔ a. The digestive system.
   b. Peripheral nerves.
   c. The central nervous system.
   d. Skeletal muscles.

9. Where are norepinephrine and epinephrine produced?
   a. In the brain
   b. In the spinal cord
   ✔ c. In the adrenal glands
   d. In the circulatory system

10. Which of the following is a brain neurotransmitter that regulates skeletal muscle tone and emotional responses?
    a. Acetylcholine
    b. Epinephrine
    ✔ c. Norepinephrine
    d. Dopamine

---

**Nervous Tissue Multiple Choice Quiz 2**

1. Which of the following is a similarity between the central nervous system and the peripheral nervous system?
   a. Their structures are composed of satellite and Schwann cells.
   ✔ b. Their structures are composed of neurons and neuroglia.
   c. They both consist of a series of nerves that connect the brain and spinal cord with the various tissues of the body.
   d. Their structures are composed of astrocytes and oligodendrocytes.

2. If a friend asked you to explain how neuron cell bodies are named in the central nervous system versus the peripheral nervous system, which of the following would you most likely say?
   a. In both the central and peripheral nervous systems, a cluster of neuron cell bodies is referred to as a nucleus.
   ✔ b. In both the central and peripheral nervous systems, a cluster of neuron cell bodies is referred to as a ganglion.
   c. In the central nervous system, a localized collection of neuron cell bodies is referred to as a nucleus; in the peripheral nervous system, a cluster of neuron cell bodies is referred to as a ganglion.
   d. In the central nervous system, a localized collection of neuron cell bodies is referred to as a ganglion; in the peripheral nervous system, a cluster of neuron cell bodies is referred to as a nucleus.

3. Which of the following describes how electrical signals pass through a typical neuron, in the correct order?
   a. Signals pass from the dendrites through the cell body and down the axon to the axon terminals, and then they pass to the dendrites of the next neuron or to the target cell.
   b. Signals pass from the axon down the axon terminals to the cell body, and then they enter the dendrites, which pass them to the axon of the next neuron.
   c. Signals pass from the cell body through the axon terminals to the axon, and then they go to the dendrites, which pass them to the target cell.
   d. Signals pass from the dendrites through the axon terminals to the axon, before reaching the cell body, which passes them to the next neuron.

4. If one of your classmates asked you to explain the different types of neurons that can be classified by structure, which of the following would you include in your explanation?
   a. Unipolar neurons have one axon and many dendrites extending from the cell body.
   ✔ b. Multipolar neurons have one axon and one dendrite.
   c. Bipolar neurons are sensory neurons in which the axon splits into two branches that attach to the cell body.
   d. Unipolar neurons are sensory neurons in which the axon splits into two branches that attach to the cell body.
5. If one of your peers is confused about the functions of the central nervous system neuroglia, which of the following would you include in your explanation of the different types and their functions?

✔ a. Astrocytes surround capillaries in the brain and maintain the blood–brain barrier, which prevents harmful substances from passing from the bloodstream into the brain.

b. Microglia create myelin sheaths that protect central nervous system neurons and increase their conduction speed.

c. Ependymal cells provide immune support by using phagocytosis to remove pathogens that pass the blood–brain barrier or are introduced directly into the brain.

d. Oligodendrocytes circulate cerebrospinal fluid and line the brain ventricles and central canal of the spinal cord.

6. Although the satellite cells in the peripheral nervous system perform similar functions as astrocytes do in the central nervous system, which of the following distinguishes these types of neuroglia from each other?

✔ a. Satellite cells form a myelin sheath.

b. Astrocytes establish the blood–brain barrier.

c. Astrocytes are found in sensory and autonomic ganglia.

d. Satellite cells surround capillaries in tissues.

7. How do Schwann cells differ from oligodendrocytes?

✔ a. Oligodendrocytes have processes that reach out to multiple axon segments, whereas the entire Schwann cell surrounds just one axon segment.

b. Schwann cells form myelin sheaths, whereas oligodendrocytes do not.

c. Schwann cells are found in the central nervous system, whereas oligodendrocytes are found in the peripheral nervous system.

d. Oligodendrocytes form myelin sheaths, whereas Schwann cells do not.

8. How would you explain the charge changes that occur in a neuron during the messaging process?

✔ a. Prior to the process, the neuron is depolarized; as the signal passes along the axon, the membrane polarizes, passing negative charges in, and stays that way.

b. Prior to the process, the neuron is polarized; as the signal passes along the axon, the membrane depolarizes, passing positive charges in, and stays that way.

c. Prior to the process, the neuron is polarized; as the signal passes along the axon, the membrane depolarizes and repolarizes again, passing positive charges in and then back out.

d. Prior to the process, the neuron is depolarized; as the signal passes along the axon, the membrane polarizes and then depolarizes again, passing negative charges in and then back out.

9. Which of the following best explains how neurotransmitters affect an action potential?

✔ a. Excitatory neurotransmitters encourage the transmission of an action potential, whereas inhibitory neurotransmitters inhibit transmission.

b. Excitatory and inhibitory neurotransmitters both suppress the transmission of an action potential.

c. Inhibitory neurotransmitters encourage the transmission of an action potential to cease a certain cell activity, whereas excitatory neurotransmitters alert surrounding cells of what is occurring in the cell.

d. Excitatory neurotransmitters encourage the transmission of an action potential, whereas inhibitory neurotransmitters encourage the transmission of an action potential that inhibits certain cell activities.

10. Which of the following is a similarity among dopamine, norepinephrine, and epinephrine?

✔ d. They are all biogenic amines made from tyrosine.

Nervous Tissue Multiple Choice Quiz 3

1. A typical neuron consists of a(n)

a. Soma, many axons, and one dendrite.

b. Axon and many somas and dendrites.

✔ c. Soma, many dendrites, and one axon.

d. Dendrite and many somas and axons.
2. The resting neuron has a net _____ charge inside the cell and a net _____ charge outside it.
   a. Positive, negative ✔
   b. Negative, positive
   c. Neutral, negative
   d. Positive, neutral

3. Neurotransmitters are chemicals released at synapses that regulate the activity of all of the following except
   a. Muscles. ✔
   b. Bones.
   c. Other neurons.
   d. Glands.

4. Acetylcholine is a widespread neurotransmitter that is found in all of the following except
   a. The digestive system. ✔
   b. Peripheral nerves.
   c. The central nervous system.
   d. Skeletal muscles.

5. Where are norepinephrine and epinephrine produced?
   a. In the brain
   b. In the spinal cord ✔
   c. In the adrenal glands
   d. In the circulatory system

6. Which of the following is a similarity between the central nervous system and the peripheral nervous system?
   a. Their structures are composed of satellite and Schwann cells. ✔
   b. Their structures are composed of neurons and neuroglia.
   c. They both consist of a series of nerves that connect the brain and spinal cord with the various tissues of the body.
   d. Their structures are composed of astrocytes and oligodendrocytes.

7. If one of your classmates asked you to explain the different types of neurons that can be classified by structure, which of the following would you include in your explanation?
   a. Unipolar neurons have one axon and many dendrites extending from the cell body.
   b. Multipolar neurons have one axon and one dendrite. ✔
   c. Bipolar neurons are sensory neurons in which the axon splits into two branches that attach to the cell body.
   d. Unipolar neurons are sensory neurons in which the axon splits into two branches that attach to the cell body.

8. How do Schwann cells differ from oligodendrocytes?
   a. Oligodendrocytes have processes that reach out to multiple axon segments, whereas the entire Schwann cell surrounds just one axon segment. ✔
   b. Schwann cells form myelin sheaths, whereas oligodendrocytes do not.
   c. Schwann cells are found in the central nervous system, whereas oligodendrocytes are found in the peripheral nervous system.
   d. Oligodendrocytes form myelin sheaths, whereas Schwann cells do not.

9. How would you explain the charge changes that occur in a neuron during the messaging process?
   a. Prior to the process, the neuron is depolarized; as the signal passes along the axon, the membrane polarizes, passing negative charges in, and stays that way.
   b. Prior to the process, the neuron is polarized; as the signal passes along the axon, the membrane depolarizes, passing positive charges in, and stays that way. ✔
   c. Prior to the process, the neuron is polarized; as the signal passes along the axon, the membrane depolarizes and repolarizes again, passing positive charges in and then back out.
   d. Prior to the process, the neuron is depolarized; as the signal passes along the axon, the membrane polarizes and then depolarizes again, passing negative charges in and then back out.
10. Which of the following best explains how neurotransmitters affect an action potential?
   ✔ a. Excitatory neurotransmitters encourage the transmission of an action potential, whereas inhibitory neurotransmitters inhibit transmission.
   b. Excitatory and inhibitory neurotransmitters both suppress the transmission of an action potential.
   c. Inhibitory neurotransmitters encourage the transmission of an action potential to cease a certain cell activity, whereas excitatory neurotransmitters alert surrounding cells of what is occurring in the cell.
   d. Excitatory neurotransmitters encourage the transmission of an action potential, whereas inhibitory neurotransmitters encourage the transmission of an action potential that inhibits certain cell activities.

Spinal Cord and Spinal Nerves Multiple Choice Quiz 1

1. The outermost layer of the meninges of the spinal cord is the
   ✔ a. Dura mater.
   b. Pia mater.
   c. Arachnoid mater.
   d. Subarachnoid space.

2. After leaving the vertebral column, the spinal nerves divide into _____, which branch to supply the body.
   ✔ a. Rami
   b. Meninges
   c. Roots
   d. Ganglia

3. The first spinal nerve, which supplies muscles of the neck, is called the _____ nerve.
   a. Phrenic
   ✔ b. Suboccipital
   c. Long thoracic
   d. Supraclavicular

4. All of the following are superficial branches of the cervical plexus except
   a. The supraclavicular branch.
   b. The lesser occipital branch.
   c. The auricular branch.
   ✔ d. The intercostal branch.

5. Ascending tracts of nervous system fibers in the white matter columns carry _____ up to the brain, whereas descending tracts carry _____ from the brain.
   a. Motor commands, sensory information
   ✔ b. Sensory information, motor command
   c. Action potentials, reflex responses
   d. Neurotransmitters, sensory responses

6. Which nerve supplies motor and sensory fibers to the diaphragm and is important for breathing?
   a. Phrenic nerve
   ✔ b. Suboccipital nerve
   c. Supraclavicular nerve
   d. Dorsal scapular nerve

7. When motor commands pass from the spinal cord through the ventral root of each spinal nerve and out to the body to trigger an action, which of the following are the two types of such action?
   a. Cardiac muscle contraction and hormone production
   ✔ b. Skeletal muscle contraction and gland secretion
   c. Smooth muscle contraction and circulatory system activity
   d. Skeletal muscle contraction and digestive system activity

8. All of the following are major nerves that make up the lumbar plexus except
   a. The femoral nerve.
   ✔ b. The genitofemoral nerve.
   c. The sciatic nerve.
   d. The lateral femoral cutaneous nerve.

9. All of the following nerves innervate the shoulder and upper back except
   a. The sciatic nerve.
   b. The thoracodorsal nerve.
   ✔ c. The axillary nerve.
   d. The subscapular nerve.

10. Somatic reflexes are
    a. Voluntary responses to stimuli that allow for fast reactions, based on responses in the brain.
    b. Voluntary responses to stimuli that create slow, deliberate reactions without the need for processing in the brain.
    c. Automatic responses to stimuli that allow for fast reactions, before messages reach the brain.
    ✔ d. Automatic responses to stimuli that create slow, deliberate reactions, after messages reach the brain.
1. How would you describe the spinal cord, in relation to the brain?
   ✔ a. The top of the spinal cord is continuous with the brain, and it transmits signals between the brain and the rest of the body.
   b. Unlike the brain, the spinal cord doesn't have any surrounding membranes.
   c. The spinal cord is part of the peripheral nervous system, whereas the brain is part of the central nervous system.
   d. The brain controls reflexes and sends them down the spinal cord.

2. Which of the following lists the layers of the meninges in the correct order from innermost to outermost?
   ✔ c. Pia mater, arachnoid mater, dura mater
   a. Dura mater, pia mater, arachnoid mater
   b. Arachnoid mater, dura mater, pia mater
   d. Pia mater, dura mater, arachnoid mater

3. Which of the following is a difference between the dorsal and ventral roots that connect spinal nerves to the spinal cord?
   ✔ a. Dorsal roots transmit sensory signals, whereas ventral roots transmit motor signals.
   b. Dorsal roots transmit motor signals, whereas ventral roots transmit sensory signals.
   c. Ventral roots include ganglia, whereas dorsal roots do not.
   d. Ventral roots are also known as posterior roots, whereas dorsal roots are known as anterior roots.

4. Which of the following statements accurately compares gray and white matter of the spinal cord?
   ✔ a. Gray matter surrounds white matter.
   b. Gray matter consists of the cell bodies of neurons organized into horns, whereas white matter is formed by myelinated axons organized into columns.
   c. Gray matter is formed by myelinated axons organized into columns, whereas white matter consists of the cell bodies of neurons organized into horns.
   d. Gray matter passes information up and down the spinal cord, whereas white matter processes reflexes.

5. If one of your peers asked you to explain the functions of the different types of gray matter horns, which of the following would you include in your explanation?
   ✔ a. The posterior horn is the central component of the sympathetic division of the autonomic nervous system.
   b. The lateral horn sends out motor signals to the skeletal muscles.
   c. The lateral horn is the central component of the sympathetic division of the autonomic nervous system.
   d. The anterior horn is responsible for sensory processing.

6. Which of the following lists the spinal nerve plexuses in the correct order from lower body to upper body?
   ✔ a. Cervical, brachial, lumbar, sacral
   b. Cervical, sacral, lumbar, brachial
   c. Brachial, lumbar, cervical, sacral
   d. Sacral, lumbar, brachial, cervical

7. If a friend asked you to explain dermatomes, which of the following would you not include in your explanation?
   a. A dermatome is a region of skin that sends sensory information through a single pair of spinal nerves.
   ✔ b. The facial region is innervated by a dermatome.
   c. The sacral, lumbar, and thoracic spinal nerves each have their own dermatomes.
   d. The first cervical spinal nerve does not have dermatomes.
9. Which of the following accurately explains the lumbar and sacral plexuses?

✔ a. The lumbar plexus derives from the ventral rami of spinal nerves T12–L04, whereas the sacral plexus derives from the ventral rami of spinal nerves L04–S04.

b. The sacral plexus derives from the ventral rami of spinal nerves T12–L04, whereas the lumbar plexus derives from the ventral rami of spinal nerves L04–S04.

c. The sacral plexus includes the genitofemoral, lateral femoral cutaneous, and femoral nerves, whereas the lumbar plexus includes the sciatic and pudendal nerves.

d. The lumbar plexus nerves innervate the leg and foot musculature and skin, whereas the sacral plexus nerves innervate the abdominal, thigh, and hip musculature and skin.

10. How would you describe the path of the reflex arc to a friend who doesn’t understand the concept?

✔ a. A motor signal passes from the motor neuron through the spinal nerve and dorsal root into the spinal cord, where it is processed, and then sent back the same way it came.

b. A signal passes from the receptor through the spinal nerve and dorsal root into the spinal cord, where it is processed, and then a motor signal is sent from the spinal cord through the ventral root into a motor neuron.

c. A signal passes from the receptor through the ventral root into the spinal cord, and then a motor signal is sent through the dorsal root into a motor neuron.

d. A motor signal passes from the receptor through the spinal nerve and ventral root into the spinal cord, where it is processed, and then sent through the dorsal root into a motor neuron.

---

**Spinal Cord and Spinal Nerves Multiple Choice Quiz 3**

1. The first spinal nerve, which supplies muscles of the neck, is called the _____ nerve.

a. Phrenic

✔ b. Suboccipital

c. Long thoracic

d. Supraclavicular

2. Ascending tracts of nervous system fibers in the white matter columns carry _____ up to the brain, whereas descending tracts carry _____ from the brain.

a. Motor commands, sensory information

✔ b. Sensory information, motor commands

c. Action potentials, reflex responses

d. Neurotransmitters, sensory responses

3. When motor commands pass from the spinal cord through the ventral root of each spinal nerve and out to the body to trigger an action, which of the following are the two types of such action?

a. Cardiac muscle contraction and hormone production

✔ b. Skeletal muscle contraction and gland secretion

c. Smooth muscle contraction and circulatory system activity

d. Skeletal muscle contraction and digestive system activity

4. All of the following nerves innervate the shoulder and upper back except

✔ a. The sciatic nerve.

b. The thoracodorsal nerve.

c. The axillary nerve.

d. The subscapular nerve.

5. Somatic reflexes are

a. Voluntary responses to stimuli that allow for fast reactions, based on responses in the brain.

✔ b. Voluntary responses to stimuli that create slow, deliberate reactions without the need for processing in the brain.

c. Automatic responses to stimuli that allow for fast reactions, before messages reach the brain.

d. Automatic responses to stimuli that create slow, deliberate reactions, after messages reach the brain.

6. How would you describe the spinal cord, in relation to the brain?

✔ a. The top of the spinal cord is continuous with the brain, and it transmits signals between the brain and the rest of the body.

b. Unlike the brain, the spinal cord doesn't have any surrounding membranes.

c. The spinal cord is part of the peripheral nervous system, whereas the brain is part of the central nervous system.

d. The brain controls reflexes and sends them down the spinal cord.

7. Which of the following lists the layers of the meninges in the correct order from innermost to outermost?

✔ a. Dura mater, pia mater, arachnoid mater

b. Arachnoid mater, dura mater, pia mater

c. Pia mater, arachnoid mater, dura mater

d. Pia mater, dura mater, arachnoid mater
8. If one of your peers asked you to explain the functions of the different types of gray matter horns, which of the following would you include in your explanation?
   a. The posterior horn is the central component of the sympathetic division of the autonomic nervous system.
   b. The lateral horn sends out motor signals to the skeletal muscles.
   ✔️ c. The lateral horn is the central component of the sympathetic division of the autonomic nervous system.
   d. The anterior horn is responsible for sensory processing.

9. Which of the following lists the spinal nerve plexuses in the correct order from lower body to upper body?
   a. Cervical, brachial, lumbar, sacral
   b. Cervical, sacral, lumbar, brachial
   ✔️ c. Brachial, lumbar, cervical, sacral
   d. Sacral, lumbar, brachial, cervical

Brain Multiple Choice Quiz 1

1. All of the following are functions of the brain except
   a. Integrating information to form perception and thought.
   b. Maintaining homeostasis.
   ✔️ c. Controlling reflexes.
   d. Controlling activities such as speech and movement.

2. The cranial dura mater is composed of two layers, which are the
   a. Meningeal and endosteal.
   b. Foramen magnum and epidural space.
   ✔️ c. Areolar and adipose.
   d. Arachnoid and pia.

3. Which part of the brain manages balance and posture?
   a. Cerebrum
   b. Pons
   ✔️ c. Medulla oblongata
   d. Cerebellum

4. All of the following are functions that the midbrain is involved in except
   a. Olfaction.
   b. Vision.
   ✔️ c. Thermoregulation.
   d. Alertness.

5. Which of the following is a function of cerebrospinal fluid?
   a. It provides immunity.
   b. It regulates body temperature.
   ✔️ c. It surrounds and supports the body’s major organs.
   d. It supports the brain and protects it from trauma.

6. Which of the following structures in the brain forms part of the blood–brain barrier that prevents harmful substances from entering brain tissue?
   a. Capillary walls
   b. Dural venous sinuses
   c. Gyri of the cerebrum
   ✔️ d. Medulla oblongata

7. Which of the following is true of the medulla oblongata?
   a. It is part of the midbrain.
   ✔️ b. It controls involuntary functions of the respiratory, digestive, and circulatory systems.
   c. It acts as a barrier between the brain and the spinal cord.
   d. It is divided into four symmetrical parts.

8. The midbrain contains nuclei, called _____, that control visual and auditory reflexes.
   a. Tectum
   b. Tegmentum
   ✔️ c. Colliculi
   d. Sulci

9. The cerebellum is located _____ to the brain stem and _____ to the occipital lobe of the cerebrum.
   a. Anterior, superior
   b. Anterior, inferior
   ✔️ c. Posterior, superior
   d. Posterior, inferior

10. Sensory areas of the cerebral cortex are located mainly posterior to the
    a. Central sulci.
    b. Precentral gyrus.
    c. Parieto-occipital sulcus.
    ✔️ d. Cingulate gyrus.
Brain Multiple Choice Quiz 2

1. If you were explaining the cerebrum to a friend who doesn't understand its structure or function, which of the following would not be part of your explanation?
   a. It is the largest part of the brain.
   b. Its surface is covered by gyri separated by shallow fissures called sulci.
   ✔ c. Its hemispheres are symmetrical in function.
   d. It has two hemispheres that each contain four lobes: the frontal lobe, the temporal lobe, the parietal lobe, and the occipital lobe.

2. Which of the following accurately explains the discrete function of one of the parts of the diencephalon?
   ✔ a. The hypothalamus manages sensory impulses, controls emotions, and contributes to the homeostatic balance of the autonomic nervous system.
   b. The hypothalamus relays information between the brain stem and the cerebral cortex.
   c. The thalamus contributes to the functions of the limbic system.
   d. The epithalamus helps control and regulate functions of the pituitary glands.

3. Which of the following accurately describes how particular ventricles are connected to each other?
   a. In the midbrain, the cerebral aqueduct links the lateral ventricles and the fourth ventricle.
   b. In the midbrain, the cerebral aqueduct links the lateral ventricles and the third ventricle.
   ✔ c. In the diencephalon, the interventricular foramen connects the third and fourth ventricles.
   d. In the diencephalon, the interventricular foramen connects the lateral ventricles and the third ventricle.

4. If you were teaching a friend about cerebrospinal fluid, which of the following would not be part of your lesson?
   a. Cerebrospinal fluid supports the nervous system by absorbing impacts and exchanging nutrients and wastes with the bloodstream.
   ✔ b. Cerebrospinal fluid is present only in the brain.
   c. Cerebrospinal fluid is produced in the choroid plexuses on the ventricle walls.
   d. Cerebrospinal fluid circulates through the ventricles and into the meninges and spinal cord.

5. Which of the following is an accurate comparison of the arteries and veins in the brain?
   ✔ a. The internal carotid and vertebral arteries supply blood to the brain, whereas the dural venous sinuses and internal jugular vein drain the blood from the brain.
   b. The internal carotid and vertebral arteries drain blood from the brain, whereas the dural venous sinuses and internal jugular vein supply blood to the brain.
   c. The internal carotid and vertebral arteries carry blood from the brain to the rest of the body, whereas the dural venous sinuses and internal jugular vein bring blood from the body into the brain.
   d. The internal carotid and vertebral arteries join with the dural venous sinuses and internal jugular vein to form the blood–brain barrier.

6. Which of the following is a similarity between the medulla oblongata and the pons?
   a. Both regulate autonomic functions such as respiration and heartbeat.
   b. Both link parts of the brain together.
   ✔ c. Both contain nuclei for several cranial nerves.
   d. Both contain tracts and nuclei.

7. Which of the following accurately identifies how information is processed in the cerebral cortex?
   a. Motor signals are transmitted mainly from the anterior cortex, whereas sensory signals are received and processed in the posterior regions of the cortex.
   ✔ b. Motor signals are transmitted mainly from the posterior regions of the cortex, whereas sensory signals are received and processed in the anterior cortex.
   c. Motor signals are received and processed in the anterior cortex, whereas sensory signals are transmitted mainly from the posterior regions of the cortex.
   d. Motor signals and sensory signals are both received and processed in the posterior regions of the cortex.

8. If you were explaining the gyri of the cerebral cortex to a friend, which of the following would you include?
   a. The postcentral gyrus is part of the limbic system and plays a role in expressing emotions through gestures.
   b. The cingulate gyrus contains the primary motor cortex and controls the precise movements of skeletal muscles.
   c. The precentral gyrus contains the primary somatosensory cortex and is responsible for spatial discrimination.
   ✔ d. The cingulate gyrus is part of the limbic system and plays a role in expressing emotions through gestures.
9. Which of the following describes a difference between the external and internal regions of the cerebrum?
   a. The external region of the cerebrum consists of white matter, whereas the internal region consists of gray matter. ✔
   b. The external region of the cerebrum consists of gray matter, whereas the internal region consists of white matter.
   c. The external region of the cerebrum is composed of neuronal processes, whereas the internal region consists of cell bodies.
   d. The external region of the cerebrum is called the cerebral medulla, whereas the internal region is called the cerebral cortex.

10. Which of the following distinguishes the right and left cerebral hemispheres from each other?
   a. The right hemisphere controls the right side of the body, whereas the left hemisphere controls the left side of the body.
   b. The right hemisphere is responsible for language and calculation, whereas the left hemisphere is responsible for visual, emotional, and artistic awareness. ✔
   c. The right hemisphere is responsible for visual, emotional, and artistic awareness, whereas the left hemisphere is responsible for language and calculation.
   d. The right hemisphere controls motor functions, whereas the left hemisphere controls sensory processing.

Brain Multiple Choice Quiz 3

1. All of the following are functions of the brain except
   a. Integrating information to form perception and thought.
   b. Maintaining homeostasis.
   c. Controlling reflexes.
   d. Controlling activities such as speech and movement.

2. The cranial dura mater is composed of two layers, which are the
   a. Meningeal and endosteal. ✔
   b. Foramen magnum and epidural space.
   c. Areolar and adipose.
   d. Arachnoid and pia.

3. Which of the following structures in the brain forms part of the blood–brain barrier that prevents harmful substances from entering brain tissue?
   a. Capillary walls ✔
   b. Dural venous sinuses
   c. Gyri of the cerebrum
   d. Medulla oblongata

4. Which of the following is true of the medulla oblongata?
   a. It is part of the midbrain. ✔
   b. It controls involuntary functions of the respiratory, digestive, and circulatory systems.
   c. It acts as a barrier between the brain and the spinal cord.
   d. It is divided into four symmetrical parts.

5. The cerebellum is located _____ to the brain stem and _____ to the occipital lobe of the cerebrum.
   a. Anterior, superior
   b. Anterior, inferior
   c. Posterior, superior ✔
   d. Posterior, inferior

6. If you were explaining the cerebrum to a friend who doesn’t understand its structure or function, which of the following would not be part of your explanation?
   a. It is the largest part of the brain.
   b. Its surface is covered by gyri separated by shallow fissures called sulci. ✔
   c. Its hemispheres are symmetrical in function.
   d. It has two hemispheres that each contain four lobes: the frontal lobe, the temporal lobe, the parietal lobe, and the occipital lobe.

7. Which of the following accurately describes how particular ventricles are connected to each other?
   a. In the midbrain, the cerebral aqueduct links the lateral ventricles and the fourth ventricle.
   b. In the midbrain, the cerebral aqueduct links the lateral ventricles and the third ventricle. ✔
   c. In the diencephalon, the interventricular foramen connects the third and fourth ventricles.
   d. In the diencephalon, the interventricular foramen connects the lateral ventricles and the third ventricle.

   ✔ 5. The cerebellum is located posterior to the brain stem and superior to the occipital lobe of the cerebrum.
   ✔ 6. If you were explaining the cerebrum to a friend who doesn’t understand its structure or function, which of the following would not be part of your explanation?
   ✔ 7. Which of the following accurately describes how particular ventricles are connected to each other?
8. Which of the following is an accurate comparison of the arteries and veins in the brain?
✔ a. The internal carotid and vertebral arteries supply blood to the brain, whereas the dural venous sinuses and internal jugular vein drain the blood from the brain.
b. The internal carotid and vertebral arteries drain blood from the brain, whereas the dural venous sinuses and internal jugular vein supply blood to the brain.
c. The internal carotid and vertebral arteries carry blood from the brain to the rest of the body, whereas the dural venous sinuses and internal jugular vein bring blood from the body into the brain.
d. The internal carotid and vertebral arteries join with the dural venous sinuses and internal jugular vein to form the blood–brain barrier.

9. Which of the following accurately identifies how information is processed in the cerebral cortex?
✔ a. Motor signals are transmitted mainly from the anterior cortex, whereas sensory signals are received and processed in the posterior regions of the cortex.
b. Motor signals are transmitted mainly from the posterior regions of the cortex, whereas sensory signals are received and processed in the anterior cortex.
c. Motor signals are received and processed in the anterior cortex, whereas sensory signals are transmitted mainly from the posterior regions of the cortex.
d. Motor signals and sensory signals are both received and processed in the posterior regions of the cortex.

10. Which of the following distinguishes the right and left cerebral hemispheres from each other?
✔ a. The right hemisphere controls the right side of the body, whereas the left hemisphere controls the left side of the body.
b. The right hemisphere is responsible for language and calculation, whereas the left hemisphere is responsible for visual, emotional, and artistic awareness.
c. The right hemisphere is responsible for visual, emotional, and artistic awareness, whereas the left hemisphere is responsible for language and calculation.
d. The right hemisphere controls motor functions, whereas the left hemisphere controls sensory processing.

Cranial Nerves Multiple Choice Quiz 1

1. The cranial nerves are _____ paired nerves of the peripheral nervous system that connect certain muscles and organs in the head and body directly to the brain.
   a. 24
   ✔ b. 12
c. 6
d. 4

2. Which of the following cranial nerves is purely a motor nerve?
   a. Vestibulocochlear (VIII)
   b. Olfactory (I)
   ✔ c. Optic (II)
d. Accessory (XI)

3. Which of the following is the smallest of the cranial nerves?
   a. Trochlear (IV)
   ✔ b. Accessory (XI)
c. Hypoglossal (XII)
d. Abducens (VI)

4. All of the following cranial nerves transmit both sensory and motor signals except
   a. The trigeminal nerve (V).
   b. The glossopharyngeal (IX) nerve.
   c. The vagus nerve (X).
   ✔ d. The vestibulocochlear nerve (VIII).

5. _____ fibers of the optic nerve cross over to the opposite side of the brain, whereas _____ fibers continue on the same side.
   a. Medial, lateral
   ✔ b. Lateral, medial
c. Superior, inferior
d. Inferior, superior

6. All of the following are true of the trigeminal nerves (V) except
   a. They are the largest cranial nerves.
   b. They consist of ophthalmic, maxillary, and mandibular branches.
   ✔ c. They perform sensory functions only.
d. They pass sensory and motor signals between the pons and structures of the face.

7. Which of the following is a branch of the motor part of the facial nerve (VII)?
   a. Ophthalmic
   ✔ b. Temporal
c. Maxillary
d. Superior

8. Sensory axons of the glossopharyngeal nerve (IX) arise from all of the following except
   a. Proprioceptors in swallowing muscles.
   b. Chemoreceptors in the carotid body.
   c. Baroreceptors in the carotid sinus.
   ✔ d. Nuclei in the medulla oblongata.
9. The fibers of the vagus nerve (X) originate in the
   a. Pons.
   ✔ b. Medulla oblongata.
   c. Cerebrum.
   d. Cerebellum.

10. All of the following are true of the accessory
    nerves (XI) except
    a. They are motor nerves.
    b. On each side they exit the spinal cord separately, merge, and pass upward through the foramen magnum.
    c. They control head movements.
    ✔ d. They control facial expressions.

Cranial Nerves Multiple Choice Quiz 2

1. Which of the following correctly classifies the purely sensory and purely motor nerves?
   ✔ a. The optic (II), vestibulocochlear (VIII), and olfactory (I) nerves are purely sensory, whereas the oculomotor (III), trochlear (IV), abducens (VI), accessory (XI), and hypoglossal (XII) nerves are purely motor.
   b. The optic (II), vestibulocochlear (VIII), and olfactory (I) nerves are purely motor, whereas the oculomotor (III), trochlear (IV), abducens (VI), accessory (XI), and hypoglossal (XII) nerves are purely sensory.
   c. The optic (II), oculomotor (III), olfactory (I), and accessory (XI) nerves are purely sensory, whereas the vestibulocochlear (VIII), trochlear (IV), abducens (VI), and hypoglossal (XII) nerves are purely motor.
   d. The optic (II), oculomotor (III), olfactory (I), and accessory (XI) nerves are purely motor, whereas the vestibulocochlear (VIII), trochlear (IV), abducens (VI), and hypoglossal (XII) nerves are purely sensory.

2. If you were describing how the olfactory nerves (I) transmit impulses for smell to a friend who does not understand the process, which of the following would you most likely say?
   a. They pass from the olfactory bulbs through the cribriform plate of the ethmoid and into the nasal cavity.
   ✔ b. They pass from the nasal cavity through the cribriform plate of the ethmoid and end in the olfactory bulbs.
   c. They pass from the cribriform plate of the ethmoid through the nasal canal and end in the olfactory bulbs.
   d. They pass from the nasal cavity through the olfactory bulbs and end in the cribriform plate of the ethmoid.

3. Which of the following correctly explains the difference between the rods and cones in the retina?
   a. Cones interpret the intensity of light, whereas rods interpret the color of light.
   ✔ b. Cones interpret the color of light, whereas rods interpret the intensity of light.
   c. Cones interpret images in the dark, whereas rods interpret moving objects.
   d. Cones interpret moving objects, whereas rods interpret images in the dark.

4. Which of the following accurately compares the function of the axons in the superior and inferior branches of the oculomotor nerve (III)?
   a. Axons in each superior branch innervate three extrinsic eyeball muscles, whereas axons in each inferior branch innervate one extrinsic eyeball muscle and a muscle of the upper eyelid.
   b. Axons in each superior branch innervate intrinsic eyeball muscles, including the ciliary muscle, whereas axons in each inferior branch innervate three extrinsic eyeball muscles: the medial rectus, the inferior rectus, and the inferior oblique muscles.
   c. Axons in each superior branch innervate the medial rectus, the inferior rectus, and the inferior oblique muscles, whereas axons in each inferior branch innervate the superior rectus and the levator palpebrae superioris.
   ✔ d. Axons in each superior branch innervate the superior rectus and the levator palpebrae superioris, whereas axons in each inferior branch innervate the medial rectus, the inferior rectus, and the inferior oblique muscles, as well as intrinsic eye muscles.
5. If you were explaining the functions of the three major branches of the trigeminal nerves (V) to a friend who doesn’t understand these branches, which of the following would you include in your explanation?

✔ a. The ophthalmic nerves enter the orbits via the superior orbital fissure of the sphenoid bone and divide into the frontal, lacrimal, and nasociliary branches to innervate the forehead, lacrimal glands, upper eyelids, ciliary bodies, and sides of the nose.

b. The maxillary nerves enter the orbits via the superior orbital fissure of the sphenoid bone and divide into the frontal, lacrimal, and nasociliary branches to innervate the forehead, lacrimal glands, upper eyelids, ciliary bodies, and sides of the nose.

c. The mandibular nerves pass through the foramen rotundum in the sphenoid, and then divide into branches that receive sensory information from the mucosa of the nose, palate, pharynx, upper teeth, lower lip, and lower eyelids.

d. The ophthalmic nerves exit the brain on each side via the foramen ovale in the sphenoid bone, dividing into the frontal, lacrimal, and nasociliary branches that innervate the anterior portion of the tongue.

6. Which of the following accurately explains the motor and sensory functions of the facial nerve (VII)?

a. The motor part transmits signals that control lateral movements of the face, whereas the sensory part transmits signals related to vision.

✔ b. The motor part transmits signals that control eye movement, whereas the sensory part transmits signals related to hearing.

✔ c. The motor part transmits signals that control facial expressions, whereas the sensory part transmits signals related to taste.

d. The motor part transmits signals that control neck movements, whereas the sensory part transmits signals related to olfaction.

7. If your instructor asked you to compare the branches of the vestibulocochlear nerves (VIII), which of the following would you most likely say?

✔ a. The cochlear nerves transmit signals for hearing, whereas the vestibular nerves transmit signals for equilibrium.

b. The cochlear nerves transmit signals for equilibrium, whereas the vestibular nerves transmit signals for hearing.

c. The cochlear nerves transmit signals for olfaction, whereas the vestibular nerves transmit signals for taste.

d. The cochlear nerves transmit signals for taste, whereas the vestibular nerves transmit signals for olfaction.

8. If you were explaining the functions and locations of the vagus nerves (X) to a friend, all of the following would be part of your explanation except

a. Motor axons arise from the nuclei in the medulla to innervate muscles of the pharynx, larynx, and soft palate for vocalization and swallowing.

✔ b. The vagus nerves (X) carry parasympathetic fibers that control heart rate, breathing, sweating, and movement of the gut.

c. The vagus nerves (X) transmit signals that control hearing and equilibrium.

d. Sensory axons arise from the external ear, a few taste buds in the epiglottis and pharynx, and proprioceptors in the muscles of the throat and neck.

9. Which of the following accurately explains the role the jugular foramen plays in the transmittal of the cranial nerves?

✔ a. The intermediate compartment of the jugular foramen transmits the glossopharyngeal (IX), vagus (X), and accessory (XI) nerves.

b. The anterior compartment of the jugular foramen transmits the facial (VII), hypoglossal (XII), and vestibulocochlear (VIII) nerves.

c. The posterior compartment of the jugular foramen transmits the trigeminal (V), trochlear (IV), and abducens (VI) nerves.

d. The posterior compartment of the jugular foramen transmits the glossopharyngeal (IX), vagus (X), and accessory (XI) nerves.
10. If you were teaching a classmate about the sensory nerves of the tongue, which of the following would you exclude from your lecture?
   a. The glossopharyngeal lingual branch
   b. The mandibular division of the trigeminal nerve
   ✔ c. The mandibular division of the hypoglossal nerve
   d. The facial nerve chorda tympani branch

Cranial Nerves Multiple Choice Quiz 3

1. Which of the following cranial nerves is purely a motor nerve?
   a. Vestibulocochlear (VIII)
   b. Olfactory (I)
   c. Optic (II)
   ✔ d. Accessory (XI)

2. _____ fibers of the optic nerve cross over to the opposite side of the brain, whereas _____ fibers continue on the same side.
   ✔ a. Medial, lateral
   b. Lateral, medial
   c. Superior, inferior
   d. Inferior, superior

3. All of the following are true of the trigeminal nerves (V) except
   a. They are the largest cranial nerves.
   b. They consist of ophthalmic, maxillary, and mandibular branches.
   ✔ c. They perform sensory functions only.
   d. They pass sensory and motor signals between the pons and structures of the face.

4. Sensory axons of the glossopharyngeal nerve (IX) arise from all of the following except
   a. Proprioceptors in swallowing muscles.
   b. Chemoreceptors in the carotid body.
   c. Baroreceptors in the carotid sinus.
   ✓ d. Nuclei in the medulla oblongata.

5. The fibers of the vagus nerve (X) originate in the
   a. Pons.
   ✓ b. Medulla oblongata.
   c. Cerebrum.
   d. Cerebellum.

6. If you were describing how the olfactory nerves (I) transmit impulses for smell to a friend who does not understand the process, which of the following would you most likely say?
   a. They pass from the olfactory bulbs through the cribriform plate of the ethmoid and into the nasal cavity.
   ✓ b. They pass from the nasal cavity through the cribriform plate of the ethmoid and end in the olfactory bulbs.
   c. They pass from the cribriform plate of the ethmoid through the nasal canal and end in the olfactory bulbs.
   d. They pass from the nasal cavity through the olfactory bulbs and end in the cribriform plate of the ethmoid.

7. Which of the following correctly explains the difference between the rods and cones in the retina?
   a. Cones interpret the intensity of light, whereas rods interpret the color of light.
   ✓ b. Cones interpret the color of light, whereas rods interpret the intensity of light.
   c. Cones interpret images in the dark, whereas rods interpret moving objects.
   d. Cones interpret moving objects, whereas rods interpret images in the dark.

8. Which of the following accurately explains the motor and sensory functions of the facial nerve (VII)?
   a. The motor part transmits signals that control lateral movements of the face, whereas the sensory part transmits signals related to vision.
   ✓ b. The motor part transmits signals that control eye movement, whereas the sensory part transmits signals related to hearing.
   c. The motor part transmits signals that control facial expressions, whereas the sensory part transmits signals related to taste.
   d. The motor part transmits signals that control neck movements, whereas the sensory part transmits signals related to olfaction.

9. If your instructor asked you to compare the branches of the vestibulocochlear nerves (VIII), which of the following would you most likely say?
   a. The cochlear nerves transmit signals for hearing, whereas the vestibular nerves transmit signals for equilibrium.
   ✓ b. The cochlear nerves transmit signals for equilibrium, whereas the vestibular nerves transmit signals for hearing.
   c. The cochlear nerves transmit signals for olfaction, whereas the vestibular nerves transmit signals for taste.
   d. The cochlear nerves transmit signals for taste, whereas the vestibular nerves transmit signals for olfaction.
10. Which of the following accurately explains the role the jugular foramen plays in the transmittal of the cranial nerves?

✔ a. The intermediate compartment of the jugular foramen transmits the glossopharyngeal (IX), vagus (X), and accessory (XI) nerves.

b. The anterior compartment of the jugular foramen transmits the facial (VII), hypoglossal (XII), and vestibulocochlear (VIII) nerves.

c. The posterior compartment of the jugular foramen transmits the trigeminal (V), trochlear (IV), and abducens (VI) nerves.

d. The posterior compartment of the jugular foramen transmits the glossopharyngeal (IX), vagus (X), and accessory (XI) nerves.

Somatic and Autonomic Nervous System Multiple Choice Quiz 1

1. All nerves involved in the voluntary control of skeletal muscles are part of the _____ system of the peripheral nervous system.

a. Autonomic

b. Parasympathetic

c. Sympathetic

✔ d. Somatic

2. The _____ nervous system senses internal conditions and regulates the involuntary activity of visceral organs.

✔ a. Autonomic

b. Central

c. Accessory

d. Somatic

3. Where are somatic sensory signals processed?

a. In the spinal cord

b. In the cerebellum

✔ c. In the cerebral cortex

d. In the medulla oblongata

4. Merkel cells are found in the


✔ b. Stratum basale of the fingertips, lips, hands, and external genitalia.

c. Dermal papillae of hairless skin such as the nipples, soles, clitoris, tip of the penis, and tip of the tongue.

d. Hair cells that appear on the skin on the arms, legs, head, and genitalia.

5. Which of the following is not one of the pathways through which sensory signals ascend through the spinal cord to the sensory cortex of the brain?

a. Spinothalamic pathway

✔ b. Posterior column pathway

c. Pyramidal pathway

d. Spinocerebellar pathway

6. The _____ are a group of nuclei that surround the thalamus and regulate body movements by processing sensory and motor information coming from the cerebral cortex.

a. Basal ganglia

✔ b. Cerebral sulci

c. Cerebral gyri

d. Cerebellar lobes

7. All of the following activities are controlled by the autonomic nervous system except

a. Digestion.

✔ b. Reproduction.

c. Glandular secretions.

d. Skeletal muscle contractions.

8. The _____ nervous system ramps up certain body functions during periods of increased activity.

a. Parasympathetic

✔ b. Sympathetic

c. Somatic

d. Central

9. All of the following occur as part of the fight-or-flight response except

a. The heart rate increases.

✔ b. The heart rate decreases.

c. The pupils, airways, and blood vessels to skeletal muscles dilate.

d. Digestive activities are put on hold.

10. Where do parasympathetic nerves originate?

✔ a. In the brain stem and sacral spinal cord

b. In the thoracic and lumbar spinal cord

c. In the cerebrum and cerebellum

d. In the cervical and thoracic spinal cord
Somatic and Autonomic Nervous System Multiple Choice Quiz 2

1. Which of the following differentiates the somatic and autonomic systems of the peripheral nervous system from each other?
   a. All nerves involved in the voluntary control of skeletal muscles are part of the autonomic system, whereas body functions that are involuntary and controlled by signals that pass from the brain to glands and organs throughout the body are part of the somatic system.
   ✔ b. All nerves involved in the voluntary control of skeletal muscles are part of the somatic system, whereas body functions that are involuntary and controlled by signals that pass from the brain to glands and organs throughout the body are part of the autonomic system.
   ✔ c. The autonomic nervous system is responsible for our conscious perception of the environment, whereas the somatic nervous system produces motor responses to environmental stimuli.
   d. The autonomic nervous system controls voluntary and sensory functions, including the sensation of special sensory information, whereas the somatic nervous system coordinates involuntary functions like heart rate and respiration.

2. If you were giving an oral presentation on how somatic sensory signals are processed in the cerebral cortex, which of the following points would you make as part of your presentation?
   a. The postcentral gyrus contains the primary somatosensory cortex and is responsible for spatial discrimination.
   ✔ b. The cingulate gyrus contains the primary motor cortex and controls the precise movements of the skeletal muscles.
   c. The precentral gyrus contains the primary somatosensory cortex and is responsible for spatial discrimination.
   d. The postcentral gyrus contains the primary motor cortex and somatosensory cortex.

3. If you were discussing skin sensory receptors with a friend, which of the following points would you likely make?
   a. Meissner corpuscles detect touch, pressure, and vibration.
   ✔ b. Merkel cells detect itch.
   c. Pacinian corpuscles detect temperature.
   d. Free nerve endings detect touch, pressure, and vibration.

4. Which of the following accurately outlines how somatic motor signals control the contraction of skeletal muscles?
   a. Somatic motor signals are sent from the spinal nerves to the cerebral cortex through ascending tracts of white matter, and once they are processed, they are transmitted to the skeletal muscles through the cranial nerves.
   ✔ b. Somatic motor signals are sent from the cerebral cortex through the gray matter horns of the spinal cord to spinal nerves that carry them to the skeletal muscles.
   c. Somatic motor signals are sent from the cranial nerves through the gray matter horns of the spinal cord to the cerebral cortex, which transfers them to the skeletal muscles.
   d. Somatic motor signals are sent from the cerebral cortex through descending tracts in the white matter of the spinal cord to spinal nerves, or through cranial nerves, to skeletal muscles.

5. If you were explaining skeletal muscle contraction to a friend who doesn’t understand the concept, your explanation should include all of the following except
   a. Impulses from the nervous system reach the neuromuscular junction.
   ✔ b. Proteins within the muscle tissue release acetylcholine.
   c. Acetylcholine binds to receptors on the muscle and begins a chemical reaction within its fibers.
   d. The muscle filaments slide across each other and the muscle shortens.
6. Which of the following accurately compares the direct and indirect pathways of motor signals?
   ✔ a. Direct pathways extend from the motor area of the cerebral cortex, whereas indirect pathways originate in the brain stem.
   b. Direct pathways originate in the brain stem, whereas indirect pathways extend from the motor area of the cerebral cortex.
   c. Direct pathways originate in the pons, whereas indirect pathways extend from the motor area of the cerebellum.
   d. Direct pathways extend from the motor area of the cerebellum, whereas indirect pathways originate in the medulla oblongata.

7. Which of the following best describes the difference between the sympathetic and parasympathetic nervous system divisions?
   a. The sympathetic division is associated with a decrease in heart rate, whereas the parasympathetic division is associated with an increase in heart rate.
   b. The sympathetic division is associated with homeostasis, whereas the parasympathetic division is associated with the need for increased activity.
   c. The sympathetic division is associated with daily body processes, whereas the parasympathetic division is associated with the fight-or-flight response.
   ✔ d. The sympathetic division is associated with the fight-or-flight response, whereas the parasympathetic division is associated with daily body processes.

8. If you were explaining the sympathetic nervous system to a friend who does not understand how it works, which of the following would not be part of your explanation?
   a. Sympathetic nerves arise from the thoracic and lumbar segments of the spinal cord.
   ✔ b. Preganglionic nerve fibers pass signals from the spinal cord to the sympathetic trunk ganglia.
   c. Preganglionic nerve fibers pass signals from specific organs to the spinal cord.
   d. Postganglionic nerve fibers pass signals to their target organs.

9. Which of the following accurately explains the origins of sympathetic and parasympathetic nerves?
   a. Sympathetic nerves originate in the brain stem and the sacral spinal cord, whereas parasympathetic nerves arise from the thoracic and lumbar segments of the spinal cord.
   ✔ b. Sympathetic nerves arise from the thoracic and lumbar segments of the spinal cord, whereas parasympathetic nerves originate in the brain stem and the sacral spinal cord.
   c. Both sympathetic and parasympathetic nerves arise from the thoracic and lumbar segments of the spinal cord.
   d. Both sympathetic and parasympathetic nerves originate in the brain stem and the sacral spinal cord.

10. If your friend asked you what happens when the parasympathetic nervous system is active, which of the following might you tell him or her?
   ✔ a. When the parasympathetic nervous system is active, digestive and urinary activities take place, the heart rate decreases, and airways decrease in diameter.
   b. When the parasympathetic nervous system is active, the pupils, airways, and blood vessels to skeletal muscles dilate; the heart rate increases; and digestive activities are put on hold.
   c. When the parasympathetic nervous system is active, the body sweats more.
   d. When the parasympathetic nervous system is active, the body responds to stress by initiating the fight-or-flight response.

Somatic and Autonomic Nervous System Multiple Choice Quiz 3

1. All nerves involved in the voluntary control of skeletal muscles are part of the _____ system of the peripheral nervous system.
   a. Autonomic
   b. Parasympathetic
   c. Sympathetic
   ✔ d. Somatic

2. Merkel cells are found in the
   ✔ b. Stratum basale of the fingertips, lips, hands, and external genitalia.
   c. Dermal papillae of hairless skin such as the nipples, soles, clitoris, tip of the penis, and tip of the tongue.
   d. Hair cells that appear on the skin on the arms, legs, head, and genitalia.
3. The _____ are a group of nuclei that surround the thalamus and regulate body movements by processing sensory and motor information coming from the cerebral cortex.
   ✔ a. Basal ganglia
   b. Cerebral sulci
   c. Cerebral gyri
   d. Cerebellar lobes

4. All of the following activities are controlled by the autonomic nervous system except
   a. Digestion.
   b. Reproduction.
   c. Glandular secretions.
   ✔ d. Skeletal muscle contractions.

5. All of the following occur as part of the fight-or-flight response except
   a. The heart rate increases.
   ✔ b. The heart rate decreases.
   c. The pupils, airways, and blood vessels to skeletal muscles dilate.
   d. Digestive activities are put on hold.

6. Which of the following differentiates the somatic and autonomic systems of the peripheral nervous system from each other?
   a. All nerves involved in the voluntary control of skeletal muscles are part of the autonomic system, whereas body functions that are involuntary and controlled by signals that pass from the brain to glands and organs throughout the body are part of the somatic system.
   ✔ b. All nerves involved in the voluntary control of skeletal muscles are part of the somatic system, whereas body functions that are involuntary and controlled by signals that pass from the brain to glands and organs throughout the body are part of the autonomic system.
   c. The autonomic nervous system is responsible for our conscious perception of the environment, whereas the somatic nervous system produces motor responses to environmental stimuli.
   d. The autonomic nervous system controls voluntary and sensory functions, including the sensation of special sensory information, whereas the somatic nervous system coordinates involuntary functions like heart rate and respiration.

7. If you were giving an oral presentation on how somatic sensory signals are processed in the cerebral cortex, which of the following points would you make as part of your presentation?
   a. The postcentral gyrus contains the primary somatosensory cortex and is responsible for spatial discrimination.
   b. The cingulate gyrus contains the primary motor cortex and controls the precise movements of the skeletal muscles.
   c. The precentral gyrus contains the primary somatosensory cortex and is responsible for spatial discrimination.
   ✔ d. The postcentral gyrus contains the primary motor cortex and somatosensory cortex.

8. If you were explaining skeletal muscle contraction to a friend who doesn't understand the concept, your explanation should include all of the following except
   a. Impulses from the nervous system reach the neuromuscular junction.
   b. Proteins within the muscle tissue release acetylcholine.
   c. Acetylcholine binds to receptors on the muscle and begins a chemical reaction within its fibers.
   d. The muscle filaments slide across each other and the muscle shortens.
9. Which of the following accurately compares the direct and indirect pathways of motor signals?
✔ a. Direct pathways extend from the motor area of the cerebral cortex, whereas indirect pathways originate in the brain stem.
 b. Direct pathways originate in the brain stem, whereas indirect pathways extend from the motor area of the cerebral cortex.
 c. Direct pathways originate in the pons, whereas indirect pathways extend from the motor area of the cerebellum.
 d. Direct pathways extend from the motor area of the cerebellum, whereas indirect pathways originate in the medulla oblongata.

10. Which of the following accurately explains the origins of sympathetic and parasympathetic nerves?
✓ a. Sympathetic nerves originate in the brain stem and the sacral spinal cord, whereas parasympathetic nerves arise from the thoracic and lumbar segments of the spinal cord.
✓ b. Sympathetic nerves arise from the thoracic and lumbar segments of the spinal cord, whereas parasympathetic nerves originate in the brain stem and the sacral spinal cord.
✓ c. Both sympathetic and parasympathetic nerves arise from the thoracic and lumbar segments of the spinal cord.
✓ d. Both sympathetic and parasympathetic nerves originate in the brain stem and the sacral spinal cord.

Special Senses Multiple Choice Quiz 1

1. All of the following are considered to be special senses except
   a. Olfaction.
   b. Gustation.
   ✔ c. Kinesthesia.
   d. Balance.

2. The process of smelling begins with hairlike cilia that line the nasal cavity. This lining is called the
   a. Olfactory epithelium.
   b. Gustatory epithelium.
   c. Olfactory bulbs.
   d. Olfactory nerves.
   ✔

3. Small projections, called _____, many of which contain taste buds, cover the dorsal and lateral surfaces of the tongue.
   a. Sulci
   b. Gyri
   c. Tonsils
   d. Papillae
   ✔

4. All of the following are included in the five major tastes except
   a. Umami.
   b. Sweet.
   c. Tangy.
   d. Salty.
   ✔

5. Impulses for taste pass from receptors in taste buds through all of the following nerves except
   a. The facial nerve.
   b. The hypoglossal nerve.
   ✔ c. The vagus nerve.
   d. The glossopharyngeal nerve.

6. All of the following are extraocular muscles that are responsible for the motion of the eyes except
   a. The medial oblique.
   b. The superior oblique.
   c. The lateral rectus.
   d. The inferior rectus.
   ✔

7. Humans have _____ vision because of the overlap between the two visual fields.
   a. Monocular
   b. Binocular
   c. Lateral
   d. Two-dimensional
   ✔

8. All of the following are auditory ossicles except
   a. The malleus.
   b. The incus.
   c. The stapes.
   d. The tympanic membrane.
   ✔

9. Which of the following accurately describes the process of hearing?
   a. Sound waves create mechanical motions that cause fluid in the ear to move in waves and trigger nerve impulses that the brain interprets as sound.
   b. When fluid moves out of the ear, it causes the auditory ossicles to stop moving, which triggers nerve impulses that the brain interprets as sound.
   c. When fluid moves out of the ear, it causes the hairs in the ear to move, which triggers nerve impulses that the brain interprets as sound.
   d. Sound waves travel through the ear in air, triggering nerve impulses that the brain interprets as sound.
   ✔
10. Impulses for equilibrium pass through which of the following nerves to the medulla oblongata and pons?
   a. Vagus nerves  ✔
   b. Trigeminal nerves
   c. Vestibulocochlear nerves
   d. Hypoglossal nerves

Special Senses Multiple Choice Quiz 2

1. If you were explaining olfaction to a friend, which of the following details would you not include?
   a. As air enters the nasal cavity, chemicals in the air bind to and activate nervous system receptors on the nasal cilia.
   ✔
   b. Signals move from the olfactory area of the cerebral cortex into the olfactory bulbs of the nasal passage.
   c. First-order neurons connected to the epithelial cells carry olfactory signals from the nasal cavity through openings in the ethmoid bone, and then to the olfactory bulbs of the brain.
   d. Olfactory signals move from olfactory bulbs along the olfactory nerves to the olfactory area of the cerebral cortex.

2. Which of the following describes how the sense of smell differs from the other special senses?
   ✔
   a. Smell is the only sensory modality that does not synapse in the thalamus before connecting to the cerebral cortex.
   b. Smell is the only sensory modality that is processed in the cerebral cortex.
   c. Smell is the only chemical sense.
   d. Smell is always processed in the hypothalamus, whereas the other senses are processed in the cerebral cortex.

3. If you were giving an oral presentation on the types of papillae, which of the following would you likely include in your presentation?
   a. Circumvallate papillae are found over the entire surface of the tongue.
   b. Fungiform papillae contain tactile receptors, but no taste buds, and are found all over the tongue.
   ✔
   c. Circumvallate papillae are found on the dorsum of the tongue in an inverted V-shaped row, and each contains 100–300 taste buds.
   d. Filiform papillae are mushroom-shaped and found mainly on the sides and apex of the tongue.

4. If your friend asked you how the process of vision works, which of the following statements might you use to explain it to him or her?
   a. The process of seeing begins when the cones interpret the intensity of light and the rods interpret the color of light.
   ✔
   b. The process of seeing begins when light enters the front of the eye through the pupil.
   c. Inside the eye, light is refracted by the retina and focused onto the lens.
   d. The optic nerve carries nerve signals from the occipital lobe of the brain to the retina, where signals are interpreted to represent an image.

5. Which of the following accurately compares nearsightedness and farsightedness?
   a. Nearsightedness results when the image is focused on an area beyond the retina, whereas farsightedness occurs when the point of focus does not reach the retina.
   ✔
   b. Nearsightedness results when the eye is too shallow, whereas farsightedness results in a blurry image.
   c. Nearsightedness occurs when the lens focuses light onto the retina, whereas farsightedness results when the image is focused beyond the retina.
   d. Nearsightedness occurs when the point of focus does not reach the retina, whereas farsightedness results when the image is focused on an area beyond the retina.

6. If you were explaining the structure of the ear to a friend, all of the following would be part of your explanation except
   a. The outer ear consists of the auricle and the external acoustic meatus.
   ✔
   b. The middle ear consists of the malleus, incus, and stapes.
   c. The inner ear consists of the auricle and auditory ossicles.
   d. The inner ear contains canals filled with fluid.
7. Which of the following would likely be included in a discussion of the auditory pathway?
   a. Impulses for hearing pass through the trigeminal nerves to the medulla oblongata and then on to the cerebellum. ✔
   b. Impulses for hearing pass through the vestibulocochlear nerves to the medulla oblongata and then on to the midbrain, thalamus, and cerebral cortex.
   c. Impulses for hearing pass from the medulla oblongata through the vestibulocochlear nerves to the midbrain, thalamus, and cerebral cortex.
   d. Impulses for hearing pass through the vagus nerves to the pons and then on to the thalamus and cerebellum.

8. Which of the following explains how the frequency of sound waves determines the movement of the basilar membrane?
   a. Higher-frequency waves move the region of the basilar membrane that is close to the base of the cochlea, whereas lower-frequency waves move the region that is near the tip of the cochlea. ✔
   b. Higher-frequency waves move the region of the basilar membrane that is near the tip of the cochlea, whereas lower-frequency waves move the region that is close to the base of the cochlea.
   c. Higher-frequency waves move the region of the basilar membrane that is near the middle of the cochlea, whereas lower-frequency waves move the region near the base of the cochlea.
   d. Higher-frequency waves move the region of the basilar membrane that is closer to the scala tympani, whereas lower-frequency waves move the region that is closer to the scala vestibuli.

9. Which of the following is a similarity between the sense of hearing and equilibrium?
   a. They both pass impulses to the midbrain.
   b. They both involve sound waves.
   c. They both pass impulses through the trigeminal nerves.
   d. They both occur in the inner ear. ✔

10. If you were explaining equilibrium to a classmate, which of the following statements might you make?
    a. Commands to maintain equilibrium are sent to the cerebral cortex, whereas information about equilibrium is sent directly out to the body. ✔
    b. Commands to maintain equilibrium are sent directly out to the body, whereas information about equilibrium is sent to the cerebral cortex for conscious perception.
    c. When there is an equilibrium change, signals to maintain balance are sent to the cerebellum and thalamus.
    d. When there is an equilibrium change, signals to maintain balance are sent from the medulla oblongata to the vestibulocochlear nerves.

Special Senses Multiple Choice Quiz 3

1. All of the following are considered to be special senses except
   a. Olfaction.
   b. Gustation.
   ✔ c. Kinesthesia.
   d. Balance.

2. Small projections, called _____, many of which contain taste buds, cover the dorsal and lateral surfaces of the tongue.
   a. Sulci
   b. Gyri
   c. Tonsils
   ✔ d. Papillae

3. All of the following are extraocular muscles that are responsible for the motion of the eyes except
   a. The medial oblique.
   b. The superior oblique.
   ✔ c. The lateral rectus.
   d. The inferior rectus.

4. Which of the following accurately describes the process of hearing?
   a. Sound waves create mechanical motions that cause fluid in the ear to move in waves and trigger nerve impulses that the brain interprets as sound. ✔
   b. When fluid moves out of the ear, it causes the auditory ossicles to stop moving, which triggers nerve impulses that the brain interprets as sound.
   c. When fluid moves out of the ear, it causes the hairs in the ear to move, which triggers nerve impulses that the brain interprets as sound.
   d. Sound waves travel through the ear in air, triggering nerve impulses that the brain interprets as sound.

5. Impulses for equilibrium pass through which of the following nerves to the medulla oblongata and pons?
   a. Vagus nerves
   b. Trigeminal nerves
   ✔ c. Vestibulocochlear nerves
   d. Hypoglossal nerves
6. If you were explaining olfaction to a friend, which of the following details would you not include?
   a. As air enters the nasal cavity, chemicals in the air bind to and activate nervous system receptors on the nasal cilia.
   ✔ b. Signals move from the olfactory area of the cerebral cortex into the olfactory bulbs of the nasal passage.
   c. First-order neurons connected to the epithelial cells carry olfactory signals from the nasal cavity through openings in the ethmoid bone, and then to the olfactory bulbs of the brain.
   d. Olfactory signals move from olfactory bulbs along the olfactory nerves to the olfactory area of the cerebral cortex.

7. Which of the following describes how the sense of smell differs from the other special senses?
   ✔ a. Smell is the only sensory modality that does not synapse in the thalamus before connecting to the cerebral cortex.
   b. Smell is the only sensory modality that is processed in the cerebral cortex.
   c. Smell is the only chemical sense.
   d. Smell is always processed in the hypothalamus, whereas the other senses are processed in the cerebral cortex.

8. If your friend asked you how the process of vision works, which of the following statements might you use to explain it to him or her?
   ✔ a. The process of seeing begins when the cones interpret the intensity of light and the rods interpret the color of light.
   b. The process of seeing begins when light enters the front of the eye through the pupil.
   c. Inside the eye, light is refracted by the retina and focused onto the lens.
   d. The optic nerve carries nerve signals from the occipital lobe of the brain to the retina, where signals are interpreted to represent an image.

9. If you were explaining the structure of the ear to a friend, all of the following would be part of your explanation except
   a. The outer ear consists of the auricle and the external acoustic meatus.
   b. The middle ear consists of the malleus, incus, and stapes.
   ✔ c. The inner ear consists of the auricle and auditory ossicles.
   d. The inner ear contains canals filled with fluid.

10. Which of the following explains how the frequency of sound waves determines the movement of the basilar membrane?
    ✔ a. Higher-frequency waves move the region of the basilar membrane that is close to the base of the cochlea, whereas lower-frequency waves move the region that is near the tip of the cochlea.
    b. Higher-frequency waves move the region of the basilar membrane that is near the tip of the cochlea, whereas lower-frequency waves move the region that is close to the base of the cochlea.
    c. Higher-frequency waves move the region of the basilar membrane that is near the middle of the cochlea, whereas lower-frequency waves move the region near the base of the cochlea.
    d. Higher-frequency waves move the region of the basilar membrane that is closer to the scala tympani, whereas lower-frequency waves move the region that is closer to the scala vestibuli.

---

Endocrine System

Hormone Action and Regulation Multiple Choice Quiz 1

1. Each type of hormone affects the behavior of
   a. All cells it encounters.
   ✔ b. Specific targeted cells only.
   c. All cells that are receptive to hormones.
   d. Any cell within the endocrine system.

2. All of the following are endocrine glands except
   ✔ a. Sebaceous glands.
   b. Adrenal glands.
   c. The pineal gland.
   d. The thyroid gland.

3. The _____ is the master endocrine gland; it secretes hormones that regulate the _____ gland(s).
   ✔ a. Thalamus, pineal
   b. Thymus, adrenal
   c. Thyroid, parathyroid
   d. Hypothalamus, pituitary

4. The system of vasculature that connects the hypothalamus and the anterior pituitary is called the _____ portal system.
   ✔ a. Ventral
   b. Renal
   c. Hypophyseal
   d. Hepatic

5. All of the following are hormones produced by the anterior pituitary gland except
   ✔ a. Antidiuretic hormone (ADH).
   b. Human growth hormone (hGH).
   c. Prolactin (PRL).
   d. Adrenocorticotropic hormone (ACTH).
6. Human growth hormone (hGH) causes target cells to release insulin-like growth factors (IGFs), which are hormones that promote
   a. Metabolism and nervous and skeletal system growth.
   b. Metabolism of glucose, lipids, and proteins.
   c. Production and maturation of ova in women and sperm in men.
   ✔ d. Cell growth and division, glucose release, and protein synthesis.

7. Which hormone is produced by the pituitary gland’s intermediate lobe?
   a. Adrenocorticotropic hormone (ACTH)
   ✔ b. Melanocyte-stimulating hormone (MSH)
   c. Thyroid-stimulating hormone (TSH)
   d. Human growth hormone (hGH)

8. To decrease water loss, antidiuretic hormone (ADH) targets all of the following except
   ✔ a. The bladder.
   b. The kidneys.
   c. Blood vessels.
   d. Sweat glands.

9. Which of the following hormones are synergists?
   a. Calcitonin (CT) and parathyroid hormone (PTH)
   ✔ b. Insulin (INS) and glucagon (GLU)
   c. Antidiuretic hormone (ADH) and aldosterone (ALD)
   d. Antidiuretic hormone (ADH) and atrial natriuretic peptide (ANP)

10. Which hormone stimulates production of testosterone by the testes in males and stimulates ovulation in females?
   ✔ a. Luteinizing hormone (LH)
   b. Follicle-stimulating hormone (FSH)
   c. Prolactin (PRL)
   d. Oxytocin (OXT)

   **Hormone Action and Regulation Multiple Choice Quiz 2**

1. If you were giving an oral presentation on hormone action, you would likely make all of the following points except
   a. Hormones can bind to receptors on the target cell's surface or in the cytoplasm or nucleus.
   b. When hormones bind to receptors on a cell, they trigger a cascade of actions within the cell that alter its physiological behavior.
   ✔ c. Hormones travel through the bloodstream, affecting the behavior of all cells that have hormone receptors.
   d. Hormones affect many bodily functions, including metabolism and growth, immune responses, and sexual development.

2. Which of the following accurately compares the anterior and posterior lobes of the pituitary gland?
   ✔ a. The anterior lobe produces hormones, whereas the posterior lobe stores hormones produced by the hypothalamus.
   b. The posterior lobe produces hormones, whereas the anterior lobe stores hormones produced by the hypothalamus.
   c. Both lobes are outgrowths of the brain.
   d. Both lobes are equal in size.

3. If your friend asked you to explain the functions of the hypothalamus, you would likely say all of the following except
   a. The hypothalamus connects information from the nervous system to the hormone releases of the endocrine system.
   b. The hypothalamus generally controls the endocrine system via the pituitary gland.
   c. Neurosecretory cells in the hypothalamus produce antidiuretic hormone (ADH) and oxytocin (OXT).
   ✔ d. The hypothalamus stores hormones produced by the pituitary gland.

4. If your instructor asked you to explain how oxytocin (OXT) and antidiuretic hormone (ADH) differ from the other hormones that are secreted by the hypothalamus, which of the following would you likely say?
   a. Most hormones secreted by the hypothalamus pass into the anterior pituitary gland via the hepatic portal system, whereas oxytocin (OXT) and antidiuretic hormone (ADH) pass into the posterior pituitary gland via the hypophyseal portal system.
   ✔ b. Most hormones secreted by the hypothalamus pass into capillary beds that branch from the superior hypophyseal artery and reach the anterior lobe of the pituitary gland, whereas oxytocin (OXT) and antidiuretic hormone (ADH) pass into capillaries from the inferior hypophyseal artery located in the posterior pituitary.
   c. Most hormones secreted by the hypothalamus pass into capillaries from the inferior hypophyseal artery located in the posterior pituitary, whereas oxytocin (OXT) and antidiuretic hormone (ADH) pass into capillary beds that branch from the superior hypophyseal artery and reach the anterior lobe of the pituitary gland.
   d. Most hormones secreted by the hypothalamus pass into the posterior pituitary gland via the hypophyseal portal system, whereas oxytocin (OXT) and antidiuretic hormone (ADH) pass into the anterior pituitary gland via the hepatic portal system.
5. If you were giving an oral presentation on the hypothalamus and pituitary hormones that target the reproductive system, you would likely make all of the following points except
   a. Follicle-stimulating hormone (FSH) stimulates the ovaries to secrete estrogen and produce oocytes, and it stimulates sperm development in the testes.
   b. Luteinizing hormone (LH) stimulates the production of testosterone by the testes, and it stimulates ovulation in females.
   ✔ c. Adrenocorticotropic hormone (ACTH) induces the production of milk by mammary glands.
   d. Oxytocin (OXT) causes smooth muscle in the uterus to contract during childbirth and stimulates milk ejection from the mammary glands.

6. Which of the following is a similarity between prolactin (PRL) and oxytocin (OXT)?
   ✔ a. Both target the mammary glands.
   b. Both target the uterus.
   c. Both are produced by the hypothalamus.
   d. Both are produced by the pituitary gland.

7. If your instructor asked you to explain how specific anterior pituitary hormones regulate growth, which of the following points would you not want to make?
   a. Human growth hormone (hGH) causes target cells to release insulin-like growth factors (IGFs), which promote cell growth and division.
   ✔ b. Follicle-stimulating hormone (FSH) stimulates hair follicles in the skin to grow hair on most surfaces of the body.
   c. Follicle-stimulating hormone (FSH) promotes follicular growth in the ovaries and testes.
   d. Thyroid-stimulating hormone (TSH) causes the thyroid gland to release hormones that promote nervous and skeletal system growth.

8. Which of the following is a shared function of thyroid-stimulating hormone (TSH) and adrenocorticotropic hormone (ACTH)?
   a. Both promote cell growth and division.
   b. Both stimulate the production and maturation of sex cells.
   ✔ c. Both promote nervous system growth.
   d. Both play a role in metabolism.

9. If you were explaining the hypophyseal portal system to a friend who doesn’t understand it, which of the following would you say?
   a. The hypophyseal portal system is the system of vasculature that connects the hypothalamus and the nervous system.
   ✔ b. The hypophyseal portal system is the system of vasculature that connects the anterior and posterior lobes of the pituitary.
   c. The hypophyseal portal system is the system of vasculature that connects the anterior and posterior lobes of the pituitary.
   d. The hypophyseal portal system is the system of vasculature that connects the hypothalamus and the posterior pituitary.

10. If your instructor asked you to identify the main target organs for the hypothalamus and pituitary hormones, you could include all of the following except
    a. Antidiuretic hormone (ADH) targets the kidneys.
    ✔ b. Thyroid-stimulating hormone (TSH) targets the respiratory system.
    c. Luteinizing hormone (LH) targets the gonads.
    d. Adrenocorticotropic hormone (ACTH) targets the adrenal glands.

Hormone Action and Regulation Multiple Choice Quiz 3

1. If your friend asked you to explain the functions of the hypothalamus, you would likely say all of the following except
   a. The hypothalamus connects information from the nervous system to the hormone releases of the endocrine system.
   b. The hypothalamus generally controls the endocrine system via the pituitary gland.
   c. Neurosecretory cells in the hypothalamus produce antidiuretic hormone (ADH) and oxytocin (OXT).
   ✔ d. The hypothalamus stores hormones produced by the pituitary gland.

2. If you were giving an oral presentation on the hypothalamus and pituitary hormones that target the reproductive system, you would likely make all of the following points except
   a. Follicle-stimulating hormone (FSH) stimulates the ovaries to secrete estrogen and produce oocytes, and it stimulates sperm development in the testes.
   b. Luteinizing hormone (LH) stimulates the production of testosterone by the testes, and it stimulates ovulation in females.
   ✔ c. Adrenocorticotropic hormone (ACTH) induces the production of milk by mammary glands.
   d. Oxytocin (OXT) causes smooth muscle in the uterus to contract during childbirth and stimulates milk ejection from the mammary glands.

3. Which hormone is produced by the pituitary gland’s intermediate lobe?
   a. Adrenocorticotropic hormone (ACTH)
   ✔ b. Melanocyte-stimulating hormone (MSH)
   c. Thyroid-stimulating hormone (TSH)
   d. Human growth hormone (hGH)
4. If your instructor asked you to identify the main target organs for the hypothalamus and pituitary hormones, you could include all of the following except
   a. Antidiuretic hormone (ADH) targets the kidneys.
   ✔ b. Thyroid-stimulating hormone (TSH) targets the respiratory system.
   c. Luteinizing hormone (LH) targets the gonads.
   d. Adrenocorticotropic hormone (ACTH) targets the adrenal glands.

5. Each type of hormone affects the behavior of
   a. All cells it encounters.
   ✔ b. Specific targeted cells only.
   c. All cells that are receptive to hormones.
   d. Any cell within the endocrine system.

6. All of the following are endocrine glands except
   ✔ a. Sebaceous glands.
   b. Adrenal glands.
   c. The pineal gland.
   d. The thyroid gland.

7. Which of the following is a shared function of thyroid-stimulating hormone (TSH) and adrenocorticotropic hormone (ACTH)?
   a. Both promote cell growth and division.
   ✔ b. Both stimulate the production and maturation of sex cells.
   c. Both promote nervous system growth.
   d. Both play a role in metabolism.

8. The system of vasculature that connects the hypothalamus and the anterior pituitary is called the ______ portal system.
   a. Ventral
   b. Renal
   ✔ c. Hypophyseal
   d. Hepatic

9. Human growth hormone (hGH) causes target cells to release insulin-like growth factors (IGFs), which are hormones that promote
   a. Metabolism and nervous and skeletal system growth.
   b. Metabolism of glucose, lipids, and proteins.
   c. Production and maturation of ova in women and sperm in men.
   ✔ d. Cell growth and division, glucose release, and protein synthesis.

10. Which of the following accurately compares the anterior and posterior lobes of the pituitary gland?
   ✔ a. The anterior lobe produces hormones, whereas the posterior lobe stores hormones produced by the hypothalamus.
   b. The posterior lobe produces hormones, whereas the anterior lobe stores hormones produced by the hypothalamus.
   c. Both lobes are outgrowths of the brain.
   d. Both lobes are equal in size.

   Endocrine Organs and Functions Multiple Choice Quiz 1

   1. In addition to the endocrine glands, hormone-secreting cells occur in all of the following except
      a. Lymphatic vessels.
      b. Gastric and intestinal mucous membranes.
      c. Adipose tissue.
      d. The heart atria.

   2. The thyroid consists mainly of spherical sacs known as thyroid follicles, which are lined by epithelial cells that make and secrete ______ and ______, and cells within or between follicles make and secrete ______.
      a. Triiodothyronine (T3), thyroxine (T4), glucocorticoids
      b. Calcitonin (CT), thyroxine (T4), triiodothyronine (T4)
      c. Calcitonin (CT), triiodothyronine (T3), thyroxine (T4)
      ✔ d. Triiodothyronine (T3), thyroxine (T4), calcitonin (CT)

   3. Parathyroid cells known as ______ cells are thought to produce most or all of the parathyroids' endocrine secretion.
      a. Oxyphil
      ✔ b. Chief
      c. Colloid
      d. Follicle

   4. Parathyroid hormone (PTH) stimulates all of the following except
      a. The absorption of calcium from muscles.
      b. The absorption of calcium from bone.
      c. The absorption of calcium from the small intestines.
      d. The reabsorption of calcium from kidneys' tubules.

   5. The adrenal cortex produces ______, whereas the adrenal medulla produces ______ and ______.
      a. Mineralocorticoids, glucocorticoids, gonadocorticoids
      b. Norepinephrine, gonadocorticoids, mineralocorticoids
      ✔ c. Corticosteroid hormones, epinephrine, norepinephrine
      d. Epinephrine, mineralocorticoids, glucocorticoids
6. The pineal gland produces melatonin, which
   a. Promotes the fight-or-flight responses of the
      sympathetic nervous system during stress.
   b. Increases metabolism, glucose use, protein
      synthesis, and nervous system development.
   c. Helps regulate blood calcium levels.
   ✔ d. Protects nervous tissue and regulates sleeping
      patterns.

7. In addition to its digestive functions, the pancreas
   secretes hormones necessary to regulate blood
   _____ levels.
   a. Calcium
   ✔ b. Glucose
   c. Protein
   d. Pressure

8. All of the following hormones are released by the
   kidneys except
   ✔ a. Glucagon.
   b. Calcitriol.
   c. Renin.
   d. Erythropoietin.

9. When blood volume is too great, the heart
   produces _____, which promote(s) water loss to
   decrease blood volume and pressure.
   a. Somatostatin
   b. Antiuretic hormone
   ✔ c. Natriuretic peptides
   d. Mineralocorticoids

10. Which two endocrine organs are involved in the
    stress response?
    a. Kidneys and parathyroid glands
    b. Heart and adrenal glands
    c. Pancreas and pineal glands
    ✔ d. Pancreas and adrenal glands

---

**Endocrine Organs and Functions Multiple Choice Quiz 2**

1. Which of the following accurately compares
   primary and secondary endocrine organs?
   ✔ a. Primary endocrine organs release regulatory
      hormones, whereas secondary endocrine
      organs have other functions in addition to
      secreting hormones.
   b. Secondary endocrine organs release regulatory
      hormones, whereas primary endocrine organs
      have other functions in addition to secreting
      hormones.
   c. Both primary and secondary endocrine organs
      function solely in the endocrine system.
   d. All primary and secondary endocrine organs
      have endocrine and non-endocrine functions.

2. If your friend asked you to explain the functions
   of thyroxine (T4) and triiodothyronine (T3), you
   would likely say all of the following except
   a. They increase metabolism.
   b. They increase protein synthesis.
   ✔ c. They increase calcification of bones.
   d. They increase glucose use.

3. Which of the following is a similarity between
   calcitonin (CT) and parathyroid hormone (PTH)?
   a. Both are released in response to low blood
      calcium levels.
   b. Both are produced by parafollicular cells.
   c. Both are produced by the parathyroid gland.
   ✔ d. Both help regulate blood calcium levels.

4. Which of the following accurately compares the
   three types of steroids produced by the adrenal
   cortex?
   a. Gonadocorticoids manage protein and glucose
      levels, glucocorticoids manage the levels of
      water and salt, and mineralocorticoids can be
      converted to estradiols.
   b. Glucocorticoids manage protein and glucose
      levels, mineralocorticoids manage the levels of
      water and salt, and gonadocorticoids can be
      converted to estradiols.
   c. Mineralocorticoids manage protein and
      glucose levels, gonadocorticoids manage the
      levels of water and salt, and glucocorticoids can
      be converted to estradiols.
   d. Gonadocorticoids manage protein and glucose
      levels, mineralocorticoids manage the levels
      of water and salt, and glucocorticoids can be
      converted to estradiols.

5. If you were doing an oral presentation on the
   pineal gland, you would likely make all of the
   following points except
   ✔ a. The pineal gland is a small reddish-gray body,
      about 1 cm in diameter, that is attached to the
      infundibulum of the hypothalamus.
   b. The pineal gland secretes melatonin at
      varying levels throughout the day and night,
      contributing to the circadian cycle.
   c. The pineal gland is attached to the roof of
      the third ventricle near its junction with the
      midbrain, and is located in the depression
      between the superior colliculi.
   d. The pineal gland consists of follicles lined
      by epithelium and enveloped by connective
      tissue.
6. Which of the following accurately compares two of the types of cells found in the pancreatic islets?
   a. Alpha cells produce insulin, whereas delta cells produce pancreatic polypeptide.
   ✔ b. Beta cells produce glucagon, whereas PP cells (F cells) produce somatostatin.
   c. Alpha cells produce glucagon, whereas beta cells produce insulin.
   d. Delta cells produce insulin, whereas PP cells (F cells) produce glucagon.

7. Which of the following accurately compares the role of glucagon and insulin in regulating blood glucose levels?
   ✔ a. Glucagon stimulates organs and tissues to release glucose, whereas insulin stimulates organs and tissues to increase their uptake of glucose.
   b. Glucagon stimulates organs and tissues to increase their uptake of glucose, whereas insulin stimulates organs and tissues to release glucose.
   c. Glucagon reduces blood glucose levels via glycolysis, whereas insulin increases blood glucose levels via glycogenolysis and gluconeogenesis.
   d. The primary function of both glucagon and insulin is to facilitate the uptake of glucose into body cells.

8. If you were explaining the functions of the hormones released by the kidneys to a friend who doesn’t understand them, which of the following points would not be included in your explanation?
   a. Erythropoietin stimulates red blood cell production.
   ✔ b. Adenosine lowers blood pressure.
   c. Renin causes an increase in blood pressure.
   d. Calcitriol increases calcium reabsorption in the body.

9. If you were explaining the role the ovaries and testes play in the endocrine system, which of the following would you most likely say?
   a. The ovaries and testes do not produce any hormones, but their functions are impacted by pituitary gland hormones.
   ✔ b. The ovaries and testes do not produce any hormones, but their functions are impacted by hypothalamus hormones.
   c. The ovaries and testes only produce the hormone inhibin, which allows them to regulate the impact that hypothalamus and pituitary hormones have on their functions.
   d. The ovaries and testes produce hormones that regulate female and male reproductive processes.

10. If you were doing an oral presentation on organs that have endocrine functions as well as other bodily functions, you would likely make all of the following points except:
   a. In addition to its digestive functions, the pancreas secretes hormones necessary to regulate blood glucose levels.
   b. In addition to its urinary functions, the kidneys secrete hormones that increase calcium reabsorption in the body, stimulate red blood cell production, and increase blood pressure.
   c. In addition to its lymphatic functions, the thymus secretes hormones that increase metabolism, glucose use, protein synthesis, and nervous system development.
   d. In addition to its cardiovascular functions, the heart produces hormones that promote water loss to decrease blood volume and pressure.

Endocrine Organs and Functions Multiple Choice Quiz 3

1. Which of the following accurately compares primary and secondary endocrine organs?
   ✔ a. Primary endocrine organs release regulatory hormones, whereas secondary endocrine organs have other functions in addition to secreting hormones.
   b. Secondary endocrine organs release regulatory hormones, whereas primary endocrine organs have other functions in addition to secreting hormones.
   c. Both primary and secondary endocrine organs function solely in the endocrine system.
   d. All primary and secondary endocrine organs have endocrine and non-endocrine functions.

2. The adrenal cortex produces _____, whereas the adrenal medulla produces _____.
   c. Corticosteroid hormones, epinephrine, norepinephrine
   ✔ d. Epinephrine, mineralocorticoids, glucocorticoids

Graded Quiz Bank: Instructor’s Manual 71
3. If you were doing an oral presentation on the pineal gland, you would likely make all of the following points except:

✔ a. The pineal gland is a small reddish-gray body, about 1 cm in diameter, that is attached to the infundibulum of the hypothalamus.

b. The pineal gland secretes melatonin at varying levels throughout the day and night, contributing to the circadian cycle.

c. The pineal gland is attached to the roof of the third ventricle near its junction with the midbrain, and is located in the depression between the superior colliculi.

d. The pineal gland consists of follicles lined by epithelium and enveloped by connective tissue.

4. In addition to the endocrine glands, hormone-secreting cells occur in all of the following except:

✔ a. Lymphatic vessels.

b. Gastric and intestinal mucous membranes.

c. Adipose tissue.

d. The heart atria.

5. If you were doing an oral presentation on organs that have endocrine functions as well as other bodily functions, you would likely make all of the following points except:

✔ a. In addition to its digestive functions, the pancreas secretes hormones necessary to regulate blood glucose levels.

b. In addition to its urinary functions, the kidneys secrete hormones that increase calcium reabsorption in the body, stimulate red blood cell production, and increase blood pressure.

c. In addition to its lymphatic functions, the thymus secretes hormones that increase metabolism, glucose use, protein synthesis, and nervous system development.

d. In addition to its cardiovascular functions, the heart produces hormones that promote water loss to decrease blood volume and pressure.

6. Which of the following is a similarity between calcitonin (CT) and parathyroid hormone (PTH)?

✔ a. Both are released in response to low blood calcium levels.

b. Both are produced by parafollicular cells.

c. Both are produced by the parathyroid gland.

d. Both help regulate blood calcium levels.

7. The thyroid consists mainly of spherical sacs known as thyroid follicles, which are lined by epithelial cells that make and secrete _____ and _____, and cells within or between follicles make and secrete _____.

✔ a. Triiodothyronine (T3), thyroxine (T4), glucocorticoids

b. Calcitonin (CT), thyroxine (T4), triiodothyronine (T4)

c. Calcitonin (CT), triiodothyronine (T3), thyroxine (T4)

d. Triiodothyronine (T3), thyroxine (T4), calcitonin (CT)

8. Parathyroid cells known as ____ cells are thought to produce most or all of the parathyroids' endocrine secretion.

✔ a. Oxyphil

b. Chief

c. Colloid

d. Follicle

9. Which of the following accurately compares the role of glucagon and insulin in regulating blood glucose levels?

✔ a. Glucagon stimulates organs and tissues to release glucose, whereas insulin stimulates organs and tissues to increase their uptake of glucose.

b. Glucagon stimulates organs and tissues to increase their uptake of glucose, whereas insulin stimulates organs and tissues to release glucose.

c. Glucagon reduces blood glucose levels via glycolysis, whereas insulin increases blood glucose levels via glycogenolysis and gluconeogenesis.

d. The primary function of both glucagon and insulin is to facilitate the uptake of glucose into body cells.

10. All of the following hormones are released by the kidneys except:

✔ a. Glucagon.

b. Calcitriol.

c. Renin.

d. Erythropoietin.
**Circulatory System**

**Blood Multiple Choice Quiz 1**

1. Blood is an _____ tissue.
   - a. Epithelial
   - b. Nervous
   - c. Muscle
   ✔ d. Connective

2. Which of the following is the largest component of blood?
   - a. Plasma
   - b. Platelets
   - c. White blood cells
   ✔ d. Red blood cells

3. Which organ produces plasma proteins?
   - a. Kidneys
   - b. Brain
   ✔ c. Liver
   d. Heart

4. The hepatic portal vein collects blood from the vessels that drain all of the following organs except
   - a. The liver.
   - b. The intestines.
   - c. The stomach.
   ✔ d. The spleen.

5. What is the main function of red blood cells?
   - a. To transport carbon dioxide from the lungs to the body’s cells
   - b. To transport oxygen from the lungs to the body’s cells
   ✔ c. To transport oxygen from the skeletal system to the lungs
   d. To transport carbon dioxide from the skeletal system to the lungs

6. Which hormone, produced in the kidneys and liver, stimulates red blood cell production?
   - a. Cortisol
   - b. Oxytocin
   - c. Prolactin
   ✔ d. Erythropoietin

7. Red blood cells contain gas-transporting molecules called
   - a. Hemoglobin.
   - b. Erythrocytes.
   - c. Plasma.
   d. Erythropoietin.

8. All of the following are types of white blood cells except
   - b. Monocytes.
   ✔ c. Erythrocytes.
   d. Lymphocytes.

9. When a blood vessel tears, _____ at the site adhere to the vessel's wall to close the tear.
   - a. Lymphocytes
   - b. Erythrocytes
   - c. Leukocytes
   ✔ d. Platelets

10. Large cells called _____ in red bone marrow shed cell fragments that enter circulation as platelets.
    - a. Monocytes
    - b. Megakaryocytes
    ✔ c. Thrombocytes
    d. Lymphocytes

---

**Blood Multiple Choice Quiz 2**

1. If you were giving an oral presentation on the functions of blood, you would likely include all of the following points except
   - a. It transports oxygen from the lungs to body cells and brings carbon dioxide from cells to the lungs.
   - b. It transports carbon dioxide from the lungs to body cells and brings oxygen from cells to the lungs.
   - c. It protects the body from pathogens.
   d. It helps regulate body temperature.

2. If your friend asked you to explain the composition of blood plasma, which of the following would you most likely say?
   - a. It is composed of red blood cells.
   - b. It is composed of white blood cells and platelets.
   - c. It is composed of water, proteins, nutrients, and hormones.
   ✔ d. It is composed of white and red blood cells.

3. Which of the following accurately explains plasma protein production?
   - a. The liver produces plasma proteins and secretes them into the blood, which leaves the liver through the hepatic veins and returns to the heart to be pumped through the body.
   - b. The heart produces plasma proteins and secretes them into the blood, pumping the blood through the body.
   - c. The brain produces plasma proteins and secretes them into the blood, which leaves the brain through the hepatic veins and returns to the heart to be pumped through the body.
   - d. The kidneys produce plasma proteins and secrete them into the blood, which leaves the kidneys through the hepatic veins and returns to the heart to be pumped through the body.
4. If your instructor asked you to explain the benefit of red blood cells ejecting their nuclei, which of the following would you most likely say?
   a. This allows the cells to change their shape to squeeze through capillaries.
   b. This allows the cells to synthesize proteins.
   c. This allows the cells to conduct aerobic respiration.
   ✔ d. This allows the cells to carry more oxygen to the tissues.

5. Which of the following accurately compares the blood traveling from the lungs and the blood traveling to the lungs?
   a. The blood traveling from the lungs carries carbon dioxide, whereas the blood traveling to the lungs carries nitrogen.
   b. The blood traveling from the lungs is high pressure, whereas the blood traveling to the lungs is low pressure.
   ✔ c. The blood traveling from the lungs is oxygenated, whereas the blood traveling to the lungs is deoxygenated.
   d. The blood traveling from the lungs is deoxygenated, whereas the blood traveling to the lungs is oxygenated.

6. Which of the following accurately compares the functions of red blood cells and white blood cells?
   ✔ a. Red blood cells transport oxygen to body tissues, whereas white blood cells defend the body against disease.
   b. Red blood cells defend the body against disease, whereas white blood cells transport oxygen to body tissues.
   c. Red blood cells make up 1% of circulating blood, whereas white blood cells make up 40–45% of blood volume.
   d. Red blood cells increase in number during inflammation, whereas white blood cells decrease.

7. If your friend asked you to explain the distinguishing characteristics of leukocytes and erythrocytes, your explanation would likely include all of the following except
   a. Leukocytes are far less numerous than erythrocytes.
   ✔ b. Leukocytes originate from hematopoietic stem cells in the bone marrow, whereas erythrocytes originate in the heart.
   c. Leukocytes are larger than erythrocytes.
   d. Leukocytes are complete cells with a nucleus and organelles, whereas erythrocytes do not have these components.

8. Which of the following is a similarity among red blood cells, white blood cells, and platelets?
   ✔ a. They originate in red bone marrow inside the bones.
   b. They are part of the coagulation system.
   c. They can be classified into several types.
   d. They account for equal percentages of circulating blood.

9. Which of the following statements accurately compares two types of white blood cells?
   ✔ a. B cells target viruses, fungi, cancer cells, and transplanted cells, whereas T cells produce antibodies.
   b. Eosinophils consume bacteria through phagocytosis, whereas basophils destroy parasites and combat the effects of histamine.
   c. Monocytes are involved in controlling allergic reactions, whereas neutrophils develop into macrophages and remove debris after an infection.
   d. Neutrophils consume bacteria through phagocytosis, whereas basophils are involved in controlling allergic reactions.

10. If your instructor asked you to list the components of blood, from highest percentage of blood volume to lowest, which of the following would you most likely say?
    ✔ a. Plasma, red blood cells, platelets, white blood cells
    b. White blood cells, red blood cells, plasma, platelets
    c. Platelets, plasma, white blood cells, red blood cells
    d. Red blood cells, white blood cells, platelets, plasma

Blood Multiple Choice Quiz 3

1. Which hormone, produced in the kidneys and liver, stimulates red blood cell production?
   a. Cortisol
   b. Oxytocin
   c. Prolactin
   ✔ d. Erythropoietin

2. When a blood vessel tears, _____ at the site adhere to the vessel's wall to close the tear.
   a. Lymphocytes
   b. Erythrocytes
   c. Leukocytes
   ✔ d. Platelets

3. The hepatic portal vein collects blood from the vessels that drain all of the following organs except
   a. The liver.
   ✔ b. The intestines.
   c. The stomach.
   d. The spleen.
4. If your instructor asked you to list the components of blood, from highest percentage of blood volume to lowest, which of the following would you most likely say?

✔ a. Plasma, red blood cells, platelets, white blood cells
b. White blood cells, red blood cells, plasma, platelets
c. Platelets, plasma, white blood cells, red blood cells
d. Red blood cells, white blood cells, platelets, plasma

5. Which of the following accurately compares the functions of red blood cells and white blood cells?

✔ a. Red blood cells transport oxygen to body tissues, whereas white blood cells defend the body against disease.
b. Red blood cells defend the body against disease, whereas white blood cells transport oxygen to body tissues.
c. Red blood cells make up 1% of circulating blood, whereas white blood cells make up 40–45% of blood volume.
d. Red blood cells increase in number during inflammation, whereas white blood cells decrease.

6. If your instructor asked you to explain the benefit of red blood cells ejecting their nuclei, which of the following would you most likely say?

✔ a. This allows the cells to change their shape to squeeze through capillaries.
b. This allows the cells to synthesize proteins.
c. This allows the cells to conduct aerobic respiration.
d. This allows the cells to carry more oxygen to the tissues.

7. Blood is a(n) ____ tissue.
   a. Epithelial
   b. Nervous
   c. Muscle
   ✔ d. Connective

8. Which of the following is a similarity among red blood cells, white blood cells, and platelets?

✔ a. They originate in red bone marrow inside the bones.
b. They are part of the coagulation system.
c. They can be classified into several types.
d. They account for equal percentages of circulating blood.

9. All of the following are types of white blood cells except

   a. Neutrophils.
   b. Monocytes.
   ✔ c. Erythrocytes.
   d. Lymphocytes.

10. If your friend asked you to explain the composition of blood plasma, which of the following would you most likely say?

   a. It is composed of red blood cells
   b. It is composed of white blood cells and platelets.
   ✔ c. It is composed of water, proteins, nutrients, and hormones.
   d. It is composed of white and red blood cells.

Heart Multiple Choice Quiz 1

1. The heart of a healthy adult beats about _____ times per minute to keep blood constantly moving.
   a. 90–100
   ✔ b. 60–70
c. 40–50
d. 120–130

2. The heart is located within the thoracic cage, between the ____ and ____ rib.
   ✔ a. Second, fifth
   b. First, second
c. First, sixth
d. Second, third

3. The three layers of the heart wall are called the

   a. Pericardium, epicardium, and mesothelium.
   b. Mesothelium, pericardium, and myocardium.
   ✔ c. Myocardium, epicardium, and pericardium.
d. Epicardium, myocardium, and endocardium.

4. The ____ receives oxygen-depleted blood and empties it into the ____, whereas oxygenated blood from the lungs enters the ____ and empties into the ____.

   a. Left atrium, left ventricle, right atrium, right ventricle
   ✔ b. Right atrium, right ventricle, left atrium, left ventricle
c. Right ventricle, right atrium, left ventricle, left atrium
d. Left ventricle, left atrium, right ventricle, right atrium

5. All of the following are heart valves except

   a. The mitral valve.
   b. The aortic valve.
   ✔ c. The tricuspid valve.
d. The atrial valve.

6. Which of the following is the largest papillary muscle?

   a. Right anterior papillary muscle
   b. Right posterior papillary muscle
   ✔ c. Left anterior papillary muscle
d. Left posterior papillary muscle
7. Coronary _____ branch from the ascending aorta to supply the ventricles and atria, and coronary _____ drain blood into the right atrium.
   a. Veins, arteries ✓
   b. Arteries, veins
   c. Bundles, fibers
   d. Fibers, bundles

8. The conduction system of the heart regulates the electrical impulses that
   a. Circulate blood within the heart.
   b. Pull blood into the heart.
   c. Make the heart rest. ✓
   d. Make the heart beat.

9. _____ is the amount of blood a ventricle pumps out during one contraction.
   a. Stroke volume ✓
   b. Cardiac output
   c. Blood pressure
   d. Cardiac reserve

10. Which of the following explains how you can find the cardiac output volume?
    a. Add the number of heart beats in one minute to the stroke volume.
    b. Subtract the number of heart beats in one minute from the stroke volume.
    ✓ c. Multiply the number of heart beats in one minute by the stroke volume.
    d. Divide the number of heart beats in one minute by the stroke volume.

Heart Multiple Choice Quiz 2

1. Which of the following accurately compares the heart of an adult male and the heart of an adult female?
   a. The heart of an adult male beats slightly slower than that of an adult female.
   b. The heart of an adult male beats slightly faster than that of an adult female.
   c. The heart of an adult male is slightly smaller than that of an adult female.
   d. The heart of an adult male is slightly larger than that of an adult female. ✓

2. If a friend asked you to describe the spatial relationship among the heart, lungs, and diaphragm, which of the following would you most likely say?
   a. The heart is located between the lungs and superior to the diaphragm.
   b. The heart is located between the lungs and the diaphragm. ✓
   c. The heart is located inferior to the lungs and inside the diaphragm.
   d. The heart is located superior to the lungs and the diaphragm.

3. If your instructor asked you to explain why the myocardium is thicker in the left ventricle than it is in the right ventricle, which of the following would you most likely say?
   a. The left ventricle has to pump harder to overcome the high resistance required to pump blood into the long pulmonary circuit, whereas the right ventricle does not need to generate as much pressure since the systemic circuit is shorter and provides less resistance.
   b. The right ventricle has to pump harder to overcome the high resistance required to pump blood into the long systemic circuit, whereas the left ventricle does not need to generate as much pressure since the pulmonary circuit is shorter and provides less resistance. ✓
   c. The left ventricle has to pump harder to overcome the high resistance required to pump blood into the long systemic circuit, whereas the right ventricle does not need to generate as much pressure since the pulmonary circuit is shorter and provides less resistance.
   d. The right ventricle has to pump harder to overcome the high resistance required to pump blood into the long pulmonary circuit, whereas the left ventricle does not need to generate as much pressure since the systemic circuit is shorter and provides less resistance.

4. All of the following are differences between the left and right atrium except
   a. The left atrium is smaller than the right atrium. ✓
   b. The left atrium is larger than the right atrium.
   c. The auricula of the left atrium is longer, narrower, and more curved than that of the right atrium.
   d. The left atrium has thicker walls than the right atrium.
5. Which of the following statements accurately compares the four heart valves?
   a. The pulmonary and mitral valves prevent the backflow of blood, whereas the aortic and tricuspid valves facilitate blood flow from the atria to the ventricles.
   b. The mitral and aortic valves facilitate blood flow from the atria into the ventricles, whereas the tricuspid and pulmonary valves prevent the backflow of blood.
   c. The mitral and tricuspid valves prevent the backflow of blood, whereas the aortic and pulmonary valves facilitate blood flow from the atria into the ventricles.
   ✔ d. The mitral and tricuspid valves facilitate blood flow from the atria into the ventricles, whereas the aortic and pulmonary valves prevent the backflow of blood.

6. Which of the following statements accurately compares two of the types of chordae tendineae?
   ✔ a. Primary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas secondary chordae tendineae anchor the leaflets’ ventricular surface to the papillary muscle and relieve tension.
   b. Secondary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas primary chordae tendineae anchor the leaflets’ ventricular surface to the papillary muscle and relieve tension.
   c. Tertiary chordae tendineae anchor the leaflets’ ventricular surface to the papillary muscle and relieve tension, whereas secondary chordae tendineae attach the annulus and base of the posterior leaflet to the papillary muscle.
   d. Tertiary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas primary chordae tendineae attach the annulus and base of the posterior leaflet to the papillary muscle.

7. If you were giving an oral presentation on the conduction system, you would most likely include all of the following steps in your discussion except
   a. The electrical impulse is initiated at the sinoatrial node.
   b. The electrical impulse pauses at the atrioventricular node.
   ✔ c. The electrical impulse initiates at the Purkinje fibers.
   d. The electrical signal branches into the bundle branches of each ventricle.

8. All of the following statements accurately compare systole and diastole except
   a. Ventricular contraction and constriction are known as systole, whereas ventricular relaxation and expansion are known as diastole.
   ✔ b. Ventricular contraction and constriction are known as diastole, whereas ventricular relaxation and expansion are known as systole.
   c. Systole is longer and takes up two-thirds of the cardiac cycle, whereas diastole is shorter and takes up the other third.
   d. During systole, the ventricles fill with blood, whereas during diastole, the ventricles pump blood into the vascular system.

9. If your friend asked you to explain an activity that increases cardiac output to the maximum, which of the following would you most likely say?
   a. Cardiac output increases when a person is sleeping and actively dreaming, rising to a maximum that may be four to seven times greater than the resting output.
   ✔ b. Cardiac output increases when a person is taking a test, rising to a maximum that may be four to seven times greater than the resting output.
   c. Cardiac output increases with physical activity, rising to a maximum that may be four to seven times greater than the resting output.
   d. Cardiac output increases with alcohol consumption, rising to a maximum that may be four to seven times greater than the resting output.
10. Which of the following accurately compares the resting cardiac output for an average adult male and an average adult female?
✔ a. At rest, the cardiac output for an average adult male is about 5.25 liters, whereas that of an average adult female is 4.9 liters.
b. At rest, the cardiac output for an average adult female is about 5.25 liters, whereas that of an average adult male is 4.9 liters.
c. At rest, the cardiac output for an average adult male or female is the same, at about 5.25 liters.
d. At rest, the cardiac output for an average adult female is way higher than that of an average adult male.

Heart Multiple Choice Quiz 3

1. The _____ receives oxygen-depleted blood and empties it into the _____, whereas oxygenated blood from the lungs enters the _____ and empties into the _____.
   a. Left atrium, left ventricle, right atrium, right ventricle
   ✔ b. Right atrium, right ventricle, left atrium, left ventricle
   c. Right ventricle, right atrium, left ventricle, left atrium
   d. Left ventricle, left atrium, right ventricle, right atrium

2. Which of the following statements accurately compares two of the types of chordae tendineae?
✔ a. Primary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas secondary chordae tendineae anchor the leaflets' ventricular surface to the papillary muscle and relieve tension.
b. Secondary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas primary chordae tendineae anchor the leaflets' ventricular surface to the papillary muscle and relieve tension.
c. Tertiary chordae tendineae anchor the leaflets' ventricular surface to the papillary muscle and relieve tension, whereas secondary chordae tendineae attach the annulus and base of the posterior leaflet to the papillary muscle.
d. Tertiary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas primary chordae tendineae attach the annulus and base of the posterior leaflet to the papillary muscle.

3. The heart is located within the thoracic cage, between the _____ and _____.
   a. Second, fifth
   ✔ b. First, second
   c. First, sixth
   d. Second, third

4. If your instructor asked you to explain why the myocardium is thicker in the left ventricle than it is in the right ventricle, which of the following would you most likely say?
   a. The left ventricle has to pump harder to overcome the high resistance required to pump blood into the long pulmonary circuit, whereas the right ventricle does not need to generate as much pressure since the systemic circuit is shorter and provides less resistance.
   b. The right ventricle has to pump harder to overcome the high resistance required to pump blood into the long systemic circuit, whereas the left ventricle does not need to generate as much pressure since the pulmonary circuit is shorter and provides less resistance.
   ✔ c. The left ventricle has to pump harder to overcome the high resistance required to pump blood into the long systemic circuit, whereas the right ventricle does not need to generate as much pressure since the pulmonary circuit is shorter and provides less resistance.
d. The right ventricle has to pump harder to overcome the high resistance required to pump blood into the long pulmonary circuit, whereas the left ventricle does not need to generate as much pressure since the systemic circuit is shorter and provides less resistance.

5. Which of the following explains how you can find the cardiac output volume?
   a. Add the number of heart beats in one minute to the stroke volume.
   b. Subtract the number of heart beats in one minute from the stroke volume.
   c. Multiply the number of heart beats in one minute by the stroke volume.
   ✔ d. Divide the number of heart beats in one minute by the stroke volume.
6. The conduction system of the heart regulates the electrical impulses that
   a. Circulate blood within the heart.
   b. Pull blood into the heart.
   c. Make the heart rest.
   ✔ d. Make the heart beat.

7. If your friend asked you to explain an activity that increases cardiac output to the maximum, which of the following would you most likely say?
   a. Cardiac output increases when a person is sleeping and actively dreaming, rising to a maximum that may be four to seven times greater than the resting output.
   b. Cardiac output increases when a person is taking a test, rising to a maximum that may be four to seven times greater than the resting output.
   ✔ c. Cardiac output increases with physical activity, rising to a maximum that may be four to seven times greater than the resting output.
   d. Cardiac output increases with alcohol consumption, rising to a maximum that may be four to seven times greater than the resting output.

8. All of the following statements accurately compare systole and diastole except
   a. Ventricular contraction and constriction are known as systole, whereas ventricular relaxation and expansion are known as diastole.
   ✔ b. Ventricular contraction and constriction are known as diastole, whereas ventricular relaxation and expansion are known as systole.
   c. Systole is longer and takes up two-thirds of the cardiac cycle, whereas diastole is shorter and takes up the other third.
   d. During systole, the ventricles fill with blood, whereas during diastole, the ventricles pump blood into the vascular system.

9. Which of the following accurately compares the heart of an adult male and the heart of an adult female?
   a. The heart of an adult male beats slightly slower than that of an adult female.
   b. The heart of an adult male beats slightly faster than that of an adult female.
   c. The heart of an adult male is slightly smaller than that of an adult female.
   ✔ d. The heart of an adult male is slightly larger than that of an adult female.

Blood Vessels and Circulation Quiz 1

1. All of the following are types of blood vessels except
   a. Capillaries.
   ✔ b. Atria.
   c. Arterioles.
   d. Venules.

2. All of the following are functions of capillaries except
   a. Capillaries branching from arterioles supply tissue with nutrients.
   b. Waste products move out through the capillary networks into the veins.
   c. Oxygen from inhaled air diffuses into the capillaries and enters the bloodstream.
   ✔ d. Capillaries deliver oxygen to alveoli from exhalation.

3. The average systolic pressure is ____ millimeters of mercury, and the average diastolic pressure is ____ millimeters of mercury.
   ✔ a. 120, 70–80
   b. 70–80, 120
   c. 50, 100
   d. 100, 50

4. Which of the following causes blood pressure?
   a. It is caused by the size of the blood vessels and the amount of force needed to move blood through the vessels.
   ✔ b. It is caused by electrical impulses in the blood vessels and the resulting contractions that move blood through the vessels.
   c. It is caused by the blood flow generated by the heart as it pumps and the resistance that blood encounters as it moves through the enclosed vessel.
   d. It is caused by the relaxation of the heart and the subsequent increase in blood flow through the vessels.

5. Systemic veins carry _____, and systemic arteries carry _____.
   a. Nitrogen-rich blood, carbon dioxide-rich blood
   b. Hydrogen-rich blood, nitrogen-rich blood
   c. Oxygenated blood, deoxygenated blood
   ✔ d. Deoxygenated blood, oxygenated blood

6. The _____ is the largest artery in the body.
   a. Aorta
   b. Pulmonary artery
   c. Common carotid artery
   d. Subclavian artery
7. The _____ provides blood supply to the brain and contains alternate routes in case of blockage.
   a. Venous sinuses  
   b. Azygos system  
   ✔️ c. Circle of Willis  
   d. Hepatic portal system

8. Branches of the thoracic aorta fall into two categories
   ✔️ a. Visceral and parietal.  
   b. Inferior and superior.  
   c. Major and minor.  
   d. Ascending and descending.

9. Which of the following is a network of vessels that drains the thorax wall?
   a. Venous sinuses  
   b. Circle of Willis  
   ✔️ c. Azygos system  
   d. Hepatic portal system

10. Deoxygenated blood from the intestines drains into the
    ✔️ b. Superior and inferior mesenteric veins.  
    c. Superior and inferior venae cavae.  
    d. Azygos system.

Blood Vessels and Circulation Quiz 2

1. Which of the following is a shared characteristic among all blood vessel types?
   a. They all have thin, elastic walls.  
   b. They all withstand similar levels of pressure from the blood that flows through them.  
   c. They are all the same size.  
   ✔️ d. They all have lumens.

2. All of the following are structures arteries and veins have in common except
   a. Tunica externa.  
   ✔️ b. Valves.  
   c. Tunica intima.  
   d. Tunica media.

3. Which of the following accurately distinguishes between systolic pressure and diastolic pressure?
   ✔️ a. Systolic pressure is the point of highest pressure, whereas diastolic pressure is the point of lowest pressure.  
   b. Systolic pressure is the point of lowest pressure, whereas diastolic pressure is the point of highest pressure.  
   c. Systolic pressure represents the arterial pressure of blood during ventricular relaxation, whereas diastolic pressure reflects the arterial pressure resulting from the ejection of blood during ventricular contraction.  
   d. Blood pressure is commonly recorded by measuring systolic pressure, whereas diastolic pressure is only recorded if the systolic pressure is abnormal.

4. If your friend asked you to distinguish between pulmonary and systemic circulation, which of the following would you most likely say?
   a. Systemic circulation manages the gas exchange and oxygenation of blood, and pulmonary circulation simply delivers oxygenated blood throughout the body.  
   ✔️ b. In pulmonary circulation, the arteries transport oxygenated blood and the veins transport deoxygenated blood, whereas in systemic circulation, the opposite is true.  
   c. Pulmonary circulation moves blood between the heart and lungs, and systemic circulation moves blood between the heart and the rest of the body.  
   d. Systemic circulation moves blood between the heart and lungs, and pulmonary circulation moves blood between the heart and the rest of the body.

5. Which of the following describes a difference between the right and left common carotid arteries?
   ✔️ a. The longer left common carotid artery is the second branch of the aortic arch, whereas the right common carotid artery arises from the bifurcation of the brachiocephalic trunk behind the right sternoclavicular joint.  
   b. The longer right common carotid artery is the second branch of the aortic arch, whereas the left common carotid artery arises from the bifurcation of the brachiocephalic trunk behind the right sternoclavicular joint.  
   c. The left common carotid artery branches into the external carotids, whereas the right common carotid artery branches into the internal carotids.  
   d. The right common carotid artery branches into the external carotids, whereas the left common carotid artery branches into the internal carotids.
6. If your instructor asked you to discuss the arteries of the upper limb in order, from superior to inferior, which of the following would you most likely say?
   a. The subclavian artery is the first part of the long trunk that supplies each upper extremity, and at the lower border of the teres major, it becomes the brachial artery, which ends in the axilla, where it becomes the axillary artery.
   b. The brachial artery is the first part of the long trunk that supplies each upper extremity, and at the clavicle, it becomes the subclavian artery, which ends at the lower border of the tendon of the teres major, where it becomes the axillary artery.
   c. The axillary artery is the first part of the long trunk that supplies each upper extremity, and at the clavicle, it becomes the subclavian artery, which ends at the lower border of the tendon of the teres major, where it becomes the brachial artery.
   d. The subclavian artery is the first part of the long trunk that supplies each upper extremity, and at the axilla, it becomes the axillary artery, which ends at the lower border of the tendon of the teres major, where it becomes the brachial artery.

✔ 8. Which of the following accurately identifies the paired and unpaired visceral branches of the abdominal aorta?
   a. The paired visceral branches are the phrenic and lumbar arteries, whereas the unpaired visceral branch is the median sacral artery.
   b. The unpaired visceral branches are the suprarenal and renal arteries and the median sacral artery, whereas the paired visceral branches are the superior and inferior mesenteric arteries and the phrenic and lumbar arteries.
   c. The paired visceral branches are the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery, whereas the unpaired visceral branches are the suprarenal, renal, and gonadal arteries.
   ✔  d. The unpaired visceral branches are the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery, whereas the paired visceral branches are the suprarenal, renal, and gonadal arteries.

9. Which of the following is a shared characteristic of the right and left common iliac veins?
   a. They have branches but no valves.
   b. They are the same length.
   c. They take parallel paths.
   ✔  d. They include valves.

10. If you were giving an oral presentation on the hepatic system, you would most likely make all of the following points except
   a. The hepatic portal vein collects blood from the vessels that drain the stomach, intestines, colon, spleen, pancreas, and gall bladder.
   b. The hepatic portal vein transports oxygen-depleted blood to the liver, which performs detoxification, protein synthesis, and other functions.
   ✔  c. On its way to the liver, blood passes through the right, left, and intermediate hepatic veins, which originate in the inferior vena cava.
   d. In the liver, the branches of the hepatic portal vein subdivide and end in smaller vessels known as sinusoids, which are permeable.

Blood Vessels and Circulation Quiz 3

1. Which of the following causes blood pressure?
   a. It is caused by the size of the blood vessels and the amount of force needed to move blood through the vessels.
  ✔  b. It is caused by electrical impulses in the blood vessels and the resulting contractions that move blood through the vessels.
   c. It is caused by the blood flow generated by the heart as it pumps and the resistance that blood encounters as it moves through the enclosed vessel.
   d. It is caused by the relaxation of the heart and the subsequent increase in blood flow through the vessels.
2. If your instructor asked you to discuss the arteries of the upper limb in order, from superior to inferior, which of the following would you most likely say?
   a. The subclavian artery is the first part of the long trunk that supplies each upper extremity, and at the lower border of the teres major, it becomes the brachial artery, which ends in the axilla, where it becomes the axillary artery.
   b. The brachial artery is the first part of the long trunk that supplies each upper extremity, and at the clavicle, it becomes the subclavian artery, which ends at the lower border of the tendon of the teres major, where it becomes the axillary artery.
   c. The axillary artery is the first part of the long trunk that supplies each upper extremity, and at the clavicle, it becomes the subclavian artery, which ends at the lower border of the tendon of the teres major, where it becomes the brachial artery.
   d. The subclavian artery is the first part of the long trunk that supplies each upper extremity, and at the axilla, it becomes the axillary artery, which ends at the lower border of the tendon of the teres major, where it becomes the brachial artery.

3. Which of the following accurately identifies the paired and unpaired visceral branches of the abdominal aorta?
   a. The paired visceral branches are the phrenic and lumbar arteries, whereas the unpaired visceral branch is the median sacral artery.
   b. The unpaired visceral branches are the suprarenal and renal arteries and the median sacral artery, whereas the paired visceral branches are the superior and inferior mesenteric arteries and the phrenic and lumbar arteries.
   c. The paired visceral branches are the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery, whereas the unpaired visceral branches are the suprarenal, renal, and gonadal arteries.
   d. The unpaired visceral branches are the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery, whereas the paired visceral branches are the suprarenal, renal, and gonadal arteries.

4. The _____ provides blood supply to the brain and contains alternate routes in case of blockage.
   a. Venous sinuses
   b. Azygos system
   c. Circle of Willis
   d. Hepatic portal system

5. The _____ is the largest artery in the body.
   a. Aorta
   b. Pulmonary artery
   c. Common carotid artery
   d. Subclavian artery

6. If your friend asked you to distinguish between pulmonary and systemic circulation, which of the following would you most likely say?
   a. Systemic circulation manages the gas exchange and oxygenation of blood, and pulmonary circulation simply delivers oxygenated blood throughout the body.
   b. In pulmonary circulation, the arteries transport oxygenated blood and the veins transport deoxygenated blood, whereas in systemic circulation, the opposite is true.
   c. Pulmonary circulation moves blood between the heart and lungs, and systemic circulation moves blood between the heart and the rest of the body.
   d. Systemic circulation moves blood between the heart and lungs, and pulmonary circulation moves blood between the heart and the rest of the body.

7. Deoxygenated blood from the intestines drains into the
   b. Superior and inferior mesenteric veins.
   c. Superior and inferior venae cavae.
   d. Azygos system.

8. All of the following are types of blood vessels except
   a. Capillaries.
   b. Atria.
   c. Arterioles.
   d. Venules.
9. If you were giving an oral presentation on the hepatic system, you would most likely make all of the following points except

a. The hepatic portal vein collects blood from the vessels that drain the stomach, intestines, colon, spleen, pancreas, and gall bladder.

b. The hepatic portal vein transports oxygen-depleted blood to the liver, which performs detoxification, protein synthesis, and other functions.

c. On its way to the liver, blood passes through the right, left, and intermediate hepatic veins, which originate in the inferior vena cava.

d. In the liver, the branches of the hepatic portal vein subdivide and end in smaller vessels known as sinusoids, which are permeable.

10. All of the following are structures arteries and veins have in common except

a. Tunica externa.

b. Valves.

c. Tunica intima.

d. Tunica media.

Lymphatic System

Lymphatic System Multiple Choice Quiz 1

1. _____ begins as interstitial fluid between cells and filters into lymphatic _____, flowing into larger vessels and trunks, and eventually returning to venous blood.

a. Lymph, capillaries

b. Lymph, arteries

c. Chyle, capillaries

d. Chyle, arteries

2. Lymph empties into the bloodstream at the junction of which two veins?

a. The external and internal jugular veins

✔ b. The subclavian and internal jugular veins

c. The subclavian and external jugular veins

d. The vertebral and internal jugular veins

3. All of the following are lymph trunks except

a. Jugular.

b. Bronchomediastinal.

c. Lumbar.

✔ d. Thoracic.

4. Which of the following is the largest diameter lymphatic duct of the body?

a. Thoracic duct

✔ b. Right lymphatic duct

c. Jugular duct

d. Subclavian duct

5. _____ are lymphocytes that develop and mature in red bone marrow inside spongy bone, particularly in the vertebrae, sternum, ribs, and pectoral and pelvic girdles.

a. Monocytes

b. Macrophages

✔ c. B cells

d. T cells

6. All of the following are true of the thymus except

a. It produces hormones that regulate the development of B cells.

✔ b. It produces hormones that regulate the development of T cells.

c. It is where T cells mature and become specialized.

d. It functions in body defenses.

7. Inside the _____, abnormal blood cells are consumed by macrophages, and lymphocytes carry out immune responses.

a. Bone marrow

b. Heart

c. Thymus

✔ d. Spleen

8. Capsules of tissue that filter lymph and contain lymphocytes that destroy pathogens are called

a. Lymph trunks.

✔ b. Lymph nodes.

c. Lymphatic capillaries.

d. Lymphatic ducts.

9. All of the following are chambers of lymph nodes except

a. The cortical sinus.

✔ b. The trabecular sinuses.

c. Afferent vessels.

d. The subcapsular sinuses.

10. All of the following are areas of the body where lymph nodes are clustered except

a. In the brain.

✔ b. Where the head meets the torso.

c. Where the limbs meet the torso.

d. Near the intestines.
Lymphatic System Multiple Choice Quiz 2

1. All of the following accurately compare how lymph drains from the left and right sides of the face and scalp except
   a. Lymph from both sides of the face and scalp drains toward the neck, where it enters the submandibular, submental, mastoid, occipital, and parotid nodes.
   b. Lymph from the left and right sides of the face and scalp drains through a series of nodes into the left and right deep cervical lymph nodes, respectively, which are located along the course of the left and right internal jugular veins.
   ✔ c. The left and right jugular lymphatic trunks carry lymph from both sides of the head and neck into the thoracic duct.
   d. The left jugular lymphatic trunks carry lymph from the left side of the head and neck into the thoracic duct, whereas the right jugular lymphatic trunks empty into either the right lymphatic duct or directly into the right venous angle.

2. If your friend asked you to explain the cisterna chyli, which of the following would you likely say?
   a. The cisterna chyli is a lymphatic sac that is always present and is formed by the splitting of the right and left lumbar lymphatic trunks.
   b. The cisterna chyli is a lymphatic sac that, if present, is formed by the convergence of the thoracic and right lymphatic ducts.
   ✔ c. The cisterna chyli is a lymphatic sac that is always present and forms the base of the right lymphatic duct anterior to the first or second lumbar vertebra.
   d. The cisterna chyli is a lymphatic sac that, if present, forms the base of the thoracic duct anterior to the first or second lumbar vertebra.

3. Which of the following accurately compares the thoracic duct and the right lymphatic duct?
   ✔ a. The thoracic duct drains a much larger portion of the body than does the right lymphatic duct.
   b. The thoracic duct drains a much smaller portion of the body than does the right lymphatic duct.
   c. The thoracic duct and the right lymphatic duct drain equal portions of the body.
   d. The thoracic duct receives lymph from only the upper left side of the body, whereas lymph from the rest of the body enters the bloodstream through the right lymphatic duct via all the remaining lymphatic trunks.

4. Which of the following identifies the lymph trunks of the body in the correct order, from superior to inferior?
   a. Intestinal, lumbar, bronchomediastinal, subclavian, jugular
   ✔ b. Subclavian, jugular, bronchomediastinal, intestinal, lumbar
   c. Jugular, subclavian, bronchomediastinal, lumbar, intestinal
   d. Bronchomediastinal, jugular, intestinal, lumbar, subclavian

5. Which of the following accurately compares T cells and B cells?
   ✔ a. After maturing, both T cells and B cells enter the bloodstream, then colonize lymphatic tissues like the spleen and lymph nodes.
   b. T cells develop and mature in the thymus, whereas B cells develop and mature in the spleen.
   c. B cells develop and mature in the thymus, whereas T cells develop and mature in the spleen.
   d. Both T cells and B cells develop and mature in the thymus.

6. If you were giving an oral presentation on the spleen, you would likely make all of the following points except
   ✔ a. The spleen is the smallest lymphoid organ.
   b. The spleen is the largest lymphoid organ.
   c. Inside the spleen, macrophages consume abnormal blood cells.
   d. Inside the spleen, lymphocytes carry out immune responses.

7. Which of the following accurately compares the red pulp and white pulp of the spleen?
   a. Neither the red pulp nor the white pulp contain macrophages.
   b. The red pulp is where adaptive T and B cell responses are mounted, whereas the white pulp primarily functions as a filtration system of the blood.
   ✔ c. The red pulp makes up most of the spleen's tissue, whereas the white pulp consists mainly of lymphocytes.
   d. The white pulp makes up most of the spleen's tissue, whereas the red pulp consists mainly of lymphocytes.

8. If your friend asked you to explain why lymph nodes are clustered in areas where the head and limbs meet the torso and near the intestines, which of the following would you likely say?
   ✔ a. This distribution defends the extremities and intestines from pathogens circulating in air and blood.
   b. This distribution defends the torso from pathogens entering from the extremities or from ingested food.
   c. This distribution prevents all pathogens from entering the body.
   d. This distribution ensures that the body will have the pathogens it needs to complete its immune responses.
9. Which of the following accurately compares the afferent and efferent vessels of lymph nodes?
   a. Pathogens and debris enter the node through the afferent vessels, and lymphocytes enter via the efferent vessels.
   b. Lymph enters the node through the afferent vessels, and pathogens and debris are removed via the efferent vessels.
   c. Lymph enters the node through efferent vessels, and filtered lymph leaves the node through afferent vessels.
   ✔ d. Lymph enters the node through afferent vessels, and filtered lymph leaves the node through efferent vessels.

10. If your instructor asked you to explain the role lymph nodes play in the lymphatic system, which of the following would you likely say?
   a. Lymph nodes remove macrophages and lymphocytes from the lymph before it reenters the bloodstream.
   b. Lymph nodes infuse lymph with pathogens before it reenters the bloodstream.
   ✔ c. Lymph nodes filter lymph before it reenters the bloodstream.
   d. Lymph nodes break lymph down into nutrients, which enter the bloodstream.

Lymphatic System Multiple Choice Quiz 3

1. _____ begins as interstitial fluid between cells and filters into lymphatic _____, flowing into larger vessels and trunks, and eventually returning to venous blood.
   a. Lymph, capillaries
   ✔ b. Lymph, arteries
   c. Chyle, capillaries
   d. Chyle, arteries

2. All of the following accurately compare how lymph drains from the left and right sides of the face and scalp except
   a. Lymph from both sides of the face and scalp drains toward the neck, where it enters the submandibular, submental, mastoid, occipital, and parotid nodes.
   b. Lymph from the left and right sides of the face and scalp drains through a series of nodes into the left and right deep cervical lymph nodes, respectively, which are located along the course of the left and right internal jugular veins.
   ✔ c. The left and right jugular lymphatic trunks carry lymph from both sides of the head and neck into the thoracic duct.
   d. The left jugular lymphatic trunks carry lymph from the left side of the head and neck into the thoracic duct, whereas the right jugular lymphatic trunks empty into either the right lymphatic duct or directly into the right venous angle.

3. All of the following are true of the thymus except
   a. It produces hormones that regulate the development of B cells.
   ✔ b. It produces hormones that regulate the development of T cells.
   c. It is where T cells mature and become specialized.
   d. It functions in body defenses.

4. If your instructor asked you to explain the role lymph nodes play in the lymphatic system, which of the following would you likely say?
   a. Lymph nodes remove macrophages and lymphocytes from the lymph before it reenters the bloodstream.
   b. Lymph nodes infuse lymph with pathogens before it reenters the bloodstream.
   ✔ c. Lymph nodes filter lymph before it reenters the bloodstream.
   d. Lymph nodes break lymph down into nutrients, which enter the bloodstream.

5. All of the following are chambers of lymph nodes except
   a. The cortical sinus.
   ✔ b. The trabecular sinuses.
   c. Afferent vessels.
   d. The subcapsular sinuses.

6. Which of the following accurately compares the thoracic duct and the right lymphatic duct?
   ✔ a. The thoracic duct drains a much larger portion of the body than does the right lymphatic duct.
   b. The thoracic duct drains a much smaller portion of the body than does the right lymphatic duct.
   c. The thoracic duct and the right lymphatic duct drain equal portions of the body.
   d. The thoracic duct receives lymph from only the upper left side of the body, whereas lymph from the rest of the body enters the bloodstream through the right lymphatic duct via all the remaining lymphatic trunks.
7. Inside the _____, abnormal blood cells are consumed by macrophages, and lymphocytes carry out immune responses.
   a. Bone marrow
   b. Heart
   c. Thymus
   ✔ d. Spleen

8. Which of the following accurately compares T cells and B cells?
   a. B cells develop and mature in the thymus, whereas T cells develop and mature in the spleen.
   b. T cells develop and mature in the thymus, whereas B cells develop and mature in the bloodstream.
   c. Both T cells and B cells develop and mature in the thymus.
   ✔ d. After maturing, both T cells and B cells enter the bloodstream, then colonize lymphatic tissues like the spleen and lymph nodes.

9. All of the following are lymph trunks except
   a. Jugular.
   b. Bronchomediastinal.
   c. Lumbar.
   ✔ d. Thoracic.

10. If your friend asked you to explain why lymph nodes are clustered in areas where the head and limbs meet the torso and near the intestines, which of the following would you likely say?
    a. This distribution defends the extremities and intestines from pathogens circulating in air and blood.
    ✔ b. This distribution defends the torso from pathogens entering from the extremities or from ingested food.
    c. This distribution prevents all pathogens from entering the body.
    d. This distribution ensures that the body will have the pathogens it needs to complete its immune responses.

**Immunity Multiple Choice Quiz 1**

1. All of the following are physical barriers against invading pathogens except
   a. Mucous membranes.
   ✔ b. Macrophages.
   c. Skin.
   d. Saliva.

2. As part of the innate immune response, once infection takes place, ______ to accelerate the immune response.
   a. White blood cells leave the tissues and enter the bloodstream
   b. Sweating lowers body temperature
   ✔ c. Fever elevates body temperature
   d. White blood cells enter the tissues and lower body temperature

3. When bacteria or other pathogens are present in the body, certain white blood cells consume the microorganisms to protect the body from infection, in a process called
   a. Phagocytosis.
   b. Inflammation.
   c. Antibody response.
   d. Cell-mediated response.

4. All of the following are true of white blood cells except
   a. They are the component of blood that defends the body against disease.
   b. Their numbers increase during infection or inflammation.
   c. There are many types of white blood cells that, together, account for 1 percent of circulating blood.
   ✔ d. Their numbers decrease during infection or inflammation.

5. White blood cells called _____ develop into macrophages and remove debris after an infection.
   a. Neutrophils
   ✔ b. Monocytes
c. Basophils
d. Lymphocytes

6. All of the following are types of lymphocytes except
   a. B cells.
   b. Natural killer cells.
   ✔ c. Neutrophils.
d. T cells.
7. Which of the following are types of adaptive immune responses?
✔ a. Antibody-mediated responses and cell-mediated responses
   b. Inflammation and phagocytosis
   c. Physical defenses and fever
   d. Antimicrobial responses and phagocytosis

8. During an antibody response, when a B cell with receptors for a specific pathogen recognizes the pathogen in the body, the B cell is activated and divides to produce
   a. Macrophages.
   ✔ b. Plasma cells and memory cells.
   c. T cells.
   d. Natural killer cells.

9. _____ produce _____, substances that recognize the antigens on foreign microbes and act as tags that identify the invaders.
   a. T cells, phagocytes
   ✔ b. T cells, antibodies
   c. B cells, phagocytes
   d. B cells, antibodies

10. Which of the following triggers T cells to seek out and destroy infected cells?
✔ a. They are activated by antigens on foreign microbes.
   b. They are activated by antibodies on foreign microbes.
   c. They produce antibodies that are attracted to antigens on foreign microbes.
   d. They produce antigens that are attracted to antibodies on foreign microbes.

Immunity Multiple Choice Quiz 2

1. If your friend asked you to explain the physical defenses the body has against invading pathogens, you would likely say all of the following except
   a. Saliva contains enzymes that destroy bacteria by digesting their cell walls.
   ☑ b. The skin contains natural killer cells that surround and dissolve bacteria cells.
   c. The mucous layer of the gastrointestinal tract, respiratory tract, reproductive tract, eyes, ears, and nose traps microbes and debris and facilitates their removal.
   d. The skin is covered with a layer of dead, keratinized epithelium that is too dry for bacterial growth, and as these cells are continuously sloughed off from the skin, they carry bacteria and other pathogens with them.

2. If your instructor asked you to explain why inflammation is such an important part of the innate immune response, which of the following would you likely say?
   a. The inflammatory reaction brings white blood cells to the site of injury, allowing them to destroy pathogens and remove them and debris from the site.
   ☑ b. The inflammatory reaction reduces blood flow to the site of injury to limit blood loss.
   c. Inflammation seals up the site of injury, preventing pathogens from entering the body.
   d. Lysosomes in the phagocyte merge with the vacuole, and its enzymes kill and digest the pathogen.

3. If you were explaining the innate immune response to a friend who doesn’t understand it, which of the following would you likely say?
   a. The innate immune response occurs when memory cells in the body recognize and destroy invading pathogens.
   b. The innate immune response occurs when plasma cells release antibodies that eliminate pathogens.
   c. The innate immune response occurs when B and T lymphocytes recognize and neutralize invading microbes in the lymphatic system and bloodstream.
   ✓ d. The innate immune response involves physical defenses, antimicrobial substances, fever, inflammation, and phagocytes that consume pathogens.

4. If you were giving an oral presentation on phagocytosis, you would likely include all of the following points except
   a. The process begins when the phagocyte is attracted to chemicals from the pathogen and, through receptors, binds to it.
   b. The phagocyte ingests the microbe, encasing it in a compartment called a vacuole.
   ✓ c. The process begins when chemicals from the phagocyte attract the pathogen and, through receptors in its vacuole, binds to it.
   d. Lysosomes in the phagocyte merge with the vacuole, and its enzymes kill and digest the pathogen.
5. Which of the following accurately distinguishes the innate immune response from the adaptive immune response?
   a. The innate immune response provides slower and more general defense against invading pathogens than the adaptive immune response.
   b. The innate immune response provides a faster and more targeted defense against invading pathogens than the adaptive immune response.
   c. The innate immune response provides a slower and more targeted defense against invading pathogens than the adaptive immune response.
   d. The innate immune response provides a faster and more general defense against invading pathogens than the adaptive immune response.

6. All of the following accurately compare antibody-mediated immunity and cell-mediated immunity except
   ✔ a. Antibody-mediated immunity involves T cells, whereas cell-mediated immunity involves B cells.
   b. Antibody-mediated immunity involves B cells, whereas cell-mediated immunity involves T cells.
   c. Both antibody-mediated immunity and cell-mediated immunity result in the formation of memory cells that prepare for the next pathogen invasion.
   d. Both antibody-mediated immunity and cell-mediated immunity are ways cells in the body can fight unknown invaders.

7. If your instructor asked you to explain the role of white blood cells in immunity, which of the following would you say?
   a. Any white blood cell can recognize any pathogen that enters the body and destroy it.
   b. White blood cells are found primarily in the skin and mucous membranes, where they act as a physical defense against pathogens.
   c. White blood cells are the component of blood that defends the body against disease.
   d. Basophils and eosinophils play a main role in both innate and adaptive immune responses.

8. Which of the following accurately distinguishes B cells from T cells?
   ✔ a. B cells produce antibodies, whereas T cells do not.
   b. B cells produce antigens, whereas T cells do not.
   c. B cells are activated by antigens, whereas T cells are activated by antibodies.
   d. B cells are the primary cells of innate immune responses, whereas T cells are the primary cells of adaptive immune responses.

9. All of the following are similarities between B cells and T cells except
   ✔ a. Both develop in the red bone marrow.
   b. Both are types of monocytes.
   c. Both are active in the spleen, lymph nodes, and bloodstream.
   d. Both are identical morphologically with a large central nucleus surrounded by a thin layer of cytoplasm.

10. If your instructor asked you to explain why innate immune responses are necessary for adaptive immune responses to succeed, which of the following would you likely say?
    ✔ c. Innate immune responses slow pathogen growth and allow time for the adaptive immune response to strengthen and either control or eliminate the pathogen.
    a. Innate immune responses are effective at completely controlling pathogen growth, which makes it easy for adaptive immune responses to eliminate all pathogens.
    b. Innate immune responses form memory cells, which quickly identify pathogens and release antibodies to enable the adaptive immune response to eliminate the pathogens.
    d. Innate immune responses produce antigen, which enables the adaptive immune response to eliminate pathogens.

Immunity Multiple Choice Quiz 3

1. Which of the following accurately distinguishes the innate immune response from the adaptive immune response?
   a. The innate immune response provides slower and more general defense against invading pathogens than the adaptive immune response.
   b. The innate immune response provides a faster and more targeted defense against invading pathogens than the adaptive immune response.
   c. The innate immune response provides a slower and more targeted defense against invading pathogens than the adaptive immune response.
   d. The innate immune response provides a faster and more general defense against invading pathogens than the adaptive immune response.
2. When bacteria or other pathogens are present in the body, certain white blood cells consume the microorganisms to protect the body from infection, in a process called

✔ a. Phagocytosis.
   b. Inflammation.
   c. Antibody response.
   d. Cell-mediated response.

3. Which of the following are types of adaptive immune responses?

✔ a. Antibody-mediated responses and cell-mediated responses
   b. Inflammation and phagocytosis
   c. Physical defenses and fever
   d. Antimicrobial responses and phagocytosis

4. _____ produce _____, substances that recognize the antigens on foreign microbes and act as tags that identify the invaders.

✔ a. T cells, phagocytes
   b. T cells, antibodies
   c. B cells, phagocytes
   d. B cells, antibodies

5. As part of the innate immune response, once infection takes place, _____ to accelerate the immune response.

a. White blood cells leave the tissues and enter the bloodstream
   b. Sweating lowers body temperature
   ✔ c. Fever elevates body temperature
   d. White blood cells enter the tissues and lower body temperature

6. If your friend asked you to explain the physical defenses the body has against invading pathogens, you would likely say all of the following except

   a. Saliva contains enzymes that destroy bacteria by digesting their cell walls.
   b. The skin contains natural killer cells that surround and dissolve bacteria cells.
   c. The mucous layer of the gastrointestinal tract, respiratory tract, reproductive tract, eyes, ears, and nose traps microbes and debris and facilitates their removal.
   d. The skin is covered with a layer of dead, keratinized epithelium that is too dry for bacterial growth, and as these cells are continuously sloughed off from the skin, they carry bacteria and other pathogens with them.

7. All of the following are similarities between B cells and T cells except

   a. Both develop in the red bone marrow.
   ✔ b. Both are types of monocytes.
   c. Both are active in the spleen, lymph nodes, and bloodstream.
   d. Both are identical morphologically with a large central nucleus surrounded by a thin layer of cytoplasm.

8. All of the following are true of white blood cells except

   a. They are the component of blood that defends the body against disease.
   b. Their numbers increase during infection or inflammation.
   c. There are many types of white blood cells that, together, account for 1 percent of circulating blood.
   ✔ d. Their numbers decrease during infection or inflammation.

9. If your instructor asked you to explain why inflammation is such an important part of the innate immune response, which of the following would you likely say?

   a. The inflammatory reaction brings white blood cells to the site of injury, allowing them to destroy pathogens and remove them and debris from the site.
   b. The inflammatory reaction reduces blood flow to the site of injury to limit blood loss.
   c. Inflammation seals up the site of injury, preventing pathogens from entering the body.
   d. Inflammation reduces swelling in the injured area to reduce damage to the tissues.

10. If your instructor asked you to explain why innate immune responses are necessary for adaptive immune responses to succeed, which of the following would you likely say?

   a. Innate immune responses are effective at completely controlling pathogen growth, which makes it easy for adaptive immune responses to eliminate all pathogens.
   b. Innate immune responses form memory cells, which quickly identify pathogens and release antibodies to enable the adaptive immune response to eliminate the pathogens.
   ✔ c. Innate immune responses slow pathogen growth and allow time for the adaptive immune response to strengthen and either control or eliminate the pathogen.
   d. Innate immune responses produce antigen, which enables the adaptive immune response to eliminate pathogens.
Respiratory System

Upper Respiratory System Multiple Choice Quiz 1

1. Which of the following is an upper respiratory structure?
   a. Trachea  ✔
   b. Diaphragm
   c. Lungs
   d. Pharynx

2. Air entering the nasal cavity flows through passages created by the
   a. Nasopharynx.  ✔
   b. Nasal conchae.
   c. Nares.
   d. Mucous membrane.

3. All of the following are nasal cartilages except
   a. Septal cartilage.  ✔
   b. Major alar cartilage.
   c. Ethmoid cartilage.
   d. Lateral cartilage.

4. Structures in the nasal mucosa do all of the following to air except
   a. Dry it.  ✔
   b. Moisten it.
   c. Filter it.
   d. Warm it.

5. Particles that enter the nostrils and irritate nerve endings in the nasal mucosa trigger impulses that are transmitted via cranial nerve number ______ to the brain's sneezing center in the ______.
   a. III, pons  ✔
   b. II, cerebellum
   c. V, medulla
   d. VI, cerebral cortex

6. Neurons carry olfactory signals through the ______ of the ethmoid to the olfactory ______.
   a. Perpendicular plate, tracts
   b. Perpendicular plate, bulbs
   c. Labyrinths, tracts
   d. Cribriform plate, bulbs

7. All of the following are regions of the pharynx except
   a. Oropharynx.  ✔
   b. Epiglottis.
   c. Nasopharynx.
   d. Laryngopharynx.

8. The vocal cartilages include the paired ______ and ______ cartilages.
   a. Arytenoid, corniculate
   b. Epiglottis, cricoid
   c. Thyroid, arytenoid
   d. Cricoid, thyroid

9. What is the primary function of the vestibular folds?
   a. They help produce sound.  ✔
   b. They regulate the degree of tension of the vocal folds.
   c. They assist in closing the glottis during swallowing.
   d. They open the glottis.

10. The vocal folds and vestibular folds are controlled by the
    a. Pharynx and larynx.  ✔
    b. Posterior and lateral cricoarytenoid muscles.
    c. Chest and abdominal muscles.
    d. Medulla and cerebral cortex.

Upper Respiratory System Multiple Choice Quiz 2

1. If you were giving an oral presentation on the nasal cavity, you would likely make all of the following points except
   a. The mucous membrane lining the nasal cavities is thinnest over the nasal conchae.
   b. The nasal cavities open in front through the nares, and in back, they connect to the nasopharynx.
   c. The roof of the nasal cavity may be divided from the posterior to anterior into sphenoid, ethmoid, and frontonasal portions.
   d. On the lateral wall of each cavity are the superior, middle, and inferior nasal conchae.  ✔

2. If your friend asked you to explain how air flows through the upper respiratory tract, which of the following would you likely say?
   a. Inhaled air passes through the pharynx into the nasal or oral cavity and then through the larynx into the trachea.
   b. Inhaled air passes through the larynx into the nasal or oral cavity and then through the trachea into the pharynx.  ✔
   c. Inhaled air passes from the nasal or oral cavity through the pharynx and larynx and into the trachea.
   d. Inhaled air passes from the nasal or oral cavity through the trachea and pharynx and into the larynx.
3. If you were explaining what happens to air as it passes over the nasal mucosa to a friend who does not understand this process, which of the following would you not include in your explanation?
   a. Coarse hairs filter out large dust particles.
   ✔ b. Blood flowing through capillaries in the mucosa traps particles and filters them out.
   c. Blood flowing through capillaries in the mucosa warms the air.
   d. Seromucous glands secrete antimicrobial substances and mucus that traps and moistens the air.

4. If your instructor asked you to explain what can happen to foreign particles that enter the respiratory system, which of the following would not be included in your explanation?
   a. Foreign particles are trapped by mucus in the nasal cavity and lower respiratory system.
   b. Foreign particles are swallowed through the esophagus and destroyed in the stomach.
   c. Foreign particles are expelled through the pharynx and oral cavity.
   ✔ d. Foreign particles are trapped by mucus in the oral cavity and expelled via coughing.

5. If you were explaining sneezing to a friend who does not understand the process, you would likely include all of the following in your explanation except
   a. Rapid inspiration fills the lungs, the epiglottis and vocal cords close, and the muscles of exhalation tighten in a spasmodic contraction, causing a release of pressure in the lungs.
   ✔ b. Particles that enter the nostrils and irritate nerve endings in the nasal mucosa trigger impulses that are transmitted via the fifth cranial nerve to the brain's sneezing center in the medulla.
   c. The medulla sets off a respiratory response: rapid inspiration fills the lungs, the epiglottis and vocal cords close, and the muscles of exhalation in the chest and abdomen tighten in a spasmodic contraction.
   d. When a sufficiently high level of pressure is attained in the lungs, the vocal cords relax, the epiglottis opens, and an expulsion of air rushes through the nose and mouth.

6. If you were giving an oral presentation on olfaction, which of the following points would you likely include?
   a. The process of olfaction begins when signals from the olfactory area of the cerebral cortex move along the olfactory nerves to the nasal cavity.
   ✔ b. As air enters the nasal cavity, chemicals in the air activate nervous system receptors on the cilia, sending a signal from the nasal cavity through the ethmoid bone, olfactory bulbs, and olfactory nerves to the olfactory area of the cerebral cortex.
   c. The process of olfaction begins when neurons in the nasal cavity receive signals from the olfactory bulbs of the brain.
   d. The process of olfaction begins when neurons in the nasal cavity receive signals from the olfactory area of the cerebral cortex.

7. Which of the following accurately distinguishes the nasopharynx from the oral and laryngeal parts of the pharynx?
   a. The nasopharynx is shared by the respiratory and digestive systems.
   b. The nasopharynx is the only part of the pharynx that is part of the upper respiratory system.
   ✔ c. The cavity of the nasopharynx always remains closed.
   d. The cavity of the nasopharynx always remains open.

8. Which of the following explains why the epiglottis is so important?
   a. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs inhaled particles away from the esophagus and into the trachea.
   ✔ b. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs food and fluid away from the trachea and into the esophagus.
   c. The epiglottis triggers the cough reflex, which pushes air forcefully up though the larynx, forcing particles up and out of the respiratory system.
   d. The epiglottis swings up and down, directing food into the esophagus and fluid into the trachea.
9. Which of the following accurately explains how one of the cartilages of the larynx differs in males and in females?

✔ a. The thyroid cartilage consists of two laminae that form the laryngeal prominence, which is larger in males than in females.

b. The cricoid cartilage consists of two laminae that form the laryngeal prominence, which is larger in females than in males.

✔ c. The arytenoid cartilage consists of two pyramid-shaped projections that are smaller in males than in females.

d. The epiglottis is a leaf-shaped projection that is larger in males than in females.

10. If your friend asked you to identify the factors that affect phonation, you would likely include all of the following factors except

✔ a. The amount of tension in the vocal folds.

b. The size of the folds.

c. The motion of the epiglottis.

d. Structures in the oral and nasal cavities.

Upper Respiratory System Multiple Choice Quiz 3

1. Which of the following is an upper respiratory structure?

✔ a. Trachea

b. Diaphragm

c. Lungs

d. Pharynx

2. Structures in the nasal mucosa do all of the following to air except

✔ a. Dry it.

b. Moisten it.

c. Filter it.

d. Warm it.

3. Particles that enter the nostrils and irritate nerve endings in the nasal mucosa trigger impulses that are transmitted via cranial nerve number _____ to the brain's sneezing center in the _____.

✔ a. III, pons

b. II, cerebellum

c. V, medulla

d. VI, cerebral cortex

4. All of the following are regions of the pharynx except

✔ a. Oropharynx.

b. Epiglottis.

c. Nasopharynx.

d. Laryngopharynx.

5. The vocal folds and vestibular folds are controlled by the

✔ a. Pharynx and larynx.

b. Posterior and lateral cricoarytenoid muscles.

c. Chest and abdominal muscles.

d. Medulla and cerebral cortex.

6. If your friend asked you to explain how air flows through the upper respiratory tract, which of the following would you likely say?

✔ a. Inhaled air passes through the pharynx into the nasal or oral cavity and then through the larynx into the trachea.

b. Inhaled air passes through the larynx into the nasal or oral cavity and then through the trachea into the pharynx.

c. Inhaled air passes from the nasal or oral cavity through the pharynx and larynx and into the trachea.

d. Inhaled air passes from the nasal or oral cavity through the trachea and pharynx and into the larynx.

7. If your instructor asked you to explain what can happen to foreign particles that enter the respiratory system, which of the following would not be included in your explanation?

✔ a. Foreign particles are trapped by mucus in the nasal cavity and lower respiratory system.

b. Foreign particles are swallowed through the esophagus and destroyed in the stomach.

c. Foreign particles are expelled through the pharynx and oral cavity.

d. Foreign particles are trapped by mucus in the oral cavity and expelled via coughing.

8. If you were giving an oral presentation on olfaction, which of the following points would you likely include?

✔ a. The process of olfaction begins when signals from the olfactory area of the cerebral cortex move along the olfactory nerves to the nasal cavity.

b. When air enters the nasal cavity, it stimulates mucus production, and this mucus triggers signals in the olfactory area of the cerebral cortex.

c. As air enters the nasal cavity, chemicals in the air activate nervous system receptors on the cilia, sending a signal from the nasal cavity through the ethmoid bone, olfactory bulbs, and olfactory nerves to the olfactory area of the cerebral cortex.

d. The process of olfaction begins when neurons in the nasal cavity receive signals from the olfactory bulbs of the brain.
9. Which of the following explains why the epiglottis is so important?
   a. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs inhaled particles away from the esophagus and into the trachea. ✔
   b. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs food and fluid away from the trachea and into the esophagus.
   c. The epiglottis triggers the cough reflex, which pushes air forcefully up though the larynx, forcing particles up and out of the respiratory system.
   d. The epiglottis swings up and down, directing food into the esophagus and fluid into the trachea.

10. Which of the following accurately explains how one of the cartilages of the larynx differs in males and in females?
   a. The thyroid cartilage consists of two laminae that form the laryngeal prominence, which is larger in males than in females. ✔
   b. The cricoid cartilage consists of two laminae that form the laryngeal prominence, which is larger in females than in males.
   c. The arytenoid cartilage consists of two pyramid-shaped projections that are smaller in males than in females.
   d. The epiglottis is a leaf-shaped projection that is larger in males than in females.

---

**Lower Respiratory System Multiple Choice Quiz 1**

1. All of the following are lower respiratory structures except
   a. The trachea. ✔
   b. The pharynx.
   c. The lungs.
   d. The bronchi.

2. The trachea is a cartilaginous and membranous tube extending from the lower part of the _____ to the upper border of the _____ vertebra.
   a. Larynx, T05 ✔
   b. Larynx, T12
   c. Pharynx, T05
   d. Pharynx, T12

3. Relaxation of smooth muscle in the bronchioles during exercise causes _____, whereas allergic reactions and histamines cause _____.
   a. Reduced ventilation, bronchodilation ✔
   b. Reduced ventilation, increased ventilation
   c. Bronchoconstriction, bronchodilation
   d. Bronchodilation, bronchoconstriction

4. A delicate, double-layered serous membrane, called the _____, covers the surface of each lung.
   a. Alveoli ✔
   b. Pleura
   c. Pneumothorax
   d. Peritoneum

5. All of the following structures enter the lung at the hilum except
   a. The bronchus. ✔
   b. The pulmonary artery.
   c. The pleura.
   d. The pulmonary veins.

6. Where does gas exchange occur?
   a. In the alveoli
   b. In the bronchioles
   c. In the trachea
   d. In the bronchi

7. What reduces the tension of the alveoli and allows them to maintain their shape?
   a. Alveolar microphages ✔
   b. Type I alveolar cells that line the alveoli
   c. Particulate debris in alveolar fluid
   d. Surfactant in alveolar fluid

8. How many alveoli exist inside each lung?
   a. Hundreds
   b. Hundreds of millions
   c. Millions ✔
   d. Thousands

9. Gases are exchanged across the walls of the pulmonary _____ in the lungs, and the oxygen content of the blood rises.
   a. Capillaries
   b. Venules
   c. Veins
   d. Arteries

10. Deoxygenated blood is pumped from the heart’s right ventricle and enters the lungs via pulmonary _____, and oxygenated blood drains through the pulmonary _____ to the left atrium.
    a. Veins, capillaries
    b. Venules, arterioles
    c. Arteries, veins
    d. Veins, arteries
Lower Respiratory System Multiple Choice Quiz 2

1. All of the following are differences between the right and the left primary bronchi except
a. The left primary bronchus has nine to twelve cartilaginous rings, whereas the right primary bronchus has six to eight.
✔ b. The right primary bronchus is wider, shorter, and oriented more vertically than the left.
c. The right primary bronchus is narrower, longer, and oriented more horizontally than the left.
d. The right primary bronchus divides into three major secondary bronchi, whereas the left primary bronchus divides into two secondary bronchi.

2. Which of the following is a similarity between the trachea and the primary bronchi?
✔ a. Both are composed of rings of hyaline cartilage wrapped in elastic fibrous membrane.
b. Both attach to the lungs.
c. Both attach to the larynx.
d. Both are the same length and width.

3. If you were giving an oral presentation on the tracheal cartilaginous rings, you would likely make all of the following points except
a. The C-shaped cartilaginous rings enable the smooth muscle of the trachea to change shape and accommodate masses of food passing through the esophagus.
✔ b. The tracheal cartilages are stacked horizontally and separated by narrow intervals.
c. The cartilaginous rings provide structural support that helps keep the airway open.
d. The O-shaped cartilaginous rings enable the smooth muscle of the trachea to maintain a consistent, rigid shape for optimum air flow.

4. All of the following are differences between the left and the right lungs except
a. The left lung is slightly smaller than the right lung.
✔ b. The left lung is divided into three lobes, whereas the right lung is divided into two lobes.
c. The right lung is slightly shorter than the left lung.
d. The left lung is divided into two lobes, whereas the right lung is divided into three lobes.

5. Which of the following accurately outlines the path oxygen-rich air takes from the trachea through the lungs?
✔ a. Primary bronchi, secondary bronchi, tertiary bronchi, bronchioles
b. Bronchioles, tertiary bronchi, secondary bronchi, primary bronchi
c. Bronchioles, primary bronchi, secondary bronchi, tertiary bronchi
d. Tertiary bronchi, secondary bronchi, primary bronchi, bronchioles

6. All of the following are structures that exist in both the right and left lungs except
a. Oblique fissure.
✔ b. Superior lobe.
c. Middle lobe.
d. Hilum.

7. Which of the following accurately compares the three major cell types of the alveolar wall?
a. Most gas exchange occurs through alveolar macrophages, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and type II alveolar cells remove particulate debris from the alveolar surfaces.
✔ b. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from alveolar macrophages keeps the alveolar surfaces moist, and type I alveolar cells remove particulate debris from the alveolar surfaces.
c. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.
d. Most gas exchange occurs through type I alveolar cells, alveolar fluid secreted from type II alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.

8. All of the following statements accurately compare branches of the bronchial tree except
a. Each lung has ten tertiary bronchi, but only one primary bronchi.
✔ b. The secondary bronchi are wider than the primary bronchi.
c. The primary bronchi have cartilaginous rings, whereas the secondary bronchi have irregular plates of hyaline cartilage.
d. The tertiary bronchi contain a slight amount of supportive tissue, whereas the bronchioles contain no cartilage at all.
9. If your instructor asked you to explain the importance of the circulatory system in lung function, which of the following would you likely say?
   a. The major function of the lungs is to perform gas exchange, and pulmonary capillaries drop off oxygen and pick up carbon dioxide.
   b. The major function of the lungs is for pulmonary arteries to pick up carbonic acid and oxygen from the alveoli and drop off carbon dioxide.
   ✔️ c. The major function of the lungs is to perform gas exchange, which requires blood from the pulmonary circulation to drop off carbon dioxide and pick up oxygen.
   d. Pulmonary circulation provides an important level of control through constriction of the airway.

10. What distinguishes the pulmonary trunk and its branching arteries from all other arteries in the adult body?
   ✔️ a. They are the only arteries in the body that carry deoxygenated blood.
   b. They are the only arteries in the body that carry oxygenated blood.
   c. They are the only arteries in the body that do not contain erythrocytes.
   d. They are the only arteries in the body that do not branch into capillaries.

Lower Respiratory System Multiple Choice Quiz 3

1. The trachea is a cartilaginous and membranous tube extending from the lower part of the _____ to the upper border of the _____ vertebra.
   a. Larynx, T05
   ✔️ b. Larynx, T12
   c. Pharynx, T05
   d. Pharynx, T12

2. A delicate, double-layered serous membrane, called the _____, covers the surface of each lung.
   a. Alveoli
   ✔️ b. Pleura
   c. Pneumothorax
   d. Peritoneum

3. All of the following structures enter the lung at the hilum except
   a. The bronchus.
   ✔️ b. The pulmonary artery.
   c. The pleura.
   d. The pulmonary veins.

4. How many alveoli exist inside each lung?
   a. Hundreds
   ✔️ b. Hundreds of millions
   c. Millions
   d. Thousands

5. Deoxygenated blood is pumped from the heart's right ventricle and enters the lungs via pulmonary _____, and oxygenated blood drains through the pulmonary _____ to the left atrium.
   a. Veins, capillaries
   b. Venules, arterioles
   ✔️ c. Arteries, veins
   d. Veins, arteries

6. All of the following are differences between the right and the left primary bronchi except
   a. The left primary bronchus has nine to twelve cartilaginous rings, whereas the right primary bronchus has six to eight.
   b. The right primary bronchus is wider, shorter, and oriented more vertically than the left.
   ✔️ c. The right primary bronchus is narrower, longer, and oriented more horizontally than the left.
   d. The right primary bronchus divides into three major secondary bronchi, whereas the left primary bronchus divides into two secondary bronchi.

7. All of the following are differences between the left and the right lungs except
   a. The left lung is slightly smaller than the right lung.
   ✔️ b. The left lung is divided into three lobes, whereas the right lung is divided into two lobes.
   c. The right lung is slightly shorter than the left lung.
   d. The left lung is divided into two lobes, whereas the right lung is divided into three lobes.
8. Which of the following accurately compares the three major cell types of the alveolar wall?
   a. Most gas exchange occurs through alveolar macrophages, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and type II alveolar cells remove particulate debris from the alveolar surfaces.
   ✔
   b. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from alveolar macrophages keeps the alveolar surfaces moist, and type I alveolar cells remove particulate debris from the alveolar surfaces.
   c. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.
   d. Most gas exchange occurs through type I alveolar cells, alveolar fluid secreted from type II alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.

9. If your instructor asked you to explain the importance of the circulatory system in lung function, which of the following would you likely say?
   a. The major function of the lungs is to perform gas exchange, and pulmonary capillaries drop off oxygen and pick up carbon dioxide.
   ✔
   b. The major function of the lungs is for pulmonary arteries to pick up carbonic acid and oxygen from the alveoli and drop off carbon dioxide.
   c. The major function of the lungs is to perform gas exchange, which requires blood from the pulmonary circulation to drop off carbon dioxide and pick up oxygen.
   ✔
   d. Pulmonary circulation provides an important level of control through constriction of the airway.

10. What distinguishes the pulmonary trunk and its branching arteries from all other arteries in the adult body?
    a. They are the only arteries in the body that carry deoxygenated blood.
    ✔
    b. They are the only arteries in the body that carry oxygenated blood.
    c. They are the only arteries in the body that do not contain erythrocytes.
    d. They are the only arteries in the body that do not branch into capillaries.

Respiration Multiple Choice Quiz 1

1. Pulmonary ventilation, or breathing, is induced by
   a. Contractions of the lungs.
   ✔
   b. Changes in the volume of the lungs and the air pressure within them.
   c. Changes in the blood pressure through the pulmonary arteries from the heart.
   d. Nervous signals from the cerebral cortex.

2. What creates the movement that helps inspiration and expiration of air during pulmonary ventilation?
   a. Nervous signals from the cerebral cortex
   b. The pleural fluid that surrounds the lungs
   c. The lungs themselves
   ✔
   d. Contraction and relaxation of muscles in the diaphragm and thorax

3. The _____ is/are the principle muscle(s) of inspiration.
   a. External intercostals
   ✔
   b. Internal intercostals
   c. Diaphragm
   d. Sternocleidomastoid

4. During normal exhalation, the diaphragm and external intercostals
   a. Relax.
   ✔
   b. Contract.
   c. Depress the ribs.
   d. Flex the vertebral column.

5. In external respiration, gases are exchanged between the lungs and the bloodstream.
   a. Muscles.
   ✔
   b. Bloodstream.
   c. Thoracic wall.
   d. Nervous tissues.

6. Why does oxygen diffuse from the alveolus into the pulmonary capillary?
   a. Both the alveolus and the surrounding pulmonary capillaries have a low-oxygen partial pressure.
   ✔
   b. Both the alveolus and the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   c. The alveolus has a high-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a low-oxygen partial pressure.
   d. The alveolus has a high-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a high-oxygen partial pressure.

7. In internal respiration, oxygen carried in _____ moves into cells, and waste carbon dioxide moves out into _____.
   a. Alveoli, arteries
   ✔
   b. Veins, arteries
   c. Arteries, veins
   d. Veins, alveoli
8. The gas-transporting molecules in red blood cells are called
   a. Erythrocytes.
   b. Plasma.
   c. Alveoli.
   ✔ d. Hemoglobin.

9. Nerve impulses transmitted by the _____ and the _____ to respiratory muscles regulate the respiratory rate.
   a. Cerebellum, hypothalamus
   ✔ b. Pons, medulla oblongata
   c. Thalamus, cerebral cortex
   d. Cerebellum, pons

10. When chemoreceptors in the aortic arch and common carotid arteries detect changes in carbon dioxide and oxygen levels in the blood, they send signals up to which two cranial nerves?
    a. Vagus and glossopharyngeal
    ✔ b. Hypoglossal and glossopharyngeal
    c. Vagus and hypoglossal
    d. Accessory and trigeminal

Respiration Multiple Choice Quiz 2

1. If you were explaining Boyle's law to a friend who does not understand it, you would likely make all of the following points except
   a. An increase in the volume of a container lowers the pressure of the air inside.
   b. A decrease in the volume of a container raises the pressure in the reduced space.
   ✔ c. An increase in the volume of a container raises the pressure of the air inside.
   d. Pressure and volume are inversely related.

2. Which of the following accurately identifies the path air takes during the inhalation part of pulmonary ventilation?
   ✔ a. Nasal and oral cavities, pharynx, larynx, trachea, lungs
   b. Lungs, trachea, larynx, pharynx, nasal and oral cavities
   c. Nasal and oral cavities, trachea, larynx, pharynx, lungs
   d. Nasal and oral cavities, larynx, trachea, pharynx, lungs

3. Which of the following accurately compares the muscles that contract during normal and forced inhalation?
   a. During normal inhalation, the serratus anterior and external intercostals contract, whereas during forced inhalation, the diaphragm, sternocleidomastoid, scalenes, and pectoralis minor also contract.
   ✔ b. During normal inhalation, the diaphragm and external intercostals contract, whereas in forced inhalation, the sternocleidomastoid, scalenes, pectoralis minor, and serratus anterior also contract.
   c. During normal inhalation, the diaphragm, sternocleidomastoid, and pectoralis minor contract, whereas in forced inhalation, the external intercostals, scalenes, and serratus anterior also contract.
   d. During normal inhalation, the sternocleidomastoid, scalenes, pectoralis minor, and serratus anterior contract, whereas in forced inhalation, the diaphragm and external intercostals also contract.

4. Which of the following is a similarity between inspiration and expiration during forced breathing?
   a. Both involve accessory muscles of the neck.
   b. Both are passive processes.
   c. Both occur due to muscles relaxing.
   ✔ d. Both occur due to muscle contractions.

5. Which of the following accurately explains external respiration?
   a. Oxygen from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream, while carbon dioxide from oxygen-depleted blood diffuses from the capillaries into the alveoli and is expelled through exhalation.
   ✔ b. Oxygen from the blood diffuses from the capillaries into the alveoli and is expelled through exhalation, while carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   c. Oxygen and carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   d. Oxygen moves from the alveoli to the pulmonary arteries and carbon dioxide leaves the pulmonary veins to enter the alveoli.
6. If your friend asked you to explain Dalton’s law, which of the following would you likely say?
   a. Dalton’s law explains that in a gas mixture, all the gases will exert the same pressure.
   b. Dalton’s law explains that in a gas mixture, the pressure exerted by the gases are dependent on each other.
   ✔️ c. Dalton’s law explains that in a gas mixture, the pressure exerted by each gas is independent.
   d. Dalton’s law explains that the pressure of a gas is inversely proportional to its volume.

7. Which of the following is a similarity between external and internal respiration?
   a. The partial pressure gradients involved in both processes are identical.
   ✔️ b. Both occur as simple diffusion due to a partial pressure gradient.
   c. Both processes involve exchanges between the lungs and bloodstream.
   d. Both processes involve exchanges between the lungs and body tissues.

8. If you were giving an oral presentation on internal respiration, you would likely make all of the following points except
   a. In the lungs, oxygen is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.
   ✔️ b. The lungs themselves
   c. Contraction and relaxation of muscles in the diaphragm and thorax

9. If your friend asked you to explain regulation of the breathing rate, you would likely make all of the following points except
   ✔️ a. Respiration is a voluntary function, regulated by the cerebral cortex.
   b. Respiration is an involuntary function, regulated by the pons and the medulla oblongata.
   c. When the body uses more oxygen or holds too much carbon dioxide, chemoreceptors send signals to the brain.
   d. Involuntary breathing mechanisms can be overridden by the cerebral cortex.

10. If your instructor asked you how breathing patterns can be altered, which of the following would you not want to say?
    a. The body adjusts the rate and depth of normal breathing in response to metabolic needs.
    b. Talking, sneezing, and coughing can alter breathing patterns for short periods of time.
    ✔️ c. Breathing patterns can only be altered by acute diseases and injuries.
    d. The medulla oblongata adjusts the breathing rate as needed, in response to changes in carbon dioxide and oxygen levels in the blood.

Respiration Multiple Choice Quiz 3

1. What creates the movement that helps inspiration and expiration of air during pulmonary ventilation?
   a. Nervous signals from the cerebral cortex
   b. The pleural fluid that surrounds the lungs
   ✔️ c. The lungs themselves
   d. Contraction and relaxation of muscles in the diaphragm and thorax

2. During normal exhalation, the diaphragm and external intercostals
   ✔️ a. Relax.
   ✔️ b. Contract.
   ✔️ c. Depress the ribs.
   ✔️ d. Flex the vertebral column.

3. Why does oxygen diffuse from the alveolus into the pulmonary capillary?
   a. Both the alveolus and the surrounding pulmonary capillaries have a low-oxygen partial pressure.
   b. Both the alveolus and the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   ✔️ c. The alveolus has a low-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   ✔️ d. The alveolus has a high-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a low-oxygen partial pressure.

4. The gas-transporting molecules in red blood cells are called
   ✔️ a. Erythrocytes.
   b. Plasma.
   ✔️ c. Alveoli.
   ✔️ d. Hemoglobin.

5. When chemoreceptors in the aortic arch and common carotid arteries detect changes in carbon dioxide and oxygen levels in the blood, they send signals up to which two cranial nerves?
   ✔️ a. Vagus and glossopharyngeal
   ✔️ b. Hypoglossal and glossopharyngeal
   ✔️ c. Vagus and hypoglossal
   ✔️ d. Accessory and trigeminal
6. If you were explaining Boyle's law to a friend who does not understand it, you would likely make all of the following points except
   a. An increase in the volume of a container lowers the pressure of the air inside.
   b. A decrease in the volume of a container raises the pressure in the reduced space.
   ✔ c. An increase in the volume of a container raises the pressure of the air inside.
   d. Pressure and volume are inversely related.

7. Which of the following is a similarity between inspiration and expiration during forced breathing?
   a. Both involve accessory muscles of the neck.
   b. Both are passive processes.
   ✔ c. Both occur due to muscles relaxing.
   ✔ d. Both occur due to muscle contractions.

8. Which of the following accurately explains external respiration?
   ✔ a. Oxygen from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream, while carbon dioxide from oxygen-depleted blood diffuses from the capillaries into the alveoli and is expelled through exhalation.
   b. Oxygen from the blood diffuses from the capillaries into the alveoli and is expelled through exhalation, while carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   c. Oxygen and carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   d. Oxygen moves from the alveoli to the pulmonary arteries and carbon dioxide leaves the pulmonary veins to enter the alveoli.

9. If you were giving an oral presentation on internal respiration, you would likely make all of the following points except
   a. In the lungs, oxygen is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.
   b. At the narrow capillaries within body tissues, red blood cells release oxygen, which diffuses through the capillary walls into tissues.
   ✔ c. At the narrow capillaries within body tissues, the waste product carbon dioxide diffuses into the bloodstream, where it is carried inside red blood cells and in plasma back to the lungs.
   ✔ d. In the lungs, carbon dioxide is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.

10. If your instructor asked you how breathing patterns can be altered, which of the following would you not want to say?
    a. The body adjusts the rate and depth of normal breathing in response to metabolic needs.
    b. Talking, sneezing, and coughing can alter breathing patterns for short periods of time.
    ✔ c. Breathing patterns can only be altered by acute diseases and injuries.
    d. The medulla oblongata adjusts the breathing rate as needed, in response to changes in carbon dioxide and oxygen levels in the blood.

Digestive System

Oral Cavity Multiple Choice Quiz 1

1. What does saliva do to food in the oral cavity?
   ✔ a. It partially digests it.
   b. It completely digests it.
   c. It mechanically digests it.
   d. It prevents it from going into the trachea.
7. Taste buds are found in the and .
   a. Circumvallate papillae, filiform papillae ✔
   b. Circumvallate papillae, fungiform papillae
   c. Fungiform papillae, filiform papillae
   d. Fungiform papillae, fauces

8. The salivary glands include all of these except
   a. Parotid glands.
   b. Sublingual glands. ✔
   c. Parathyroid glands.
   d. Submandibular glands.

9. The muscles that move the mandible during mastication are the
   a. Occipitofrontalis, the temporalis, and the superficial and deep masseters.
   b. Occipitofrontalis, the temporalis, and the medial and lateral pterygoids.
   c. Superficial and deep masseters, the hyoglossus, and the medial and lateral pterygoids. ✔
   d. Temporalis, the superficial and deep masseters, and the medial and lateral pterygoids.

10. During swallowing, the epiglottis prevents choking by folding down to close off the and .
    a. Larynx, esophagus
    b. Larynx, trachea
    ✔ c. Esophagus, trachea
    d. Larynx, pharynx

---

Oral Cavity Multiple Choice Quiz 2

1. Which of the following best describes how the structures of the oral cavity work?
   a. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.
   b. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the esophagus. ✔
   c. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the esophagus.
   d. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the esophagus.

2. Which of these steps in the process of chewing and swallowing is voluntary?
   a. The tongue manipulates the chewed food into a small mass, then moves it into the oropharynx. ✔
   b. Peristalsis moves the bolus into the stomach.
   c. The epiglottis closes off the trachea.
   d. The bolus passes through the pharynx.

3. All of the following are oral cavity structures that work to break down food except
   a. The gingiva. ✔
   b. The teeth.
   c. The tongue.
   d. The salivary glands.

4. If you were showing a friend a cross-section of a tooth, you could use all of the following to explain it except
   a. Enamel is the hardest tissue in the body.
   b. The root canal is where blood vessels and nerves that supply and innervate the tooth pass into the pulp cavity. ✔
   c. The neck of the tooth sits in the alveolar process of the jaw bone.
   d. The crown of the tooth lies above the gingiva.

5. Which of the following best describes the papillae on the tongue?
   a. Taste buds are raised projections on the tongue’s surface. Circumvallate and fungiform taste buds contain papillae; filiform papillae create friction that helps the tongue move food. ✔
   b. The papillae are raised projections on the tongue’s surface. Circumvallate and fungiform papillae contain taste buds; filiform papillae create friction that helps the tongue move food.
   c. The papillae are raised projections on the tongue’s surface. Circumvallate and fungiform papillae contain taste buds; filiform papillae create friction that helps the tongue move food.
   d. The papillae are raised projections on the tongue’s surface. Filiform papillae contain taste buds; circumvallate and fungiform papillae create friction that helps the tongue move food.

6. Which of the following distinguishes the different types of salivary glands?
   a. The parotid ducts pass saliva from the parotid glands into the oral cavity. The sublingual ducts pass saliva from the submandibular and sublingual glands.
   b. The submandibular ducts pass saliva from the parotid and submandibular glands into the oral cavity. The parotid ducts pass saliva from the sublingual glands.
   ✔ c. The parotid ducts pass saliva from the parotid glands into the oral cavity. The submandibular ducts pass saliva from the submandibular and sublingual glands.
   d. The submandibular ducts pass saliva from the parotid glands into the oral cavity. The parotid ducts pass saliva from the submandibular and sublingual glands.

7. If you wanted to explain the mastication muscles to someone who did not understand them, you would say all of the following except
   a. The masseter elevates the mandible to close the mouth.
   b. The masseter is assisted by the temporalis, which retracts the mandible.
   ✔ c. You can feel the temporalis move by touching your temple while you chew.
   d. There are both superficial and deep temporalis muscles.

8. If you wanted to explain the extrinsic tongue muscles to someone who did not understand them, you would say all of the following except
   a. Extrinsic muscles allow the tongue to change its shape, such as by curling into a loop or flattening.
   ✔ b. Extrinsic muscles anchor the tongue to the skeleton.
   c. Extrinsic muscles move the whole tongue in different directions.
   d. Extrinsic muscles insert into the tongue from outside origins.

9. Which of the following is a good description of one of the types of teeth?
   a. Incisors crush and grind food.
   ✔ b. The canines are also called cuspids, and have a pointed edge, or cusp, that helps to tear food.
   c. Molars bite into and cut food.
   d. The second and third members of each set of three molars are commonly referred to as wisdom teeth.

10. Which of these is the best explanation of the importance of the epiglottis?
    a. During swallowing, the epiglottis prevents choking by folding down to close off the esophagus.
    ✔ b. The glottis is the opening to the larynx, which the epiglottis covers. The experience of food “going down the wrong way” is caused by the epiglottis covering the larynx.
    c. During swallowing, the larynx moves superiorly, and its most superior structure, the epiglottis, folds inferiorly to cover the glottis, blocking access to the trachea and bronchi.
    d. The epiglottis lifts up during swallowing to close off the lower airways and direct the bolus into the esophagus.

Oral Cavity Multiple Choice Quiz 3

1. What does saliva do to food in the oral cavity?
   ✔ a. It partially digests it.
   b. It completely digests it.
   c. It mechanically digests it.
   d. It prevents it from going into the trachea.

2. What is the role of the tongue in chewing and swallowing?
   a. The tongue secretes saliva and moves food into the oropharynx.
   ✔ b. The tongue chemically digests the food and moves it into the oropharynx.
   c. The tongue manipulates the chewed food into a small mass and moves it into the larynx.
   d. The tongue manipulates the chewed food into a small mass and moves it into the oropharynx.

3. All of these types of teeth cut and tear food except
   a. Canines.
   ✔ b. Premolars.
   c. Lateral incisors.
   d. Central incisors.

4. Taste buds are found in the _____ and _____.
   a. Circumvallate papillae, filiform papillae
   ✔ b. Circumvallate papillae, fungiform papillae
   c. Fungiform papillae, filiform papillae
   d. Fungiform papillae, fauces

5. During swallowing, the epiglottis prevents choking by folding down to close off the _____ and _____.
   a. Larynx, esophagus
   ✔ b. Larynx, trachea
   c. Esophagus, trachea
   d. Larynx, pharynx
6. Which of the following best describes how the structures of the oral cavity work?
   a. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.
   b. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.
   c. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the esophagus.
   d. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the trachea by the epiglottis, which folds down to block the esophagus.
   ✔

7. If you were showing a friend a cross-section of a tooth, you could use all of the following to explain it except
   a. Enamel is the hardest tissue in the body.
   b. The root canal is where blood vessels and nerves that supply and innervate the tooth pass into the pulp cavity.
   c. The neck of the tooth sits in the alveolar process of the jaw bone.
   d. The crown of the tooth lies above the gingiva.
   ✔

8. Which of the following distinguishes the different types of salivary glands?
   a. The parotid ducts pass saliva from the parotid glands into the oral cavity. The sublingual ducts pass saliva from the submandibular and sublingual glands.
   b. The submandibular ducts pass saliva from the parotid and submandibular glands into the oral cavity. The parotid ducts pass saliva from the sublingual glands.
   ✔
   c. The parotid ducts pass saliva from the parotid glands into the oral cavity. The submandibular ducts pass saliva from the submandibular and sublingual glands.
   d. The submandibular ducts pass saliva from the parotid glands into the oral cavity. The parotid ducts pass saliva from the submandibular and sublingual glands.

9. If you wanted to explain the mastication muscles to someone who did not understand them, you would say all of the following except
   a. The masseter elevates the mandible to close the mouth.
   b. The masseter is assisted by the temporalis, which retracts the mandible.
   ✔
   c. You can feel the temporalis move by touching your temple while you chew.
   d. There are both superficial and deep temporalis muscles.

10. If you wanted to explain the extrinsic tongue muscles to someone who did not understand them, you would say all of the following except
    ✔
    a. Extrinsic muscles allow the tongue to change its shape, such as by curling into a loop or flattening.
    b. Extrinsic muscles anchor the tongue to the skeleton.
    c. Extrinsic muscles move the whole tongue in different directions.
    d. Extrinsic muscles insert into the tongue from outside origins.

Esophagus and Stomach Multiple Choice Quiz 1

1. All of these are true of peristalsis except
   a. It churns the stomach.
   b. It moves chyme through the small intestine.
   ✔
   c. It moves chyme through the esophagus.
   d. It is controlled by the autonomic nervous system.

2. On its way to the stomach, the esophagus passes through an opening in the diaphragm called the
   a. Epiglottis.
   b. Cardiac sphincter.
   c. Pyloric sphincter.
   ✔
   d. Esophageal hiatus.

3. Two types of arteries supply blood to the stomach. The _____ supply/supplies the greater curvature of the stomach, whereas the _____ supply/supplies the lesser curvature.
   ✔
   a. Gastroepiploic artery, gastric arteries
   b. Gastric arteries, gastroepiploic artery
   c. Gastroepiploic arteries, gastric artery
   d. Gastric artery, gastroepiploic artery
4. Which of the following is true of the oblique muscle layer of the stomach?
   a. It allows the stomach to expand.  ✔
   b. It allows the stomach to churn food.
   c. It is also found in the rest of the alimentary canal.
   d. It is also known as the outer muscle layer of the stomach.
5. Where does food enter the stomach?
   a. In the duodenum
   b. In the fundus
   c. In the pyloric sphincter  ✔
   d. In the cardiac sphincter
6. Where does chyme exit the stomach into the duodenum?
   a. In the esophagus
   b. In the cardiac sphincter  ✔
   c. In the pyloric sphincter
   d. In the gastroesophageal sphincter
7. What are rugae?
   a. Folds in the stomach wall  ✔
   b. Longitudinal muscle layers in the stomach wall
   c. Circular muscle layers in the stomach wall
   d. Sphincters in the stomach
8. Peristaltic waves tend to be small and regular in the
   a. Esophagus.
   b. Intestines.  ✔
   c. Stomach.
   d. Oral cavity.
9. The esophagus extends from the _____ to the cardiac sphincter, where it joins the stomach.
   a. Oral cavity
   b. Oropharynx
   c. Diaphragm
   d. Laryngopharynx  ✔
10. All of the following are regions of the stomach except
    a. The cardia.
    b. The duodenum.  ✔
    c. The fundus.
    d. The body.

**Esophagus and Stomach Multiple Choice Quiz 2**

1. How would you explain peristalsis to someone who needed help understanding how it works?
   a. Peristalsis occurs throughout the alimentary canal to move digested food forward. The waves of contractions are dramatic, and one peristaltic wave can be enough to move a bolus down the esophagus.
   b. Peristalsis occurs in the stomach and intestines to move digested food forward. The waves of contractions are small and regular.  ✔
   c. The alimentary canal is a continuous tube. The walls of the tube include layers of smooth muscle. The rhythmic contraction and relaxation of the smooth muscle is called peristalsis.
   d. The alimentary canal is a continuous tube. The walls of the tube include layers of smooth muscle. These layers of smooth muscle contract randomly to propel digested food forward. The contractions take place at the same rate throughout the alimentary canal.

2. How does peristalsis differ in different parts of the alimentary canal?
   a. In some parts of the alimentary canal, peristalsis involves only contraction.
   b. In some parts of the alimentary canal, peristalsis involves only relaxation.
   c. Peristalsis can involve smaller waves in the esophagus and bigger waves in the intestines.
   d. Peristalsis can involve bigger waves in the esophagus and smaller waves in the intestines.  ✔

3. If you wanted to explain the structure of the stomach wall to someone who did not understand it, you would say all of the following except
   a. The stomach wall includes folds, called rugae, that allow it to expand.
   b. The longitudinal layer of the stomach wall allows the stomach to churn food.
   c. The stomach wall has three muscle layers: longitudinal, circular, and oblique.
   d. The stomach wall has two muscle layers found in the rest of the alimentary canal and one that is unique to the stomach.  ✔

4. Which of the following is a good description of the function of the stomach sphincters?
   a. The anal sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum.
   b. The cardiac sphincter is where chyme enters the stomach from the esophagus. The pyloric sphincter is where a bolus exits the stomach into the duodenum.
   c. The pyloric sphincter is where a bolus enters the stomach from the esophagus. The cardiac sphincter is where chyme exits the stomach into the duodenum.  ✔
   d. The cardiac sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum.

5. How would you describe the lesser curvature of the stomach?
   a. It is the concave, medial surface of the stomach.
   b. It is the convex, lateral surface of the stomach.
   c. It is the concave, lateral surface of the stomach.  ✔
   d. It is the convex, lateral surface of the stomach.
6. If you were explaining the vasculature of the stomach to a friend, you might say all of the following except
   a. Two types of arteries supply blood to the stomach.
   ✔ b. Two arteries supply blood to the stomach.
   c. The gastroepiploic artery supplies the greater curvature of the stomach.
   d. The gastric arteries supply the lesser curvature of the stomach.

7. Which of the following describes the longest portion of the alimentary canal?
   a. The small intestine is where absorption of nutrients occurs.
   ✔ b. The large intestine is where water is absorbed.
   c. The rectum and anal canal are where waste is eliminated.
   d. The stomach is where food is broken down into chyme.

8. Chyme can be described as any of the following except
   a. The substance that exits the stomach into the duodenum via the pyloric sphincter.
   ✔ b. Food broken down into a small mass by structures in the oral cavity.
   c. Food mixed with digestive enzymes.
   d. Food mixed with acids secreted by the stomach.

9. If you were explaining the stomach regions to a friend, you might say all of the following except
   a. The pylorus, or pyloric region, connects the stomach to the duodenum.
   b. The body is the main part of the stomach and it is located below the fundus.
   ✔ c. The fundus is located inferior to the diaphragm.
   d. The cardia, or cardiac region, connects the stomach to the duodenum.

10. Which of the following describes the greater curvature of the stomach?
   a. It is the funnel-shaped stomach structure that connects to the duodenum.
   b. It is the concave, medial surface of the stomach.
   ✔ c. It is supplied by the gastric arteries.
   d. It is supplied by the gastroepiploic artery.

**Esophagus and Stomach Multiple Choice Quiz 3**

1. On its way to the stomach, the esophagus passes through an opening in the diaphragm called the
   a. Epiglottis.
   b. Cardiac sphincter.
   c. Pyloric sphincter.
   ✔ d. Esophageal hiatus.

2. Two types of arteries supply blood to the stomach. The _____ supply/supplies the greater curvature of the stomach, whereas the _____ supply/supplies the lesser curvature.
   a. Gastroepiploic artery, gastric arteries
   ✔ b. Gastric arteries, gastroepiploic artery
   c. Gastroepiploic arteries, gastric artery
   d. Gastric artery, gastroepiploic artery

3. Where does food enter the stomach?
   a. In the duodenum
   b. In the fundus
   ✔ c. In the pyloric sphincter
   d. In the cardiac sphincter

4. What are rugae?
   a. Folds in the stomach wall
   ✔ b. Longitudinal muscle layers in the stomach wall
   c. Circular muscle layers in the stomach wall
   d. Sphincters in the stomach

5. The esophagus extends from the _____ to the cardiac sphincter, where it joins the stomach.
   a. Oral cavity
   b. Oropharynx
   ✔ c. Diaphragm
   d. Laryngopharynx

6. How does peristalsis differ in different parts of the alimentary canal?
   a. In some parts of the alimentary canal, peristalsis involves only contraction.
   b. In some parts of the alimentary canal, peristalsis involves only relaxation.
   ✔ c. Peristalsis can involve smaller waves in the esophagus and bigger waves in the intestines.
   d. Peristalsis can involve bigger waves in the esophagus and smaller waves in the intestines.

7. Which of the following is a good description of the function of the stomach sphincters?
   a. The anal sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum.
   b. The cardiac sphincter is where chyme enters the stomach from the esophagus. The pyloric sphincter is where a bolus exits the stomach into the duodenum.
   c. The pyloric sphincter is where a bolus enters the stomach from the esophagus. The cardiac sphincter is where chyme exits the stomach into the duodenum.
   ✔ d. The cardiac sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum.
8. Which of the following describes the longest portion of the alimentary canal?
✔ a. The small intestine is where absorption of nutrients occurs.
   b. The large intestine is where water is absorbed.
   c. The rectum and anal canal are where waste is eliminated.
   d. The stomach is where food is broken down into chyme.

9. Chyme can be described as any of the following except
   a. The substance that exits the stomach into the duodenum via the pyloric sphincter.
   b. Food broken down into a small mass by structures in the oral cavity.
   c. Food mixed with digestive enzymes.
   d. Food mixed with acids secreted by the stomach.

10. Which of the following describes the greater curvature of the stomach?
    a. It is the funnel-shaped stomach structure that connects to the duodenum.
    b. It is the concave, medial surface of the stomach.
    c. It is supplied by the gastroepiploic artery.
    ✔ d. It is supplied by the gastroepiploic artery.

Accessory Organs of Digestion Multiple Choice Quiz 1

1. All of the following are segments of the liver except
   a. The caudate lobe.
   b. The anteromedial segment.
   ✔ c. The superior lateral segment.
   d. The left posterolateral segment.

2. The falciform ligament separates the _____ and _____ lobes of the liver.
   ✔ a. Right, left
   b. Right, quadrate
   c. Left, quadrate
   d. Left, caudate

3. The hepatic portal system drains nutrient-rich blood from
   a. The liver.
   b. The gall bladder.
   ✔ c. The pancreas.
   d. The alimentary canal.

4. The pancreas produces pancreatic juice that flows into a smaller accessory duct and a larger pancreatic duct. What is the name of the smaller duct?
   a. Duct of Wirsung
   ✔ b. Duct of Santorini
   c. Common bile duct
   d. Cystic duct

5. All of these can be true of bile that has traveled into the hepatic and common hepatic ducts except
   a. It enters the common bile duct.
   b. It is stored in the liver.
   ✔ c. It passes into the duodenum.
   d. It enters the cystic duct.

6. Pancreatic juice produced in the pancreas travels through the _____, which joins the common bile duct to empty into the duodenum at the main duodenal papilla.
   a. Cystic duct
   b. Minor duodenal papilla
   c. Accessory pancreatic duct
   ✔ d. Main pancreatic duct

7. Which of the following supplies the gall bladder with oxygenated blood?
   a. Branches of the cystic artery
   ✔ b. Branches of the proper hepatic artery
   c. Branches of the gastroduodenal arteries
   d. Branches of the splenic arteries

8. Branches of the _____ and splenic arteries supply the pancreas.
   a. Cystic artery
   b. Proper hepatic artery
   c. Gastroduodenal arteries
   ✔ d. Gastroepiploic artery

9. Which structures unite at the hepatopancreatic ampulla, or ampulla of Vater?
   a. The pancreatic duct and the common bile duct
   b. The duct of Wirsung and the duct of Santorini
   c. The common bile duct and the cystic duct
   d. The pancreatic duct and the common hepatic duct

10. When pancreatic juice drains through the accessory pancreatic duct, it empties into the duodenum at the
    a. Main pancreatic duct.
    b. Cystic duct.
    ✔ c. Minor duodenal papilla.
    d. Main duodenal papilla.

Accessory Organs of Digestion Multiple Choice Quiz 2

1. If you were telling a friend how the liver works, you might say all of the following except
   a. The liver’s primary digestive function is to secrete bile, which emulsifies fats.
   ✔ b. The liver’s primary digestive function is to store bile, which emulsifies fats.
   c. The liver has eight surgical segments.
   d. The liver is the largest gland in the body.
2. How would you describe the ligaments of the liver?

✔ a. The liver’s ligaments are made by folds in the peritoneum. The falciform ligament is important because it separates the right and left lobes.

b. The liver’s ligaments are the same kind of connective tissue as other ligaments in the body. The falciform ligament is important because it separates the right and left lobes.

c. The liver’s ligaments are made by folds in the peritoneum. The coronary ligament is important because it separates the right and left lobes.

d. The liver’s ligaments are made by folds in the peritoneum. The falciform ligament is important because it separates the quadrate and caudate lobes.

3. If you were explaining the hepatic portal system to someone who did not understand it, you might say all of the following except

✔ a. It is made up of the hepatic portal vein and the veins that drain into it.

b. It sends nutrient-rich blood from the liver to the alimentary canal.

c. It allows blood to be filtered before traveling to the heart.

d. It drains nutrient-rich blood from the alimentary canal into the liver.

4. Which of the following describes how bile enters the duodenum?

✔ a. Hepatocytes in the gall bladder secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the liver.

b. Hepatocytes in the liver secrete bile, which flows into the common hepatic duct and then into the right and left hepatic ducts. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.

c. Hepatocytes in the pancreas secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.

d. Hepatocytes in the liver secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.

5. Which of the following distinguishes the different pancreatic ducts?

✔ a. One of them transports bile, while the other transports pancreatic juice.

b. They transport different types of pancreatic juice.

c. The larger pancreatic duct is also known as the duct of Wirsung, while the smaller accessory duct is also known as the duct of Santorini.

d. The larger pancreatic duct is also known as the duct of Santorini, while the smaller accessory duct is also known as the duct of Wirsung.

6. Which of the following is an accurate description of the function of the bile ducts?

a. Bile enters the gall bladder from the common bile duct.

b. Bile enters the duodenum from the cystic duct.

c. Bile travels to the liver from the hepatic and common hepatic ducts.

✔ d. Bile travels from the liver via the hepatic and common hepatic ducts.

7. Which of the following is an accurate description of the function of the pancreatic ducts?

✔ a. Pancreatic juice travels to the duodenum via the main pancreatic duct.

b. Pancreatic juice travels from the duodenum via the main pancreatic duct.

c. The accessory pancreatic duct empties into the duodenum at the main duodenal papilla.

d. The main pancreatic duct empties into the duodenum at the minor duodenal papilla.

8. Why is the hepatic portal system important?

✔ a. It ensures that blood is oxygenated before entering the circulation.

b. It allows nutrients and wastes to be processed in the gall bladder instead of entering the circulation directly.

✔ c. It allows nutrients and wastes to be processed in the liver instead of entering the circulation directly.

d. It allows nutrients and wastes to be processed in the pancreas instead of entering the circulation directly.
9. How does the pathway of bile to the duodenum differ from the pathway of pancreatic juice?
   a. Pancreatic juice flows out of the pancreas via only one duct, whereas bile may flow out of the liver via two ducts.
   b. Bile flows out of the liver via only one duct, whereas pancreatic juice only flows out of the pancreas via one duct.
   ✔ c. If bile is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Pancreatic juice flows only to the duodenum.
   d. If pancreatic juice is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Bile flows only to the duodenum.

10. If you were explaining the blood supply of the accessory digestive organs to someone who did not understand it, you might say all of the following except
   ✔ a. Branches of the gastroduodenal arteries supply the liver.
   b. Branches of the proper hepatic artery supply the liver.
   c. Branches of the cystic artery supply the gall bladder.
   d. Branches of the splenic arteries supply the pancreas.

Accessory Organs of Digestion Multiple Choice Quiz 3

1. The falciform ligament separates the _____ and _____ lobes of the liver.
   ✔ a. Right, left
   b. Right, quadrate
   c. Left, quadrate
   d. Left, caudate

2. The hepatic portal system drains nutrient-rich blood from
   a. The liver.
   b. The gall bladder.
   c. The pancreas.
   ✔ d. The alimentary canal.

3. The pancreas produces pancreatic juice that flows into a smaller accessory duct and a larger pancreatic duct. What is the name of the smaller duct?
   a. Duct of Wirsung
   ✔ b. Duct of Santorini
   c. Common bile duct
   d. Cystic duct

4. Which of the following supplies the gall bladder with oxygenated blood?
   ✔ a. Branches of the cystic artery
   b. Branches of the proper hepatic artery
   c. Branches of the gastroduodenal arteries
   d. Branches of the splenic arteries

5. Which structures unite at the hepatopancreatic ampulla, or ampulla of Vater?
   ✔ a. The pancreatic duct and the common bile duct
   b. The duct of Wirsung and the duct of Santorini
   c. The common bile duct and the cystic duct
   d. The pancreatic duct and the common hepatic duct

6. If you were telling a friend how the liver works, you might say all of the following except
   a. The liver’s primary digestive function is to secrete bile, which emulsifies fats.
   ✔ b. The liver’s primary digestive function is to store bile, which emulsifies fats.
   c. The liver has eight surgical segments.
   d. The liver is the largest gland in the body.

7. Which of the following describes how bile enters the duodenum?
   a. Hepatocytes in the gall bladder secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the liver.
   b. Hepatocytes in the liver secrete bile, which flows into the common hepatic duct and then into the right and left hepatic ducts. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.
   c. Hepatocytes in the pancreas secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.
   ✔ d. Hepatocytes in the liver secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.

8. Which of the following distinguishes the different pancreatic ducts?
   ✔ a. One of them transports bile, while the other transports pancreatic juice.
   b. They transport different types of pancreatic juice.
   c. The larger pancreatic duct is also known as the duct of Wirsung, while the smaller accessory duct is also known as the duct of Santorini.
   d. The larger pancreatic duct is also known as the duct of Santorini, while the smaller accessory duct is also known as the duct of Wirsung.
9. Why is the hepatic portal system important?
   a. It ensures that blood is oxygenated before entering the circulation.
   b. It allows nutrients and wastes to be processed in the gall bladder instead of entering the circulation directly.
   ✔ c. It allows nutrients and wastes to be processed in the liver instead of entering the circulation directly.
   d. It allows nutrients and wastes to be processed in the pancreas instead of entering the circulation directly.

10. How does the pathway of bile to the duodenum differ from the pathway of pancreatic juice?
   a. Pancreatic juice flows out of the pancreas via only one duct, whereas bile may flow out of the liver via two ducts.
   b. Bile flows out of the liver via only one duct, whereas pancreatic juice only flows out of the pancreas via one duct.
   ✔ c. If bile is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Pancreatic juice flows only to the duodenum.
   d. If pancreatic juice is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Bile flows only to the duodenum.

Small and Large Intestines Multiple Choice Quiz 1

1. All of these are true of villi except
   a. They line the interior wall of the small intestine.
   ✔ b. They propel chyme through the pyloric sphincter.
   c. They help absorb nutrients from ingested food.
   d. They contain lacteals of the lymphatic system.

2. Where does absorption of nutrients begin?
   a. In the ileum
   b. In the large intestine
   c. In the stomach
   ✔ d. In the duodenum

3. While chyme is in the small intestine, all of the following things happen to the nutrients in the chyme except
   ✔ a. They are moved by haustral contractions.
   b. They are further broken down by secretions from organs.
   c. They are taken up by intestinal lining cells.
   d. They are digested by intracellular enzymes.

4. The taenia coli are bands of _____ running along the outside of the colon.
   a. Lymphatic tissue
   b. Endocrine tissue
   ✔ c. Muscle
   d. Membrane

5. Bacteria in the colon do all of the following except
   a. Break down carbohydrates.
   ✔ b. Absorb water.
   c. Secrete vitamin B.
   d. Secrete vitamin K.

6. Chyme passes from the _____ of the small intestine through the ileocecal valve into the _____.
   a. Duodenum, colon
   ✔ b. Duodenum, cecum
   c. Ileum, colon
   d. Ileum, cecum

7. Which of these structures relaxes voluntarily as part of defecation?
   ✔ a. External anal sphincter
   b. Internal anal sphincter
   c. Rectum
   d. Anal canal

8. From the cecum to the rectum, the regions of the colon are the
   a. Descending colon, sigmoid colon, transverse colon, ascending colon.
   ✔ b. Descending colon, transverse colon, sigmoid colon, ascending colon.
   c. Ascending colon, descending colon, transverse colon, sigmoid colon.
   d. Ascending colon, transverse colon, descending colon, sigmoid colon.

9. What are haustra?
   ✔ a. Contractions in the colon
   b. Bulges in the colon
   c. Bands of muscle along the surface of the colon
   d. Contractions in the small intestine

10. Which structures in the intestine increase the surface area available for absorption?
    a. Villi and pyloric sphincter
    ✔ b. Circular folds and haustra
    c. Villi and haustra
    d. Circular folds and villi
Small and Large Intestines Multiple Choice Quiz 2

1. Which of the following best describes absorption in the digestive process?
   ✔ a. Some absorption occurs in the stomach and in the large intestine, but most absorption occurs in the small intestine.
   b. The stomach, small intestine, and large intestine all absorb nutrients equally.
   c. Some absorption occurs in the small intestine and large intestine, but most absorption occurs in the stomach.
   d. Some absorption occurs in the stomach and in the small intestine, but most absorption occurs in the large intestine.

2. How would you summarize the last few steps of the digestive process?
   a. Water is absorbed in the small intestine. Nutrients are absorbed in the large intestine. Waste is eliminated through the rectum and anal canal.
   b. Water is absorbed in the small intestine. Nutrients are absorbed in the large intestine and rectum. Waste is eliminated through the anal canal.
   c. Nutrients are absorbed in the small intestine. Water is absorbed in the large intestine and rectum. Waste is eliminated through the anal canal.
   ✔ d. Nutrients are absorbed in the small intestine. Water is absorbed in the large intestine. Waste is eliminated through the rectum and anal canal.

3. Which of the following is a similarity between the circular folds and the villi?
   a. They both secrete chyme.
   b. They are both located in the large intestine.
   ✔ c. They both increase the surface area available for absorption.
   d. They are both tiny raised projections.

4. If you were explaining the absorption structures to someone who did not understand them, you might include all of the following except
   a. Circular folds increase the surface area available for absorption.
   ✔ b. All absorption of nutrients takes place in the small intestine.
   c. Villi increase the surface area available for absorption.
   d. Absorption of nutrients begins in the duodenum.

5. Which of these is the best explanation of the structure of the colon?
   a. The cecum is the first part of the colon, followed by the descending colon, the transverse colon, the ascending colon, and then the sigmoid colon.
   b. The cecum is the first part of the colon, followed by the ascending colon, the transverse colon, the descending colon, and then the sigmoid colon.
   ✔ c. The cecum leads into the colon, which begins with the ascending colon, followed by the transverse colon, the descending colon, and then the sigmoid colon.
   d. The cecum leads into the colon, which begins with the descending colon, followed by the transverse colon, the ascending colon, and then the sigmoid colon.

6. Which of the following best describes what happens to nutrients in the chyme as it travels through the small intestine?
   a. The nutrients are further broken down by secretions from organs. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.
   b. The nutrients are further broken down by bacteria. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.
   ✔ c. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by secretions from organs.
   d. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by bacteria.

7. Which of these is the best explanation of the importance of the taenia coli?
   a. The taenia coli mix the contents of the colon.
   b. The taenia coli push chyme through the colon.
   c. The taenia coli produce haustra, or bulges. Haustral contractions maintain the shape of the colon.
   ✔ d. The taenia coli produce haustra, or bulges. Haustral contractions push chyme through the colon.
8. If you wanted to explain the function of bacteria in the large intestine to someone who did not understand it, you might include all of the following except
✓ a. Bacteria absorb water in the colon.
   ✔ b. Bacteria break down carbohydrates and other substances in chyme.
   c. Bacteria release vitamin B, which the colon absorbs.
   d. Bacteria release vitamin K, which the colon absorbs.

9. Which of the following is a similarity between peristalsis and haustral churning?
   a. They both eliminate feces from the rectum.
   ✔ b. They both compact undigested material into stool.
   c. They both move chyme through the colon.
   d. They both break down carbohydrates and other substances in chyme.

10. If you were summarizing the defecation reflex, you might include all of the following except
✓ a. The reflex is triggered by feces stretching the rectum.
   ✔ b. Involuntary relaxation of the external anal sphincter allows defecation to occur.
   c. The internal anal sphincter relaxes.
   d. Voluntary relaxation of the external anal sphincter allows defecation to occur.

Small and Large Intestines Multiple Choice Quiz 3

1. All of these are true of villi except
   a. They line the interior wall of the small intestine.
   ✔ b. They propel chyme through the pyloric sphincter.
   c. They help absorb nutrients from ingested food.
   d. They contain lacteals of the lymphatic system.

2. Where does absorption of nutrients begin?
   a. In the ileum
   b. In the large intestine
   c. In the stomach
   ✔ d. In the duodenum

3. The taenia coli are bands of _____ running along the outside of the colon.
   a. Lymphatic tissue
   b. Endocrine tissue
   ✔ c. Muscle
   d. Membrane

4. Which of these structures relaxes voluntarily as part of defecation?
   ✔ a. External anal sphincter
   b. Internal anal sphincter
   c. Rectum
   d. Anal canal

5. From the cecum to the rectum, the regions of the colon are the
   a. Descending colon, sigmoid colon, transverse colon, ascending colon.
   ✔ b. Descending colon, transverse colon, sigmoid colon, ascending colon.
   c. Ascending colon, descending colon, transverse colon, sigmoid colon.
   d. Ascending colon, transverse colon, descending colon, sigmoid colon.

6. How would you summarize the last few steps of the digestive process?
   a. Water is absorbed in the small intestine.
   Nutrients are absorbed in the large intestine. Waste is eliminated through the rectum and anal canal.
   ✔ b. Water is absorbed in the small intestine. Nutrients are absorbed in the large intestine and rectum. Waste is eliminated through the anal canal.
   c. Nutrients are absorbed in the small intestine. Water is absorbed in the large intestine and rectum. Waste is eliminated through the anal canal.
   d. Nutrients are absorbed in the small intestine. Water is absorbed in the large intestine. Waste is eliminated through the rectum and anal canal.

7. If you were explaining the absorption structures to someone who did not understand them, you might include all of the following except
   a. Circular folds increase the surface area available for absorption.
   ✔ b. All absorption of nutrients takes place in the small intestine.
   c. Villi increase the surface area available for absorption.
   d. Absorption of nutrients begins in the duodenum.
8. Which of the following best describes what happens to nutrients in the chyme as it travels through the small intestine?
✔ a. The nutrients are further broken down by secretions from organs. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.

b. The nutrients are further broken down by bacteria. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.

c. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by secretions from organs.

d. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by bacteria.

9. If you wanted to explain the function of bacteria in the large intestine to someone who did not understand it, you might include all of the following except
✔ a. Bacteria absorb water in the colon.

b. Bacteria break down carbohydrates and other substances in chyme.

c. Bacteria release vitamin B, which the colon absorbs.

b. Bacteria release vitamin K, which the colon absorbs.

10. Which of the following is a similarity between peristalsis and haustral churning?
✔ a. They both eliminate feces from the rectum.

b. They both compact undigested material into stool.

c. They both move chyme through the colon.

d. They both break down carbohydrates and other substances in chyme.

Urinary System

Kidney Anatomy and Physiology Multiple Choice Quiz 1

1. The anterior surface of the left kidney is in contact with portions of all of the following structures except
 a. The stomach.

b. The liver.

c. The small intestine.

d. The spleen.

✔ d. Bowman's capsule

2. Each kidney consists of an outer renal _____ and an inner renal _____.

 a. Pyramid, pelvis

 b. Pyramid, cortex

 c. Medulla, cortex

✔ d. Cortex, medulla

3. Where does urine production take place?

✔ a. In the renal pyramids

b. In the renal cortex

c. In the renal pelvises

d. In the renal columns

4. The _____ supplies the kidney with blood, whereas the _____ drains blood from the kidney.

 a. Suprarenal vein, superior mesenteric artery

 b. Inferior vena cava, inferior adrenal artery

✔ c. Renal artery, renal vein

d. Renal vein, renal artery

5. What is the primary function of nephrons?

 a. They break down urine into nutrients and waste.

✔ b. They process blood plasma to form urine.

c. They supply the kidney with blood.

d. They drain blood from the kidney.
Kidney Anatomy and Physiology Multiple Choice Quiz 2

1. Which of the following accurately compares the position of the right and left kidneys?
   a. The right kidney is much lower than the left kidney to accommodate the bladder.
   b. The right kidney is much higher than the left kidney to accommodate the liver.
   c. The right kidney is slightly higher than the left kidney to accommodate the liver.
   ✔ d. The right kidney is slightly lower than the left kidney to accommodate the liver.

2. If your friend asked you to explain the renal pyramids, your explanation would likely include all of the following points except
   ✔ a. They are conical masses located within the cortex of the kidneys.
   b. They are conical masses located within the medulla of the kidneys.
   c. Most of their mass is nephrons.
   d. They narrow into apices as they converge toward the renal pelvis.

3. If your instructor asked you to indicate the path urine takes through the urinary system before it is excreted, which of the following lists the structures in the correct order?
   ✔ a. Kidneys, urethra, bladder, ureters
   b. Urethra, ureters, kidneys, bladder
   c. Kidneys, ureters, bladder, urethra
   d. Bladder, ureters, kidneys, urethra

4. Which of the following distinguishes the right renal artery from the left?
   ✔ a. The right renal artery is shorter than the left.
   b. The right renal artery is longer than the left.
   c. The right renal artery is higher than the left.
   d. The right renal artery lies behind the pancreas and the splenic vein, whereas the left renal artery lies behind the inferior vena cava, the head of the pancreas, and the duodenum.

5. Which of the following is a shared characteristic of the right and left renal veins?
   a. They are both the same length.
   b. They both open into the inferior vena cava at the same level.
   c. They both pass in front of the aorta just below the origin of the superior mesenteric artery.
   ✔ d. They both split into an anterior and posterior branch upon entering the kidneys.

6. If you were explaining blood flow through the nephron to a friend who does not understand the process, which of the following would you most likely say?
   ✔ a. Blood enters each kidney through the renal artery and then travels through the arterioles to the glomerulus, where it is filtered; the filtered blood travels through the capillaries surrounding the nephrons and then into the veins, exiting the kidney through the renal vein.
   b. Blood enters each kidney through the renal vein and then travels through the venules to the glomerulus, where it is filtered; the filtered blood travels through the capillaries surrounding the nephrons and then into the veins, exiting the kidney through the renal vein.
   c. Blood enters each kidney through the renal artery and then travels through the arterioles surrounding the nephrons and then into the arteries, exiting the kidney through the renal artery.
   d. Blood enters each kidney through the renal vein and then travels through the capillaries to the glomerulus, where it is filtered; the filtered blood travels through the arterioles surrounding the nephrons and then into the veins, exiting the kidney through the renal vein.

7. If your instructor asked you to do an oral report on the functions of the kidney’s structures, which of the following would you most likely say?
   a. The renal pyramid functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.
   ✔ b. The renal pelvis functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.
   c. The renal pelvis contains nephrons that filter blood and create urine.
   d. The renal cortex contains nephrons that filter blood and create urine.

8. Which of the following visually distinguishes the renal cortex from the renal medulla?
   ✔ a. The cortex is lighter colored, whereas the medulla is darker.
   b. The cortex is darker colored, whereas the medulla is lighter.
   c. The cortex is pyramid-shaped, whereas the medulla is funnel-shaped.
   d. The cortex is funnel-shaped, whereas the medulla is bean-shaped.

9. If your instructor asked you to identify the principle functions of nephrons, you would most likely identify all of the following except
   a. Filtration.
   b. Secretion.
   ✔ c. Reabsorption.
   d. Decomposition.
10. If your instructor asked you to outline the path through which plasma is filtered into urine through the nephron, which of the following would you identify as the correct path?
   a. Ureter, capillaries, distal convoluted tubule, proximal convoluted tubule, glomerular capsule, nephron loop, collecting duct ✔
   b. Capillaries, glomerular capsule, proximal convoluted tubule, nephron loop, distal convoluted tubule, collecting duct, ureter
c. Ureter, collecting duct, capillaries, proximal convoluted tubule, distal convoluted tubule, nephron loop, glomerular capsule
d. Glomerular capsule, distal convoluted tubule, nephron loop, proximal convoluted tubule, capillaries, collecting duct, ureter

Kidney Anatomy and Physiology Multiple Choice Quiz 3

1. Which of the following is a shared characteristic of the right and left renal veins?
   a. They are both the same length.
   b. They both open into the inferior vena cava at the same level.
   c. They both pass in front of the aorta just below the origin of the superior mesenteric artery.
   ✔ d. They both split into an anterior and posterior branch upon entering the kidneys.

2. If your friend asked you to explain the renal pyramids, your explanation would likely include all of the following points except ✔
   a. They are conical masses located within the cortex of the kidneys.
   b. They are conical masses located within the medulla of the kidneys.
   c. Most of their mass is nephrons.
   d. They narrow into apices as they converge toward the renal pelvis.

3. Where does urine production take place?
   a. In the renal pyramids ✔
   b. In the renal cortex
   c. In the renal pelvises
   d. In the renal columns

4. If your instructor asked you to do an oral report on the functions of the kidney’s structures, which of the following would you most likely say?
   a. The renal pyramid functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.
   ✔ b. The renal pelvis functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.
   c. The renal pelvis contains nephrons that filter blood and create urine.
   d. The renal cortex contains nephrons that filter blood and create urine.

5. What is the primary function of nephrons?
   a. They break down urine into nutrients and waste.
   ✔ b. They process blood plasma to form urine.
   c. They supply the kidney with blood.
   d. They drain blood from the kidney.

6. The anterior surface of the left kidney is in contact with portions of all of the following structures except
   a. The stomach.
   ✔ b. The liver.
   c. The small intestine.
   d. The spleen.

7. If your instructor asked you to indicate the path urine takes through the urinary system before it is excreted, which of the following lists the structures in the correct order?
   a. Kidneys, urethra, bladder, ureters
   ✔ b. Urethra, ureters, kidneys, bladder
c. Kidneys, ureters, bladder, urethra
d. Bladder, ureters, kidneys, urethra

8. Which of the following distinguishes the right renal artery from the left?
   a. The right renal artery is shorter than the left. ✔
   b. The right renal artery is longer than the left.
   c. The right renal artery is higher than the left.
   d. The right renal artery lies behind the pancreas and the splenic vein, whereas the left renal artery lies behind the inferior vena cava, the head of the pancreas, and the duodenum.

9. All of the following are sections of the renal tubule except
   a. The proximal convoluted tubule.
   ✔ b. The distal convoluted tubule.
   c. The glomerular capsule.
   d. The nephron loop.

10. The _____ supplies the kidney with blood, whereas the _____ drains blood from the kidney.
    a. Suprarenal vein, superior mesenteric artery
    b. Inferior vena cava, inferior adrenal artery
    ✔ c. Renal artery, renal vein
d. Renal vein, renal artery
Urine Production Multiple Choice Quiz 1

1. As nephrons filter blood from the renal artery in the renal pyramids, _____ and _____ enter the filtrate.
   ✔ a. Water, solutes
   b. Blood cells, proteins
   c. Proteins, solutes
   d. Blood cells, water

2. The first step in urine formation is
   a. Micturition.
   b. Secretion.
   c. Reabsorption.
   ✔ d. Glomerular filtration.

3. How many nephrons does each kidney include?
   a. Hundreds
   ✔ b. Over a million
   c. Thousands
   d. Less than one hundred

4. What is the impetus for glomerular filtration?
   a. Blood pressure inside the capillaries in the glomerulus is controlled by the surrounding capsular space.
   b. Blood pressure inside the capillaries in the glomerulus is equal to that of the surrounding capsular space.
   c. Blood pressure inside the capillaries in the glomerulus is higher than that of the surrounding capsular space.
   ✔ d. The filtrate flows into the proximal convoluted tubule.

5. The amount of filtrate produced by kidneys each minute, or glomerular filtration rate, averages _____ ml per minute.
   ✔ a. 125
   b. 200
   c. 50
   d. 75

6. As the filtrate passes out of the glomerular capsule and through the renal tubule, all of the following substances are reabsorbed into the body through cells along the tube wall except
   a. Water.
   ✔ b. Amino acids.
   c. Hydrogen ions.
   d. Glucose.

7. The process of secretion occurs when
   a. The filtrate passes out of the glomerular capsule and through the renal tubule.
   b. Waste ions and hydrogen ions are reabsorbed into the body through cells along the tube wall.
   ✔ c. Urine passes out of the kidney, through the renal pelvis and ureters, and into the bladder.
   d. Waste ions and hydrogen ions still in the blood pass from capillaries into the renal tubule.

8. Urine normally consists of about _____.% water and _____.% waste products from body processes.
   a. 50, 50
   ✔ b. 95, 5
   c. 75, 25
   d. 60, 40

9. What is the average urine volume per day for an adult?
   a. 1.4 liters
   ✔ b. 0.5 liters
   c. 5 liters
   d. 10 liters

10. If the hypothalamus detects decreased water concentration in the blood, it stimulates the pituitary gland to release more
   a. Angiotensinogen.
   b. Natriuretic hormones.
   ✔ c. Antidiuretic hormone.
   d. Aldosterone.

Urine Production Multiple Choice Quiz 2

1. If your friend asked you to explain the process of filtration, your explanation would likely include all of the following except
   a. Blood enters the nephron through the glomerulus.
   b. Blood pressure forces blood against a specialized layer of cells that surrounds the capillaries.
   ✔ c. The glomerulus pushes blood cells and proteins into the glomerular capsule.
   d. The filtrate flows into the proximal convoluted tubule.

2. If your instructor asked you to explain what prevents proteins and blood cells from going through the filtration membrane, which of the following would you most likely say?
   a. Proteins and blood cells are too large to fit through the pores in the filtration membrane.
   b. The filtration membrane contains chemicals that repel proteins and blood cells.
   c. Blood pressure binds the proteins and blood cells to the glomerulus.
   ✔ d. The filtration membrane has a sticky surface that catches proteins and blood cells.
3. Which of the following accurately describes how the processes of reabsorption and secretion are related to each other?
   a. Before the body can secrete wastes, it must reabsorb water and nutrients. ✔
   b. The process of reabsorbing water and nutrients and secreting additional wastes creates urine.
   c. After the body secretes wastes, it must reabsorb water and nutrients.
   d. The body reabsorbs water and nutrients and then secretes any additional water and nutrients it does not need.

4. If your friend asked you to explain how the structures of the kidneys are involved in the processes of filtration, reabsorption, and secretion, which of the following would you most likely say?
   a. Filtration occurs in the renal pyramids, whereas reabsorption and secretion occur in the renal pelvises.
   b. Filtration and secretion occur in the renal pelvises, whereas reabsorption occurs in the renal pyramids.
   c. Filtration, reabsorption, and secretion all occur in the renal pelvises.
   ✔ d. Filtration, reabsorption, and secretion all occur in the renal pyramids.

5. If your instructor asked you to trace the process of urine formation, which of the following identifies the steps in the correct order?
   a. Glomerular filtration occurs first, secretion occurs second, and reabsorption occurs third.
   b. Secretion occurs first, glomerular filtration occurs second, and reabsorption occurs third.
   ✔ c. Glomerular filtration occurs first and then reabsorption and secretion occur simultaneously.
   d. Reabsorption and secretion occur simultaneously first and then glomerular filtration occurs.

6. Which of the following accurately compares the conditions related to urine volume?
   a. Oliguria refers to excessive urine production, anuria refers to the virtual absence of urine production, and polyuria refers to urine output below 500 ml per day.
   b. Oliguria refers to excessive urine production, anuria refers to urine output below 500 ml per day, and polyuria refers to the virtual absence of urine production.
   c. Oliguria refers to the virtual absence of urine production, anuria refers to excessive urine production, and polyuria refers to urine output below 500 ml per day.
   ✔ d. Oliguria refers to urine output below 500 ml per day, anuria refers to the virtual absence of urine production, and polyuria refers to excessive urine production.

7. If your friend was concerned that his or her urine was darker than normal, you might ease your friend’s mind by explaining all of the following except
   a. Excessive sweating can result in darker urine. ✔
   b. Excess hydration can result in darker urine.
   c. Dehydration can result in darker urine.
   d. Certain foods can result in darker urine.

8. If you were giving an oral report on the waste products that are secreted in urine, you would likely make all of the following points except
   ✔ a. 25% of urine is waste products from body processes.
   b. 5% of urine is waste products from body processes.
   c. Nitrogenous wastes secreted in urine include urea, creatine, ammonia, and uric acid.
   d. Ions secreted in urine include sodium, potassium, hydrogen, and calcium.

9. If your instructor asked you to explain the role of antidiuretic hormone in the urinary system, which of the following points would you most likely make?
   a. Antidiuretic hormone stimulates waste secretion in the kidneys.
   b. Antidiuretic hormone inhibits waste secretion in the kidneys. ✔
   c. Antidiuretic hormone increases water reabsorption by the kidneys.
   d. Antidiuretic hormone limits water reabsorption by the kidneys.
10. If your friend just completed a marathon and was dehydrated, how would you explain to this friend what his or her body would do to maintain osmolarity?
   a. The hypothalamus would detect decreased water concentration in the blood and inhibit the pituitary gland to prevent it from releasing antidiuretic hormone.
   ✔ b. The hypothalamus would detect decreased water concentration in the blood and stimulate the pituitary gland to release more antidiuretic hormone.
   c. The kidneys would detect decreased water concentration in the blood and release antidiuretic hormone.
   d. The kidneys would detect decreased water concentration in the blood and inhibit antidiuretic hormone release.

**Urine Production Multiple Choice Quiz 3**

1. Which of the following accurately describes how the processes of reabsorption and secretion are related to each other?
   a. Before the body can secrete wastes, it must reabsorb water and nutrients.
   ✔ b. The process of reabsorbing water and nutrients and secreting additional wastes creates urine.
   c. After the body secretes wastes, it must reabsorb water and nutrients.
   d. The body reabsorbs water and nutrients and then secretes any additional water and nutrients it does not need.

2. What is the impetus for glomerular filtration?
   a. Blood pressure inside the capillaries in the glomerulus is controlled by the surrounding capsular space.
   b. Blood pressure inside the capillaries in the glomerulus is equal to that of the surrounding capsular space.
   c. Blood pressure inside the capillaries in the glomerulus is higher than that of the surrounding capsular space.
   ✔ d. Blood pressure inside the capillaries in the glomerulus is lower than that of the surrounding capsular space.

3. If your friend was concerned that his or her urine was darker than normal, you might ease your friend's mind by explaining all of the following except
   a. Excessive sweating can result in darker urine.
   ✔ b. Excess hydration can result in darker urine.
   c. Dehydration can result in darker urine.
   d. Certain foods can result in darker urine.

4. What is the average urine volume per day for an adult?
   a. 1.4 liters
   ✔ b. 0.5 liters
   c. 5 liters
   d. 10 liters

5. The process of secretion occurs when
   a. The filtrate passes out of the glomerular capsule and through the renal tubule.
   b. Waste ions and hydrogen ions are reabsorbed into the body through cells along the renal tubule wall.
   c. Urine passes out of the kidney, through the renal pelvis and ureters, and into the bladder.
   ✔ d. Waste ions and hydrogen ions still in the blood pass from capillaries into the renal tubule.

6. If your instructor asked you to explain what prevents proteins and blood cells from going through the filtration membrane, which of the following would you most likely say?
   ✔ a. Proteins and blood cells are too large to fit through the pores in the filtration membrane.
   b. The filtration membrane contains chemicals that repel proteins and blood cells.
   c. Blood pressure binds the proteins and blood cells to the glomerulus.
   d. The filtration membrane has a sticky surface that catches proteins and blood cells.

7. Which of the following accurately compares the conditions related to urine volume?
   a. Oliguria refers to excessive urine production, anuria refers to the virtual absence of urine production, and polyuria refers to urine output below 500 ml per day.
   b. Oliguria refers to excessive urine production, anuria refers to urine output below 500 ml per day, and polyuria refers to the virtual absence of urine production.
   ✔ c. Oliguria refers to the virtual absence of urine production, anuria refers to excessive urine production, and polyuria refers to urine output below 500 ml per day.
   d. Oliguria refers to urine output below 500 ml per day, anuria refers to the virtual absence of urine production, and polyuria refers to excessive urine production.
8. If your friend asked you to explain how the structures of the kidneys are involved in the processes of filtration, reabsorption, and secretion, which of the following would you most likely say?
   a. Filtration occurs in the renal pyramids, whereas reabsorption and secretion occur in the renal pelvices.
   b. Filtration and secretion occur in the renal pelvices, whereas reabsorption occurs in the renal pyramids.
   c. Filtration, reabsorption, and secretion all occur in the renal pelvices.
   ✔ d. Filtration, reabsorption, and secretion all occur in the renal pyramids.

9. The first step in urine formation is
   a. Micturition.
   b. Secretion.
   ✔ c. Reabsorption.
   d. Glomerular filtration.

10. If the hypothalamus detects decreased water concentration in the blood, it stimulates the pituitary gland to release more
    a. Angiotensinogen.
    b. Natriuretic hormones.
    ✔ c. Antidiuretic hormone.
    d. Aldosterone.

Urine Storage and Elimination Multiple Choice Quiz 1

1. Ureters are tubes of smooth muscle that move urine from the renal pelvices to the bladder through
   a. Anastalsis.
   b. Reflux.
   ❌ c. Passive drainage.
   ✔ d. Peristalsis.

2. In regards to the bladder, all of the following vary depending on the amount of fluid it contains except
   a. Size.
   ✔ b. Color.
   c. Relation to other structures.
   d. Position.

3. When the bladder reaches an approximate volume of 200–250 ml, the _____ muscle begins to contract and the _____ muscle begins to relax, creating the urge to micturate.
   ✔ a. Detrusor, internal urethral
   b. Internal urethral, detrusor
   c. Internal urethral, external urethral
   d. External urethral, detrusor

4. In males, the bladder is located _____ the rectum and _____ the prostate gland.
   a. Behind, above
   ✔ b. Behind, below
   c. In front of, above
   d. In front of, below

5. At which approximate bladder volume will micturition occur unless the external urethral sphincter is powerful enough to stop it?
   a. 500 ml
   ❌ b. 200 ml
   ❌ c. 100 ml
   ❌ d. 750 ml

6. When the bladder fills with urine, _____ in the bladder wall trigger the micturition reflex.
   a. Muscle contractions
   b. Muscle relaxation
   c. Hormone receptors
   ✔ d. Stretch receptors

7. Nerves in which region of the spinal cord stimulate the micturition reflex?
   a. Cervical
   b. Thoracic
   ✔ c. Sacral
   d. Lumbar

8. Which parts of the brain are involved in nervous control of micturition?
   a. Hypothalamus and medulla oblongata
   b. Thalamus and cerebral cortex
   ❌ c. Cerebellum and cerebral cortex
   ❌ d. Thalamus and pons

9. Which structures maintain urinary continence?
   a. Ureters
   b. Kidneys
   ❌ c. Renal pelvices
   ✔ d. Internal and external urethral sphincters
10. All of the following are regions of the male urethra except

- a. Vestibular urethra.
- b. Spongy urethra.
- c. Prostatic urethra.
- d. Membranous urethra.

**Urine Storage and Elimination Multiple Choice Quiz 2**

1. If your instructor asked you to explain the ureters to your peers, you would likely make all of the following points except

- a. The ureters convey urine from the bladder out of the body.
- b. The ureters are thick-walled, narrow tubes.
- c. The ureteral orifices, along with the internal urethral orifice, make up the trigone of the bladder.
- d. The ureters enter the bladder through slitlike openings in the posterolateral bladder floor.

2. Which of the following describes how the bladder differs in shape when it is empty versus when it is moderately full?

- a. The empty bladder assumes an ovoid form, whereas the moderately full bladder is roughly pyramidal in shape.
- b. The empty bladder assumes a flattened form, whereas the moderately full bladder is perfectly circular in shape.
- c. The empty bladder is roughly pyramidal in shape, whereas the moderately full bladder assumes a perfectly round form.
- d. The empty bladder is roughly ovoid in shape, whereas the moderately full bladder assumes a perfect ovoid form.

3. If you were giving an oral report on bladder anatomy, you would likely want to include all of the following points except

- a. The bladder is surrounded by a smooth muscle called the detrusor.
- b. The mucosa of the bladder is made of transitional epithelium thrown into folds called rugae.
- c. The bladder contains conical masses of nephrons and columns of cortical tissue.
- d. The trigone is a triangular region on the floor of the bladder.

4. If you were explaining the micturition reflex to a friend who does not understand the process, which of the following would you say to explain the steps in the correct order?

- a. When the bladder fills with urine, contractions of the detrusor muscle cause stretch receptors in the bladder wall to transmit nerve impulses to the sacral spinal cord, triggering relaxation of the internal and external urethral sphincters.
- ✔ b. When the bladder fills with urine, stretch receptors in the bladder wall transmit nerve impulses to the sacral spinal cord, triggering contraction of the detrusor muscle, relaxation of the internal urethral sphincter, and voluntary relaxation of the external urethral sphincter.
- c. When the bladder fills with urine, the internal and external urethral sphincters relax, causing stretch receptors in the bladder wall to transmit nerve impulses to the sacral spinal cord that trigger detrusor muscle contractions.
- d. When the bladder fills with urine, the internal urethral sphincter relaxes, causing stretch receptors in the bladder wall to transmit nerve impulses to the sacral spinal cord that trigger detrusor muscle contractions and ultimately voluntary relaxation of the external urethral sphincter.

5. If your instructor asked you to explain voluntary control of micturition, which of the following would you likely say?

- a. Sacral spinal nerves stimulate the micturition reflex, which conveys a signal to the thalamus and cerebral cortex, allowing for conscious control of micturition.
- c. The detrusor muscle controls how much urine enters and exits the bladder, via its voluntary contractions.
- ✔ d. The internal and external urethral sphincters control how much urine enters and exits the bladder, via voluntary relaxation.

6. If your friend asked you to explain the difference between the internal and external urethral sphincters, which of the following would you likely say?

- a. The internal urethral sphincter pushes urine from the urethra into the bladder, whereas the external urethral sphincter determines how much urine is expelled at a time.
- b. The internal urethral sphincter determines how much urine is expelled at a time, whereas the external urethral sphincter controls the intensity of urination.
- ✔ c. The internal urethral sphincter is voluntary, whereas the external urethral sphincter is involuntary.
- d. The internal urethral sphincter is involuntary, whereas the external urethral sphincter is voluntary.
7. Which of the following does not accurately describe a difference between the female and male urethra?
   ✔ a. The female urethra is significantly longer than the male urethra.
   b. The female urethra is significantly shorter than the male urethra.
   c. The male urethra transports urine and semen, whereas the female urethra is a channel solely for urine.
   d. The male urethra is divided into regions, whereas the female urethra is not.

8. Which of the following is a shared characteristic of the ureters, bladder, and urethra?
   ✔ a. They all have smooth muscle, which contracts to move urine through the urinary system.
   b. They are all tube-shaped to accommodate the flow of urine through the urinary system.
   c. They all change shape and size according to the amount of fluid they contain.
   d. They all have sphincters that control how quickly and how much urine moves through the urinary system.

9. Which of the following characteristics distinguishes the urethra from the other urologic organs?
   ✔ a. It is the only urologic organ that is lined with transitional epithelium.
   b. It is the only urologic organ that is structurally suited for large volume fluctuations.
   c. It is the only urologic organ that shows any significant anatomic difference between males and females.
   d. It is the only urologic organ that is identical in males and females.

10. Which of the following accurately compares the regions of the male urethra?
   a. The spongy urethra is the widest and most readily dilated region, the membranous urethra is the narrowest and least dilatable region, and the prostatic urethra is the longest region.
   ✔ b. The prostatic urethra is the widest and most readily dilated region, the spongy urethra is the narrowest and least dilatable region, and the membranous urethra is the longest region.
   c. The membranous urethra is the widest and most readily dilated region, the spongy urethra is the narrowest and least dilatable region, and the prostatic urethra is the longest region.
   d. The prostatic urethra is the widest and most readily dilated region, the membranous urethra is the narrowest and least dilatable region, and the spongy urethra is the longest region.

Urine Storage and Elimination Multiple Choice Quiz 3

1. Which structures maintain urinary continence?
   a. Ureters
   ✔ b. Kidneys
   c. Renal pelvises
   d. Internal and external urethral sphincters

2. If your friend asked you to explain the difference between the internal and external urethral sphincters, which of the following would you likely say?
   a. The internal urethral sphincter pushes urine from the urethra into the bladder, whereas the external urethral sphincter determines how much urine is expelled at a time.
   b. The internal urethral sphincter determines how much urine is expelled at a time, whereas the external urethral sphincter controls the intensity of urination.
   ✔ c. The internal urethral sphincter is voluntary, whereas the external urethral sphincter is involuntary.
   d. The internal urethral sphincter is involuntary, whereas the external urethral sphincter is voluntary.

3. Which of the following is a shared characteristic of the ureters, bladder, and urethra?
   ✔ a. They all have smooth muscle, which contracts to move urine through the urinary system.
   b. They are all tube-shaped to accommodate the flow of urine through the urinary system.
   c. They all change shape and size according to the amount of fluid they contain.
   d. They all have sphincters that control how quickly and how much urine moves through the urinary system.

4. Nerves in which region of the spinal cord stimulate the micturition reflex?
   a. Cervical
   b. Thoracic
   ✔ c. Sacral
   d. Lumbar
5. Which of the following does not accurately describe a difference between the female and male urethra?
✓ a. The female urethra is significantly longer than the male urethra.
b. The female urethra is significantly shorter than the male urethra.
c. The male urethra transports urine and semen, whereas the female urethra is a channel solely for urine.
d. The male urethra is divided into regions, whereas the female urethra is not.

6. Ureters are tubes of smooth muscle that move urine from the renal pelvises to the bladder through
   a. Anastalsis.
b. Reflux.
c. Passive drainage.
✓ d. Peristalsis.

7. Which of the following describes how the bladder differs in shape when it is empty versus when it is moderately full?
   a. The empty bladder assumes an ovoid form, whereas the moderately full bladder is roughly pyramidal in shape.
b. The empty bladder assumes a flattened form, whereas the moderately full bladder is perfectly circular in shape.
✓ c. The empty bladder is roughly pyramidal in shape, whereas the moderately full bladder assumes an ovoid form.
d. The empty bladder is roughly ovoid in shape, whereas the moderately full bladder assumes a perfectly round form.

8. When the bladder reaches an approximate volume of 200–250 ml, the _____ muscle begins to contract and the _____ muscle begins to relax, creating the urge to micturate.
✓ a. Detrusor, internal urethral
   b. Internal urethral, detrusor
   c. Internal urethral, external urethral
   d. External urethral, detrusor

9. All of the following are regions of the male urethra except
✓ a. Vestibular urethra.
b. Spongy urethra.
c. Prostatic urethra.
d. Membranous urethra.

10. Which of the following characteristics distinguishes the urethra from the other urologic organs?
✓ a. It is the only urologic organ that is lined with transitional epithelium.
b. It is the only urologic organ that is structurally suited for large volume fluctuations.
c. It is the only urologic organ that shows any significant anatomic difference between males and females.
d. It is the only urologic organ that is identical in males and females.

Reproductive System

Male Reproductive System Multiple Choice Quiz 1

1. The vessels and nerves that supply the testes pass through tubes of _____ called the spermatic cords.
   a. Muscle
   b. Lymphatic tissue
✓ c. Fascia
d. Membrane

2. Which of the following are the coiled tubes where sperm are produced?
   a. Fallopian tubes
   b. Spermatic cords
   c. Ejaculatory ducts
✓ d. Seminiferous tubules

3. How many chromosomes do immature sperm cells have once spermatogenesis concludes?
✓ a. 23
   b. 46
   c. 18
   d. 36

4. Where are sperm stored while they are maturing?
✓ a. In the testes
   b. In the epididymis
   c. In the seminiferous tubules
   d. In the tunica albuginea

5. The vas deferens is part of the
   a. Urethra.
   b. Seminiferous tubules.
   c. Spermatic cords.
✓ d. Duct system that delivers sperm.

6. All of the following are regions of the urethra except
   a. Prostatic.
✓ b. Ejaculatory.
c. Membranous.
d. Spongy.
7. Which of the following accurately lists the accessory glands of the male reproductive system?
   a. The epididymis, prostate, and bulbourethral glands
   ✔ b. The seminal vesicles, prostate, and bulbourethral glands
c. The seminal vesicles, epididymis, and bulbourethral glands
d. The seminal vesicles, testes, and prostate

8. The spongy urethra passes through the _____ to the tip of the glans penis.
   a. Tunica vaginalis
   b. Tunica albuginea
   ✔ c. Corpus spongiosum
d. Corpora cavernosa

9. Which of the following causes erectile tissue to swell during sexual arousal, producing an erection?
   ✔ a. Arteries in the penis dilate and veins constrict.
b. Arteries in the penis constrict and veins dilate.
c. Peristalsis pushes sperm up through the vas deferens.
d. Peristalsis pushes sperm up through the urethra.

10. Which gland or lobe of a gland stimulates the testes to produce androgens?
    a. Hypothalamus
    b. Prostate
    ✔ c. Anterior pituitary
d. Posterior pituitary

**Male Reproductive System Multiple Choice Quiz 2**

1. Which of the following best describes the relationship between the testes and the spermatic cords?
   a. The spermatic cords transport androgens produced in the testes.
   b. The spermatic cords transport sperm produced in the testes.
   c. The spermatic cords suspend the testes.
   ✔ d. Vessels and nerves that supply the testes pass through the spermatic cords.

2. If you were explaining the function of spermatogonia to a classmate, which of these would you say?
   a. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce secondary spermatocytes.
   ✔ b. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce primary spermatocytes.
c. Spermatogonia are stem cells that develop into immature sperm in the seminiferous tubules. They divide by meiosis to produce primary spermatocytes.
d. Spermatogonia are stem cells that develop into immature sperm in the seminiferous tubules. They divide by meiosis to produce secondary spermatocytes.

3. Which of the following best explains the function of the epididymis?
   a. The epididymis is a gland where sperm produced in the testes are stored while they mature.
   b. The epididymis is a duct where sperm produced in the testes are stored while they mature.
   c. The epididymis is a duct where sperm produced in the testes are stored once they are fully functional.
   ✔ d. The epididymis is a gland where sperm produced in the testes are stored once they are fully functional.

4. How would you describe the duct system that delivers sperm?
   a. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
   b. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.
   ✔ c. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
d. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.
5. Which of the following best explains the function of the male urethra?
   a. The male urethra, which consists of prostatic, ejaculatory, and spongy regions, transports semen from the ejaculatory ducts and urine from the bladder.
   ✔ b. The male urethra, which consists of prostatic, membranous, and spongy regions, transports semen from the ejaculatory ducts and urine from the bladder.
   c. The male urethra, which consists of prostatic, ejaculatory, and spongy regions, transports semen from the prostate and urine from the bladder.
   d. The male urethra, which consists of prostatic, membranous, and spongy regions, transports semen from the prostate and urine from the bladder.

6. Which of the following are glands that contribute components to semen?
   ✔ a. The seminal vesicles, prostate, and bulbourethral glands
   b. The epididymis, prostate, and bulbourethral glands
   c. The seminal vesicles, epididymis, and bulbourethral glands
   d. The seminal vesicles, testes, and prostate

7. If you were explaining the components and function of semen, you might say all of the following except
   a. Semen contains seminal fluid produced by accessory glands.
   b. The seminal fluid in semen transports and protects sperm cells.
   ✔ c. Semen contains seminal fluid produced by the testes.
   d. Semen contains sperm produced by the testes.

8. Which of the following accurately compares the corpora cavernosa and the corpus spongiosum?
   a. The corpora cavernosa and corpus spongiosum both consist of erectile tissue. The corpora cavernosa include the glans, and the urethra runs through them.
   ✔ b. The corpora cavernosa and corpus spongiosum both consist of erectile tissue. The corpus spongiosum includes the glans, and the urethra runs through it.
   c. The corpora cavernosa consist of erectile tissue, while the corpus spongiosum does not. The corpus spongiosum includes the glans, and the urethra runs through it.
   d. The corpora cavernosa consist of erectile tissue, while the corpus spongiosum does not. The corpora cavernosa include the glans, and the urethra runs through them.

9. If you were explaining the blood supply to the male genitalia to someone who does not understand it, you might say any of the following except
   a. The constriction of veins and dilation of arteries in the penis cause the erectile tissue to swell, producing an erection.
   ✔ b. Branches of the internal pudendal artery supply the male genitalia.
   c. During sexual arousal, arteries in the penis dilate and veins constrict.
   d. The dilation of veins and constriction of arteries in the penis causes the erectile tissue to swell, producing an erection.

10. Which of the following best explains how the male sexual response works?
    a. Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the vas deferens.
    ✔ b. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the urethra.
    c. Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the vas deferens.
    d. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the urethra.

Male Reproductive System Multiple Choice Quiz 3

1. The vessels and nerves that supply the testes pass through tubes of _____ called the spermatic cords.
   a. Muscle
   ✗ b. Lymphatic tissue
   c. Fascia
   d. Membrane

2. How many chromosomes do immature sperm cells have once spermatogenesis concludes?
   a. 23
   ✗ b. 46
   c. 18
   d. 36
3. Which of the following accurately lists the accessory glands of the male reproductive system?
   a. The epididymis, prostate, and bulbourethral glands ✓
   b. The seminal vesicles, prostate, and bulbourethral glands
c. The seminal vesicles, epididymis, and bulbourethral glands
d. The seminal vesicles, testes, and prostate

4. The spongy urethra passes through the _____ to the tip of the glans penis.
   a. Tunica vaginalis
   b. Tunica albuginea ✓
   c. Corpus spongiosum
d. Corpora cavernosa

5. Which gland or lobe of a gland stimulates the testes to produce androgens?
   a. Hypothalamus
   b. Prostate ✓
c. Anterior pituitary
d. Posterior pituitary

6. If you were explaining the function of spermatogonia to a classmate, which of these would you say?
   a. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce secondary spermatocytes.
   b. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce primary spermatocytes. ✓
c. Spermatogonia are stem cells that develop into immature sperm in the seminal tubules. They divide by meiosis to produce primary spermatocytes.
d. Spermatogonia are stem cells that develop into immature sperm in the seminal tubules. They divide by meiosis to produce secondary spermatocytes.

7. How would you describe the duct system that delivers sperm?
   a. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
   b. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system. ✓
c. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.
d. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the seminal tubules. The vas deferens is part of this duct system.

8. Which of the following accurately compares the corpora cavernosa and the corpus spongiosum?
   a. The corpora cavernosa and corpus spongiosum both consist of erectile tissue. The corpora cavernosa include the glans, and the urethra runs through them. ✓
   b. The corpora cavernosa and corpus spongiosum both consist of erectile tissue. The corpus spongiosum includes the glans, and the urethra runs through it.
c. The corpora cavernosa consist of erectile tissue, while the corpus spongiosum does not. The corpus spongiosum includes the glans, and the urethra runs through it.
d. The corpora cavernosa consist of erectile tissue, while the corpus spongiosum does not. The corpora cavernosa include the glans, and the urethra runs through them.

9. If you were explaining the blood supply to the male genitalia to someone who does not understand it, you might say any of the following except
   a. The constriction of veins and dilation of arteries in the penis cause the erectile tissue to swell, producing an erection. ✓
   b. Branches of the internal pudendal artery supply the male genitalia.
c. During sexual arousal, arteries in the penis dilate and veins constrict.
d. The dilation of veins and constriction of arteries in the penis causes the erectile tissue to swell, producing an erection.
10. Which of the following best explains how the male sexual response works?

- Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the vas deferens.
- Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the urethra.
- Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the vas deferens.

✔ d. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the urethra.

Female Reproductive System Multiple Choice Quiz 1

1. The _____ support the uterus, ovaries, and vagina.
   - Uterine tubes
   ✓ b. Pelvic ligaments
   c. Fimbriae
   d. Rugae

2. Which of the following secrete estrogen and progesterone, as well as produce oocytes?
   - Fimbriae
   - Pelvic ligaments
   ✓ c. Uterine tubes
   d. Ovaries

3. Stem cells called _____ go through mitosis during fetal development.
   - Primary oocytes
   - Secondary oocytes
   ✓ c. Oogonia
   d. Zygotes

4. Via which structures do the ovaries release oocytes?
   - Uterine tubes
   ✓ b. Pelvic ligaments
   c. Rugae
   d. Oogonia

5. The _____ arteries branch from the _____ arteries and supply the uterus.
   - Ovarian, internal iliac
   ✓ b. Ovarian, external iliac
   c. Uterine, internal iliac
   d. Uterine, external iliac

6. All of these structures belong to the female external genitalia except
   - The vestibule.
   ✓ b. The vagina.
   c. The prepuce.
   d. The labia minora.

7. Which hormone stimulates the follicle in the ovary to release an oocyte while the uterine lining is thickening?
   - Estrogen
   - Progesterone
   ✓ c. Follicle-stimulating hormone (FSH)
   d. Luteinizing hormone (LH)

8. An ovulated oocyte passes from the ovary into the ______. If the oocyte is fertilized, it implants in the ______.
   - Uterus, uterine tube
   ✓ b. Uterine tube, uterus
   c. Uterine tube, cervix
   d. Cervix, uterus

9. Which gland or lobe of a gland stimulates the ovaries to produce estrogen and progesterone?
   - Hypothalamus
   - Mammary gland
   ✓ c. Anterior pituitary
   d. Posterior pituitary

10. The mammary glands contain _____ that secrete milk into _____ that terminate in the nipples.
   - Areolae, ducts
   ✓ b. Lobules, areolae
   c. Lobules, ducts
   d. Ducts, lobules

Female Reproductive System Multiple Choice Quiz 2

1. Which of the following best describes the relationship between the pelvic ligaments and the female reproductive organs?
   - The pelvic ligaments support the uterus, ovaries, and external genitalia.
   ✓ b. The pelvic ligaments connect the uterus, ovaries, and external genitalia.
   c. The pelvic ligaments support the uterus, ovaries, and vagina.
   d. The pelvic ligaments connect the uterus, ovaries, and vagina.

2. If you were explaining the function of the ovaries to a classmate who did not understand them, which of the following would you say?
   - The ovaries produce zygotes and secrete estrogen and progesterone.
   ✓ b. The ovaries produce oocytes and secrete estrogen and progesterone.
   c. The ovaries produce zygotes and secrete estrogen and oxytocin.
   d. The ovaries produce oocytes and secrete estrogen and oxytocin.
3. If you were explaining the function of oogonia in oogenesis to a classmate, which of the following would you say?
   a. Oogonia are stem cells that go through mitosis during fetal development. Some of them develop into 23-chromosome secondary oocytes.
   b. Oogonia are stem cells that go through mitosis during female puberty. Some of them develop into 23-chromosome secondary oocytes.
   c. Oogonia are stem cells that go through mitosis during female puberty. Some of them develop into 46-chromosome primary oocytes.
   ✔ d. Oogonia are stem cells that go through mitosis during fetal development. Some of them develop into 46-chromosome primary oocytes.

4. How would you explain the blood supply to the uterus and ovaries?
   a. The uterine arteries, which branch from the external iliac arteries, supply the uterus. The ovarian arteries supply the ovaries.
   ✔ b. The uterine arteries, which branch from the internal iliac arteries, supply the uterus. The ovarian arteries supply the ovaries.
   c. The uterine arteries, which branch from the ovarian arteries, supply the uterus. The ovarian arteries also supply the ovaries.
   d. The uterine arteries, which branch from the internal iliac arteries, supply the uterus and the ovaries.

5. All of the following fit the category of female external genitalia except
   a. The clitoris, prepuce, and vestibule.
   ✔ b. The labia minora, cervix, and vestibule.
   c. The clitoris, labia minora, and prepuce.
   d. The labia majora, clitoris, and labia minora.

6. What is the role of the LH hormone in the female reproductive cycle?
   a. While the lining of the uterus thickens in preparation for a possible fertilized egg, LH stimulates the ovary follicle to release a secondary oocyte.
   ✔ b. While the lining of the uterus thickens in preparation for a possible fertilized egg, LH stimulates the ovary follicle to release a primary oocyte.
   c. Higher levels of LH stimulate the thickening of the uterine lining during pregnancy.
   d. Higher levels of LH stimulate the thickening of the uterine lining in preparation for a possible fertilized egg.

7. What is the importance of the uterine tube in ovulation?
   a. The uterine tube transports an ovulated oocyte out of the ovary and into the uterus, where it may be fertilized and then implanted.
   ✔ b. The uterine tube transports an ovulated oocyte out of the ovary. If the oocyte is fertilized, it implants in the uterus.
   c. The uterine tube transports an ovulated and fertilized oocyte out of the ovary. The oocyte then implants in the uterus.
   d. The uterine tube is not involved in ovulation.

8. How does the pituitary gland relate to the female sex hormones?
   a. The anterior pituitary releases estrogen.
   ✔ b. The posterior pituitary releases estrogen.
   c. The anterior pituitary stimulates the ovaries to produce estrogen.
   d. The posterior pituitary stimulates the ovaries to produce estrogen.

9. How are hormones important in the process of lactation?
   a. Prolactin, progesterone, and oxytocin control lactation. Infant suckling generates a hormonal response that releases milk through the mammary ducts.
   b. Prolactin, FSH, and LH control lactation. Infant suckling generates a hormonal response that releases milk through the mammary ducts.
   c. FSH, LH, and oxytocin control lactation. Infant suckling generates a hormonal response that releases milk through the mammary ducts.
   d. Progesterone, FSH, and LH control lactation. Infant suckling generates a hormonal response that releases milk through the mammary ducts.

10. Which of the following accurately compares the function of the lactation hormones?
    a. The anterior pituitary releases prolactin, which stimulates milk production. The posterior pituitary releases progesterone, which stimulates milk release.
    b. The anterior pituitary releases oxytocin, which stimulates milk production. The posterior pituitary releases progesterone, which stimulates milk release.
    c. The anterior pituitary releases oxytocin, which stimulates milk production. The posterior pituitary releases prolactin, which stimulates milk release.
    ✔ d. The anterior pituitary releases prolactin, which stimulates milk production. The posterior pituitary releases oxytocin, which stimulates milk release.
Female Reproductive System Multiple Choice Quiz 3

1. Which of the following secrete estrogen and progesterone, as well as produce oocytes?
   a. Fimbriae
   b. Pelvic ligaments
   c. Uterine tubes
   ✓ d. Ovaries

2. The _____ arteries branch from the _____ arteries and supply the uterus.
   a. Ovarian, internal iliac
   b. Ovarian, external iliac
   ✓ c. Uterine, internal iliac
   d. Uterine, external iliac

3. Which hormone stimulates the follicle in the ovary to release an oocyte while the uterine lining is thickening?
   a. Estrogen
   b. Progesterone
   ✓ c. Follicle-stimulating hormone (FSH)
   d. Luteinizing hormone (LH)

4. Which gland or lobe of a gland stimulates the ovaries to produce estrogen and progesterone?
   a. Hypothalamus
   b. Mammary gland
   ✓ c. Anterior pituitary
   d. Posterior pituitary

5. The mammary glands contain _____ that secrete milk into _____ that terminate in the nipples.
   a. Areolae, ducts
   b. Lobules, areolae
   ✓ c. Lobules, ducts
   d. Ducts, lobules

6. Which of the following best describes the relationship between the pelvic ligaments and the female reproductive organs?
   a. The pelvic ligaments support the uterus, ovaries, and external genitalia.
   ✓ b. The pelvic ligaments connect the uterus, ovaries, and external genitalia.
   c. The pelvic ligaments support the uterus, ovaries, and vagina.
   d. The pelvic ligaments connect the uterus, ovaries, and vagina.

7. If you were explaining the function of oogonia in oogenesis to a classmate, which of the following would you say?
   a. Oogonia are stem cells that go through mitosis during fetal development. Some of them develop into 23-chromosome secondary oocytes.
   ✓ b. Oogonia are stem cells that go through mitosis during female puberty. Some of them develop into 23-chromosome secondary oocytes.
   c. Oogonia are stem cells that go through mitosis during female puberty. Some of them develop into 46-chromosome primary oocytes.
   d. Oogonia are stem cells that go through mitosis during fetal development. Some of them develop into 46-chromosome primary oocytes.

8. What is the importance of the uterine tube in ovulation?
   a. The uterine tube transports an ovulated oocyte out of the ovary and into the uterus, where it may be fertilized and then implanted.
   ✓ b. The uterine tube transports an ovulated oocyte out of the ovary. If the oocyte is fertilized, it implants in the uterus.
   c. The uterine tube transports an ovulated and fertilized oocyte out of the ovary. The oocyte then implants in the uterus.
   d. The uterine tube is not involved in ovulation.

9. How does the pituitary gland relate to the female sex hormones?
   a. The anterior pituitary releases estrogen.
   b. The posterior pituitary releases estrogen.
   ✓ c. The anterior pituitary stimulates the ovaries to produce estrogen.
   d. The posterior pituitary stimulates the ovaries to produce estrogen.

10. Which of the following accurately compares the function of the lactation hormones?
    a. The anterior pituitary releases prolactin, which stimulates milk production. The posterior pituitary releases progesterone, which stimulates milk release.
    b. The anterior pituitary releases oxytocin, which stimulates milk production. The posterior pituitary releases progesterone, which stimulates milk release.
    ✓ c. The anterior pituitary releases oxytocin, which stimulates milk production. The posterior pituitary releases prolactin, which stimulates milk release.
    d. The anterior pituitary releases prolactin, which stimulates milk production. The posterior pituitary releases oxytocin, which stimulates milk release.

Sexual Reproduction and Development Multiple Choice Quiz 1

1. Which of the following is true of a zygote cell?
   a. It fertilizes the female gamete.
   b. It is a secondary oocyte cell.
   ✓ c. It has 46 chromosomes.
   d. It has 23 chromosomes.
2. During sexual reproduction, sperm cells fertilize a
   a. Gamete.
   b. Zygote.
   c. Primary oocyte.
   ✔ d. Secondary oocyte.

3. By the time the fertilized egg implants in the uterus, it has become a collection of hundreds of cells called a(n)
   a. Blastocyst.
   b. Embryo.
   c. Zygote.
   d. Gamete.

4. Before a zygote implants on the uterine wall, it develops first into a(n) _____ and then into a blastocyst.
   a. Oocyte
   ✔ b. Morula
   c. Embryo
   d. Gamete

5. When the cells of the blastocyst divide into two groups, about 15 days after conception, one group includes _____ and the other group forms an environment to protect and nourish the embryo.
   a. Morula cells
   b. Endometrial cells
   c. Placental cells
   ✔ d. The earliest embryonic cells

6. As the embryo develops, what do the amnion and the yolk sac become, respectively?
   a. Part of the digestive tract; a sac that will fill with fluid to cushion the developing embryo
   ✔ b. A sac that will fill with fluid to cushion the developing embryo; part of the digestive tract
   c. The placenta and structures that nourish and support the embryo; part of the digestive tract
   d. A sac that will fill with fluid to cushion the developing embryo; the placenta and structures that nourish and support the embryo

7. What produces hCG?
   a. The cells that will form the chorion later in a pregnancy
   ✔ b. The corpus luteum
   c. The amnion
   d. The placenta

8. In neurulation, the anterior end of the neural tube forms the _____, and the rest of the neural tube forms the _____.
   a. Neural plate, spinal cord
   ✔ b. Brain, neural plate
   c. Brain, spinal cord
   d. Spinal cord, brain

9. By which week of pregnancy is the embryo considered a fetus?
   a. Week 4
   ✔ b. Week 10
   c. Week 12
   d. Week 16

10. During childbirth, the hormone _____ from the ______ stimulates the contraction of the uterus.
    a. Progesterone, posterior pituitary
    b. Progesterone, anterior pituitary
    ✔ c. Oxytocin, posterior pituitary
    d. Oxytocin, anterior pituitary

Sexual Reproduction and Development Multiple Choice Quiz 2

1. If you were explaining the formation of a zygote to a classmate, you might say any of the following except
   a. The zygote's genetic information is contained in its head.
   b. The zygote has 46 chromosomes.
   c. The zygote carries genetic information from the male and the female.
   ✔ d. A zygote forms when the male gamete fertilizes the female gamete.

2. Which of the following is the best explanation of what happens from fertilization to implantation?
   a. The zygote divides, multiplies, and develops into an embryo over the course of about ten days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.
   b. The blastocyst divides, multiplies, and develops into an embryo over the course of about ten days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a zygote.
   ✔ c. The blastocyst divides, multiplies, and develops into an embryo over the course of about five days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a zygote.
   d. The zygote divides, multiplies, and develops into an embryo over the course of about five days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.
3. If you were explaining the role of hCG in pregnancy, you would include all of the following except
   a. hCG is produced by the cells that will form the chorion later in a pregnancy.
   b. hCG maintains the corpus luteum, which secretes estrogen and progesterone.
   ✔ c. hCG spikes late in the pregnancy as the corpus luteum degenerates.
   d. By the end of the second week of development, hCG can usually be detected in a pregnant woman's urine.

4. Which of the following accurately compares the conception of fraternal and identical twins?
   ✔ a. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized, each by a different sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Twin pregnancies are fraternal 90% of the time.
   b. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized, each by a different sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Fraternal and identical twin pregnancies are equally common.
   c. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized by the same sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Fraternal and identical twin pregnancies are equally common.
   d. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized by the same sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells.

5. Which of the following best explains the development of twins?
   a. In the case of fraternal twins, each fetus usually has its own placenta, chorion, and amniotic sac. Identical twins share the placenta and the chorion, and sometimes the amniotic sac.
   b. In the case of both identical and fraternal twins, the placenta and chorion may be shared, but it is very rare for both the placenta and the amniotic sac to be shared.
   ✔ c. In the case of fraternal twins, each fetus usually has its own placenta, chorion, and amniotic sac. Identical twins may each have their own placenta, chorion, and amniotic sac. In some cases, they share the placenta and the chorion; it is very rare for both the placenta and amniotic sac to be shared.
   d. In the case of both identical and fraternal twins, each twin has its own placenta, chorion, and amniotic sac.
6. How would you explain neurulation to a classmate who does not understand the process?
   a. Part of the dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the posterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
   ✔ b. Part of the dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the anterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
   c. The entire dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the posterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
   d. The entire dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the anterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.

8. Which of the following accurately compares the development that has taken place four weeks and nine weeks after conception?
   a. By the fourth week, the embryo has become a fetus. By the ninth week, it is an oblong body whose limbs, vertebrae, and organs are developing.
   b. By the fourth week, the neural tube is beginning to differentiate. By the ninth week, the embryo has become a fetus.
   c. By the fourth week, the developing cells are beginning to differentiate. By the ninth week, the embryo is developing into an oblong body whose limbs, vertebrae, and organs are developing.
   ✔ d. By the fourth week, the embryo is an oblong body whose limbs, vertebrae, and organs are developing. By the ninth week, the embryo has become a fetus.

9. If you were explaining the role of contractions during birth, you might say any of the following except
   a. Contractions detach the placenta from the uterus and expel it.
   ✔ b. The contractions that signal the beginning of labor occur at random intervals.
   c. Contractions move the head of the fetus to the cervix, which dilates.
   d. Powerful contractions push the fetus outward through the cervix.

10. Which of the following accurately compares the onset of puberty and the decline of fertility in the male and female reproductive lifespans?
    a. Puberty tends to begin about two years later in girls than in boys. Fertility in women begins to decline around age 50, whereas testosterone begins to decline between ages 30 and 45 for men.
    b. Puberty tends to begin about two years earlier in girls than in boys. Fertility in women begins to decline around age 50, whereas testosterone begins to decline between ages 30 and 45 for men.
    ✔ c. Puberty tends to begin about two years earlier in girls than in boys. Fertility in women begins to decline between ages 30 and 45, whereas testosterone begins to decline around age 50 for men.
    d. Puberty tends to begin about two years later in girls than in boys. Fertility in women begins to decline between ages 30 and 45, whereas testosterone begins to decline around age 50 for men.

Sexual Reproduction and Development Multiple Choice Quiz 3

1. Which of the following is true of a zygote cell?
   a. It fertilizes the female gamete.
   b. It is a secondary oocyte cell.
   ✔ c. It has 46 chromosomes.
   d. It has 23 chromosomes.

2. By the time the fertilized egg implants in the uterus, it has become a collection of hundreds of cells called a(n)
   a. Blastocyst.
   b. Embryo.
   c. Zygote.
   ✔ d. Gamete.
3. As the embryo develops, what do the amnion and the yolk sac become, respectively?
   a. Part of the digestive tract; a sac that will fill with fluid to cushion the developing embryo
   ✔ b. A sac that will fill with fluid to cushion the developing embryo; part of the digestive tract
   c. The placenta and structures that nourish and support the embryo; part of the digestive tract
   d. A sac that will fill with fluid to cushion the developing embryo; the placenta and structures that nourish and support the embryo

4. In neurulation, the anterior end of the neural tube forms the _____, and the rest of the neural tube forms the _____.
   a. Neural plate, spinal cord
   b. Brain, neural plate
   ✔ c. Brain, spinal cord
   d. Spinal cord, brain

5. During childbirth, the hormone _____ from the _____ stimulates the contraction of the uterus.
   a. Progesterone, posterior pituitary
   b. Progesterone, anterior pituitary
   ✔ c. Oxytocin, posterior pituitary
   d. Oxytocin, anterior pituitary

6. Which of the following is the best explanation of what happens from fertilization to implantation?
   a. The zygote divides, multiplies, and develops into an embryo over the course of about ten days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.
   b. The blastocyst divides, multiplies, and develops into an embryo over the course of about ten days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a zygote.
   c. The blastocyst divides, multiplies, and develops into an embryo over the course of about five days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.
   ✔ d. The zygote divides, multiplies, and develops into an embryo over the course of about five days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.

7. If you were explaining the role of hCG in pregnancy, you would include all of the following except
   a. hCG is produced by the cells that will form the chorion later in a pregnancy.
   b. hCG maintains the corpus luteum, which secretes estrogen and progesterone.
   ✔ c. hCG spikes late in the pregnancy as the corpus luteum degenerates.
   d. By the end of the second week of development, hCG can usually be detected in a pregnant woman’s urine.

8. Which of the following best explains the development of twins?
   a. In the case of fraternal twins, each fetus usually has its own placenta, chorion, and amniotic sac. Identical twins share the placenta and the chorion, and sometimes the amniotic sac.
   b. In the case of both identical and fraternal twins, the placenta and chorion may be shared, but it is very rare for both the placenta and the amniotic sac to be shared.
   ✔ c. In the case of fraternal twins, each fetus usually has its own placenta, chorion, and amniotic sac. Identical twins may each have their own placenta, chorion, and amniotic sac. In some cases, they share the placenta and the chorion; it is very rare for both the placenta and amniotic sac to be shared.
   d. In the case of both identical and fraternal twins, each twin has its own placenta, chorion, and amniotic sac.

9. Which of the following accurately compares the development that has taken place four weeks and nine weeks after conception?
   a. By the fourth week, the embryo has become a fetus. By the ninth week, it is an oblong body whose limbs, vertebrae, and organs are developing.
   b. By the fourth week, the developing cells are beginning to differentiate. By the ninth week, the embryo has become a fetus.
   ✔ c. By the fourth week, the developing cells are beginning to differentiate. By the ninth week, the embryo is an oblong body whose limbs, vertebrae, and organs are developing.
   d. By the fourth week, the embryo is an oblong body whose limbs, vertebrae, and organs are developing. By the ninth week, the embryo has become a fetus.
10. Which of the following accurately compares the onset of puberty and the decline of fertility in the male and female reproductive lifespans?

a. Puberty tends to begin about two years later in girls than in boys. Fertility in women begins to decline around age 50, whereas testosterone begins to decline between ages 30 and 45 for men.

b. Puberty tends to begin about two years earlier in girls than in boys. Fertility in women begins to decline around age 50, whereas testosterone begins to decline between ages 30 and 45 for men.

c. Puberty tends to begin about two years earlier in girls than in boys. Fertility in women begins to decline between ages 30 and 45, whereas testosterone begins to decline around age 50 for men.

d. Puberty tends to begin about two years later in girls than in boys. Fertility in women begins to decline between ages 30 and 45, whereas testosterone begins to decline around age 50 for men.
Quiz Bank by System (Dissection)
Cells and Tissue

» Select any part of the plasma membrane.
» Select a transport vesicle.
» Select any part of the nucleus.
» Select any part of the nucleoplasm.
» Select any part of the rough endoplasmic reticulum.
» Select any part of the smooth endoplasmic reticulum.
» Select a microtubule.
» Select a microfilament.
» Select any part of the Golgi complex.
» Select a chromosome.

Integumentary System

» Select a hair shaft.
» Select the reticular layer of the dermis.
» Select a sebaceous (oil) gland.
» Select a sweat gland.
» Select the arrector pili.
» Select any melanocytes.
» Select a Meissner’s corpuscle.
» Select the basement membrane.
» Select the stratum granulosum.
» Select any part of the hypodermis.

Skeletal System and Joints

Bone Tissue

» Select any part of the cortical (compact) bone.
» Select any part of the cancellous (spongy) bone.
» Select the medullary cavity.
» Select the yellow bone marrow.
» Select any part of the articular cartilage.

Axial Skeleton

» Select the right or left parietal bone.
» Select the occipital bone.
» Select any part of the sphenoid.
» Select any part of the mandible.
» Select the hyoid.
» Select any part of the sternum.
» Select the coccyx.
» Select the axis.
» Select a false rib.
» Select a thoracic vertebrae.

Appendicular Skeleton

» Select the right or left humerus.
» Select a metacarpal bone.
» Select one of the tarsal bones.
» Select the right or left femur.
» Select the right or left ilium.

Joints

» Select the skull bone that articulates with the atlas.
» Select the right or left ulnar collateral ligament.
» Select the right or left inguinal ligament.
» Select any part of the right or left tibiofibular ligament.
» Select a ligament of the shoulder joint.
» Select the pubic symphysis.
» Select the posterior atlantoaxial ligament.
» Select the bone that is part of both the shoulder and elbow joints.
» Select the tarsal bone that articulates with the fibula and tibia where ligaments help form the ankle’s hinge joint.
» Select one of the proximal carpal bones.

Muscle Tissue and Muscular System

Skeletal Muscle Tissue

» Select the right or left pectoralis major.
>>> Select the right or left serratus anterior.
>>> Select the right or left triceps brachii.
>>> Select the right or left adductor magnus.
>>> Select the right or left vastus lateralis.
>>> Select the right or left extensor digitorum.
>>> Select the right or left trapezius.
>>> Select any part of the right or left deltoid.
>>> Select the right or left gluteus maximus.
>>> Select the right or left external oblique.

Smooth and Cardiac Muscle Tissue

>>> Select any muscle layer of the stomach.
>>> Select any part of the colon.
>>> Select the duodenum.
>>> Select the urethra.
>>> Select the trachea.
>>> Select the right ventricle.
>>> Select a papillary muscle.
>>> Select the myocardium.
>>> Select the interventricular septum.
>>> Select the right or left Purkinje fibers.

Muscular System

>>> Select any part of the muscle (right or left) that acts as the primary agonist of elbow extension.
>>> Select the bone (right or left) that serves as the insertion for the triceps brachii.
>>> Select the bone (right or left) that contains the origin points of the biceps brachii.
>>> Select any of the right or left semispinalis capitis muscles that are involved in the first-class lever system that lifts the chin.

Nervous System and Special Senses

Nervous Tissue

>>> Select any part of the central nervous system where acetylcholine is widely used.
>>> Select one of the adrenal glands, which produce norepinephrine and epinephrine.
>>> Select the central nervous system structure that produces dopamine.
>>> Select any gland that is regulated by neurotransmitters.
>>> Select any part of the endocrine system where epinephrine and norepinephrine act as hormones.
>>> Select the main nerve whose branches release acetylcholine to slow the heart.

Spinal Cord and Spinal Nerves

>>> Select the right or left phrenic nerve.
>>> Select the right or left supraclavicular nerve.
>>> Select the right or left upper trunk of the brachial plexus.

Brain

>>> Select any part of the central nervous system where acetylcholine is widely used.
>>> Select one of the adrenal glands, which produce norepinephrine and epinephrine.
>>> Select the central nervous system structure that produces dopamine.
>>> Select any gland that is regulated by neurotransmitters.
>>> Select any part of the endocrine system where epinephrine and norepinephrine act as hormones.
>>> Select the main nerve whose branches release acetylcholine to slow the heart.

Cranial Nerves

>>> Select the auriculotemporal branch of the right or left trigeminal (V) nerve.
>>> Select the buccal branches of the right or left facial (VII) nerve.
>>> Select the inferior ganglion of the right or left glossopharyngeal (IX) nerve.
>>> Select any part of the right or left vagus (X) nerve.
>>> Select any part of the right or left accessory (XI) nerve.
Select the right or left optic (II) nerve.
Select any part of the right or left hypoglossal (XII) nerve.
Select the bulb of the right or left olfactory (I) nerve.
Select the right or left trochlear (IV) nerve.
Select the right or left interior carotid plexus.

Skin Sensory Receptors
Select a Pacinian corpuscle.
Select any sensory nerve.
Select a Meissner corpuscle.
Select a Merkel cell.
Select a free nerve ending.
Select the stratum basale, which contains the Merkel cells.
Select a layer of the dermis that contains Meissner's corpuscles.
Select the stratum of the epidermis where free nerve endings detect pain, temperature, itch, and tickle.
Select the skin layer that contains Pacinian corpuscles.
Select a hair root, which contains a nerve plexus that is sensitive to touch.

Eye
Select either the lateral, medial, superior, or inferior rectus.
Select the cornea.
Select the ciliary muscles.
Select the lacrimal artery.
Select any part of the retina.
Select the iris.
Select the nasolacrimal duct.

Select the vitreous body.
Select the pupillary dilator.
Select the lens.

Ear
Select the temporalis.
Select any part of the cochlea.
Select any part of the auricular cartilage.
Select the concha.
Select the tympanic cavity.
Select the vestibule.
Select any part of the incus.
Select any part of the malleus.
Select the Eustachian tube.
Select the external acoustic meatus.

Cochlea
Select any of the outer phalangeal (Deiters') cells.
Select the stria vascularis.
Select Hensen's cells.
Select the cochlear duct.
Select the internal spiral sulcus.
Select the scala vestibuli.
Select the scala tympani.
Select any part of the spiral ligament.
Select any inner hair cell.
Select the vestibular (Reissner's) membrane.

Tongue
Select the median sulcus.
Select the circumvallate papillae.
Select the foramen cecum.
Select the apex of the tongue.

Select the palatine tonsils.
Select the frenulum.
Select the lingual tonsils.
Select the root of the tongue.
Select any of the salivary ducts.
Select the body of the tongue.

Papillae
Select the circumvallate (vallate) papillae.
Select the fungiform papillae.
Select the filiform papillae.
Select the lingual tonsils.
Select any papillae that contain taste buds.
Select the tongue (lingua).
Select any part that is involved in the immune system.
Select a taste bud.
Select any papillae that contain tactile receptors, but no taste buds.

Endocrine System
Select the right or left adrenal gland.
Select the thyroid gland.
Select any part of the pineal gland.
Select the right or left pars distalis.
Select the right or left neurohypophysis (posterior pituitary).
Select the hypothalamus.
Select any of the parathyroid glands.
Select any part of the pancreas.
Select any part of the right or left kidney.
Select any part of the right or left ovary.
Circulatory System

Heart

- Select the conus arteriosus.
- Select the right or left ventricle.
- Select the right or left atrium.
- Select the aorta (base of).
- Select any part of the tricuspid valve.
- Select the moderator band.
- Select the right or left posterior papillary muscle.
- Select the chordae tendineae of the mitral valve.
- Select the right or left Purkinje fibers.
- Select the bundle of His.

Blood Vessels and Circulation

- Select a pulmonary vessel that carries oxygenated blood.
- Select the thoracic aorta.
- Select the right or left cephalic vein.
- Select the superior vena cava.
- Select the azygos vein.
- Select the superior mesenteric artery.
- Select any vein of the hepatic portal system.
- Select the right or left basilar artery.
- Select the right or left subclavian artery.
- Select one of the venous sinuses.

Lymphatic System

- Select the spleen.
- Select the thymus.

- Select the thoracic duct (left lymphatic duct).
- Select the right or left cubital lymph nodes.
- Select the right or left lumbar trunk.
- Select the right lymphatic duct.
- Select the right or left subclavian trunk.
- Select any of the right or left jugular lymphatic trunks.
- Select any of the axillary lymph nodes.
- Select the right or left bronchomediastinal trunk.

Respiratory System

Upper Respiratory System

- Select the nasal cavity.
- Select the septal cartilage.
- Select any part of the pharynx.
- Select the cricoid cartilage.
- Select the hyoid bone.
- Select the thyroid cartilage.
- Select the epiglottis.
- Select one of the aryngeal cartilages.
- Select the right or left vocal cord.
- Select the cricothyroid membrane.

Lower Respiratory System

- Select any part of the trachea.
- Select the right or left primary cartilaginous rings.
- Select the right or left superior secondary bronchi.
- Select any of the right or left tertiary bronchi.
- Select any of the vessels that return oxygenated blood from the lungs to the left atrium of the heart.
- Select any of the vessels that convey deoxygenated blood from the right ventricle to the lungs.
- Select any part of the pulmonary trunk.
- Select the oblique fissure of the right or left lung.
- Select the middle lobe of the right lung.
- Select the right or left hilum.

Respiration

- Select the diaphragm.
- Select any of the right or left scalene muscles.
- Select the right or left external intercostals.
- Select the right or left internal intercostals.
- Select the right or left transversus abdominis muscle.
- Select the right or left common carotid artery.
- Select the brachiocephalic trunk (innominate artery).
- Select any part of the right or left vagus nerve (CN X).
- Select any part of the medulla oblongata.
- Select any part of the right or left glossopharyngeal nerve (CN IX).

Digestive System

Oral Cavity

- Select the right or left hyoglossus.
- Select the gingiva.
- Select any of the right or left salivary glands.
Esophagus and Stomach
- Select the esophagus.
- Select the mucosa layer of the stomach.
- Select the oblique muscle layer of the stomach.
- Select the circular muscle layer of the stomach.
- Select the longitudinal muscle layer of the stomach.
- Select the cardiac sphincter.
- Select the pyloric sphincter.
- Select any part of the duodenum.
- Select the right or left gastric artery.
- Select the right or left gastroepiploic artery.

Accessory Organs of Digestion
- Select any segment of the right part of the liver.
- Select any segment of the left part of the liver.
- Select the part of the liver that includes the quadrate lobe.
- Select the caudate lobe of the liver.
- Select the falciform ligament.
- Select the gall bladder.
- Select any part of the pancreas.
- Select the duct of Wirsung.
- Select the common bile duct.
- Select the coronary ligament.

Small and Large Intestines
- Select any part of the duodenum.
- Select the jejunum.
- Select the ileum.
- Select the sigmoid colon.
- Select the ascending colon.
- Select the transverse colon.
- Select the taenia coli of the transverse colon.
- Select the rectum.
- Select the appendix.

Urinary System
Kidney Anatomy and Physiology
- Select any part of the right or left kidney.
- Select the right or left renal pelvis.
- Select any of the renal pyramids.
- Select the right or left ureter.
- Select the right or left renal artery.
- Select the right or left renal vein.

Urine Storage and Elimination
- Select the right or left ureter.
- Select any part of the right or left kidney.
- Select any of the renal pyramids.
- Select the right or left renal pelvis.
- Select the right or left trigone of the bladder.
- Select the detrusor muscle.

Reproductive System
Male Reproductive System
- Select the corpus spongiosum.
- Select either of the corpora cavernosa.
- Select any part of the prostate.
- Select the right or left seminal vesicle.
- Select either of the testes.
- Select the right or left epididymis.
- Select the right or left spermatic cord.
- Select any part of the prostatic urethra.
- Select the right or left ejaculatory duct.
- Select the glans penis.

Female Reproductive System
- Select any part of the uterus.
- Select any part of the right or left ovary.
- Select the right or left ovarian ligament.
- Select the right or left fimbriae.
- Select the right or left uterine tube.
- Select the vestibule.
- Select the clitoris.
- Select the prepuce.
- Select the labia minora.
- Select the vagina.
Atlas Quizzes (Dissection)
Circulatory System

Head and Neck (Arteries)
- Select the right or left common carotid artery.
- Select any part of the right or left internal carotid artery.
- Select the right or left vertebral artery.
- Select the right or left facial artery.
- Select the right or left external carotid artery.
- Select the right or left maxillary artery.
- Select the right or left superficial temporal artery.
- Select the right or left lingual artery.
- Select the right or left occipital artery.
- Select any of the cerebellar arteries.

Circle of Willis
- Select the right or left anterior cerebral artery.
- Select the right or left posterior communicating artery.
- Select any part of the basilar artery.
- Select the right or left middle cerebral artery.
- Select the right or left anterior communicating artery.
- Select any part of the right or left posterior cerebral artery.
- Select any part of the right or left internal carotid artery.
- Select the right or left vertebral artery.

Thorax (Arteries)
- Select the descending thoracic aorta.
- Select the brachiocephalic trunk (innominate artery).
- Select the aortic arch.
- Select the right or left internal thoracic (mammary) artery.
- Select any of intercostal arteries 1-11.
- Select the right or left subcostal artery.
- Select the right or left musculophrenic artery.
- Select any of the bronchial arteries.

Abdomen I (Arteries)
- Select the descending abdominal aorta.
- Select the celiac trunk.
- Select the splenic artery.
- Select the right or left renal artery.
- Select the common hepatic artery.
- Select the superior mesenteric artery.
- Select the right or left inferior adrenal artery.
- Select the right or left gonadal artery.

Abdomen II (Arteries)
- Select the proper hepatic artery.
- Select the right gastric artery.
- Select the right or left lumbar arteries.
- Select the right or left inferior phrenic artery.
- Select the right or left gastroepiploic (gastro-omental) artery.
- Select the cystic artery.
- Select the left gastric artery.
- Select the gastroduodenal artery.
- Select any of the pancreaticoduodenal arteries.
- Select the artery to the tail of the pancreas.

Intestines (Arteries)
- Select the superior mesenteric artery.
- Select any part of the ileocolic artery.
- Select the sigmoid arteries.
- Select the inferior mesenteric artery.
- Select the right colic artery.
- Select the superior rectal artery.
- Select the left colic artery.
- Select the middle colic artery.
Pelvis (Arteries)
- Select the right or left common iliac artery.
- Select the right or left superior gluteal artery.
- Select the right or left internal pudendal artery.
- Select the right or left obturator artery.
- Select the right or left internal iliac artery.
- Select the right or left lateral sacral artery.
- Select the right or left external iliac artery.
- Select the right or left iliolumbar artery.

Leg (Arteries)
- Select the right or left femoral artery.
- Select the right or left popliteal artery.
- Select the right or left lateral circumflex femoral artery.
- Select the right or left descending genicular artery.
- Select the right or left anterior tibial artery.
- Select the right or left deep femoral artery (deep artery of the thigh).
- Select the right or left posterior tibial artery.
- Select the right or left fibular (peroneal) artery.
- Select the right or left medial circumflex femoral artery.

Foot (Arteries)
- Select the right or left medial plantar artery.
- Select the right or left deep plantar artery.
- Select the right or left arcuate artery.
- Select the right or left lateral plantar artery.
- Select any of the plantar metatarsal or dorsal metatarsal arteries.

Head and Neck (Veins)
- Select the right or left internal jugular vein.
- Select the right or left vertebral vein.
- Select the right or left occipital vein.
- Select the right or left external jugular vein.
- Select the right or left facial vein.
- Select the right or left superficial temporal vein.
- Select the right or left maxillary vein.

Venous Sinuses
- Select the superior sagittal sinus.
- Select the right or left cavernous sinus.
- Select the right or left transverse sinus.
- Select the right or left sigmoid sinus.
- Select the inferior sagittal sinus.
- Select any of the petrosal sinuses.
- Select the right or left sphenoparietal sinus.
- Select the confluence of sinuses.

Upper Limb (Veins)
- Select the right or left subclavian vein.
- Select the right or left cephalic vein.
- Select the right or left basilic vein.
- Select the right or left superficial palmar venous arch.
- Select the right or left axillary vein.
- Select the right or left deep palmar venous arch.
- Select the right or left ulnar vein.

Thorax (Veins)
- Select the right or left brachiocephalic vein.
- Select the superior vena cava.
- Select the azygos vein.
- Select the accessory hemiazygos vein.
- Select the right or left internal thoracic (mammary) vein.
- Select the hemiazygos vein.
- Select the inferior vena cava.
- Select any of intercostal veins 1-11.
- Select the right or left subcostal vein.
- Select the right or left musculophrenic vein.

Abdomen (Veins)
- Select any part of the hepatic portal vein.
- Select the right or left renal vein.
- Select the right or left inferior phrenic vein.
- Select any of the hepatic veins.
- Select the right or left lumbar veins.
- Select the right gastric vein.
- Select the splenic or lienal vein.
- Select the left gastroepiploic (gastro-omental) vein.
Select the cystic vein.
Select the right or left gonadal vein.
Select the right or left suprarenal vein.
Select the left gastric vein.
Select the right gastroepiploic (gastro-omental) vein.

Intestines (Veins)
Select the inferior mesenteric vein.
Select the middle colic vein.
Select the sigmoid vein.
Select the superior mesenteric vein.
Select the right or left colic vein.
Select the superior rectal vein.
Select any part of the ileocolic vein.
Select the right or left internal iliac vein.
Select the right or left internal pudendal vein.
Select the right or left common iliac vein.
Select the middle (median) sacral vein.
Select the right or left obturator vein.
Select the right or left external iliac vein.
Select any of the gluteal veins.
Select the right or left iliac circumflex.

Pelvis (Veins)
Select the right or left iliolumbar vein.
Select the right or left lateral circumflex femoral vein.
Select the right or left popliteal vein.
Select the right or left small saphenous vein.
Select the right or left posterior tibial vein.
Select the right or left lateral circumflex femoral vein.

Foot (Veins)
Select the right or left dorsalis pedis vein.
Select the right or left deep plantar venous arch.
Select any of the digital veins.
Select any of the plantar metatarsal or dorsal metatarsal veins.
Select the right or left medial plantar vein.
Select the right or left lateral plantar vein.

Pulm. Circulation
Select any of the right pulmonary arteries.
Select the coronary sinus.
Select any of the left pulmonary veins.
Select any part of the pulmonary valve.
Select any of the right pulmonary veins.
Select any of the left pulmonary veins.

Coronary Circulation
Select the right coronary artery.
Select the left coronary artery.
Select the small cardiac vein.
Select the posterior interventricular artery.
Select the circumflex artery.

Heart Chambers
Select the right atrium.
Select the conus arteriosus.
Select the right ventricle.
Select the interventricular septum.
Select the left ventricle.
Select the moderator band (septomarginal trabecula).
Select the right atrium.

Heart Valves
Select any leaflet of the atroventricular tricuspid valve.
Select a papillary muscle.
Select any of the chordae tendineae.
Select any cusp of the pulmonary valve.
Select any leaflet of the mitral (bicuspid) valve.
Select any cusp of the aortic valve.

Heart Conduction
Select the atrioventricular (AV) node.
Select the right or left Purkinje fibers.
Select the posterior internodal bundle.
Select the sinoatrial node.
Select the atrioventricular bundle (bundle of His).
Select the interatrial bundle.
Select the middle internodal bundle.
Select the anterior internodal bundle.

Digestive System

Overview, Digestive
- Select the oral cavity.
- Select any part of the stomach.
- Select any part of the pancreas.
- Select any part of the large intestine.
- Select the appendix.
- Select any segment of the liver.
- Select the rectum.
- Select the gall bladder.
- Select the esophagus.
- Select any part of the cecum.
- Select a molar.
- Select any of the salivary glands.
- Select the laryngopharynx.
- Select any part of the small intestine.

Mouth, Upper Tract (Digestive System)
- Select any of the salivary glands.
- Select the soft palate.
- Select the esophagus.
- Select the palatine tonsils.
- Select one of the parotid glands.

Mouth (Digestive System)
- Select the uvula.
- Select the gingiva.
- Select any part of the oral cavity.
- Select the soft palate.
- Select one of the submandibular (submaxillary) glands.
- Select one of the sublingual glands.

Salivary Glands
- Select one of the submandibular (submaxillary) ducts.
- Select one of the sublingual glands.
- Select one of the parotid (Stensen's) ducts.

Teeth (Digestive System)
- Select an incisor.
- Select a canine (cuspid).
- Select a molar.
- Select a first molar.
- Select a second premolar (bicuspids).
- Select a third molar (wisdom tooth).
- Select a lateral incisor.
- Select a second molar.
- Select a first premolar (bicuspids).
- Select a central incisor.

Upper Tract (Digestive System)
- Select any part of the oral cavity.
- Select the oropharynx.
- Select any part of the stomach.
- Select the esophagus.
- Select the laryngopharynx.
- Select the anterior surface of the cardiac (gastroesophageal) sphincter.

Stomach
- Select the anterior surface of the cardiac (gastroesophageal) sphincter.
- Select the circular muscle layer.
- Select the anterior surface of the pyloric sphincter.
- Select the longitudinal muscle layer.
- Select the oblique muscle layer.
Liver

- Select any segment of the left part of the liver.
- Select any segment of the right part of the liver.
- Select the falciform ligament.
- Select the caudate lobe.
- Select one of the triangular ligaments.
- Select the ligamentum teres.
- Select the segment of the liver that includes the quadrate lobe.
- Select the ligamentum venosum.
- Select the coronary ligament.

Pancreas

- Select any part of the pancreas.
- Select the main pancreatic duct (duct of Wirsung).
- Select the accessory pancreatic duct (duct of Santorini).

Gall Bladder

- Select the gall bladder.
- Select the common bile duct.
- Select the cystic duct.
- Select the right or left hepatic duct.
- Select the common hepatic duct.
- Select the main duodenal papilla.

Peritoneal Cavity

- Select any part of the transverse colon.
- Select any part of the stomach.
- Select any segment of the liver.
- Select any part of the pancreas.
- Select the common hepatic duct.

Intestinal Tract

- Select any part of the ascending colon.
- Select any part of the descending colon.
- Select the lesser omentum.
- Select the cystic duct.
- Select the gall bladder.
- Select any part of the duodenum.
- Select any part of the transverse colon.
- Select the common hepatic duct.
- Select any part of the cecum.

Small Intestine

- Select any part of the duodenum.
- Select the jejunum.
- Select the ileum.

Large Intestine

- Select any part of the ascending colon.
- Select any region of the taenia coli.
- Select any part of the transverse colon.
- Select the common hepatic duct.
- Select any part of the cecum.
- Select the appendix.

Muscular System

Eye Expression (Muscular System)

- Select the right or left corrugator supercilii.
- Select the right or left orbicularis oculi.
- Select the right or left occipitofrontalis (epicranii).
- Select the right or left depressor supercilii.
- Select the right or left levator palpebrae superioris.

Mouth Expression (Muscular System)

- Select the right or left levator labii superioris.
- Select the right or left zygomaticus minor.
- Select the right or left zygomaticus major.
- Select the right or left levator anguli oris.
- Select the right or left buccinator.
- Select the right or left risorius.
- Select the right or left platysma.
- Select the right or left mentalis.
- Select the right or left depressor labii inferioris.
- Select the right or left depressor anguli oris.
- Select the orbicularis oris.

Nose Expression (Muscular System)

- Select the right or left nasalis (alar portion).
- Select the right or left levator labii superioris alaeque nasi.
- Select the right or left nasalis (transverse portion).
Select the right or left procerus.
Select the right or left depressor septi.

**Scalp Expression (Muscular System)**
- Select the right or left occipitofrontalis (epicranius).
- Select the right or left anterior auricularis.
- Select the right or left superior auricularis.
- Select the right or left posterior auricularis.

**Extraocular (Muscular System)**
- Select the right or left superior rectus.
- Select the right or left medial rectus.
- Select the right or left lateral rectus.
- Select the right or left inferior rectus.
- Select the right or left superior oblique.
- Select the right or left inferior oblique.
- Select the right or left common tendinous ring.
- Select the right or left levator palpebrae superiors.

**Tongue (Muscular System)**
- Select the tongue.
- Select the right or left geniohyoid.
- Select the right or left genioglossus.
- Select the right or left styloglossus.
- Select the right or left palatoglossus.
- Select the right or left hyoglossus.

**Mastication (Muscular System)**
- Select the right or left temporalis.
- Select the right or left deep masseter.
- Select the right or left superficial masseter.

**Laryngeal (Muscular System)**
- Select the right or left lateral pterygoid (superior head).
- Select the right or left lateral pterygoid (inferior head).
- Select the right or left medial pterygoid.

**Shoulder Joint (Muscular System)**
- Select the right or left pectoralis major.
- Select the right or left coracobrachialis.
- Select the right or left deltoid (posterior head).
- Select the right or left teres minor.
- Select the right or left infraspinatus.
- Select the right or left deltoid (anterior head).
- Select the right or left supraspinatus.
- Select the right or left subscapularis.
- Select the right or left teres major.
- Select the right or left deltoid (middle head).
- Select the right or left latissimus dorsi.

**Arm (Muscular System)**
- Select the right or left triceps (long head).
- Select the right or left brachialis.
- Select the right or left triceps (lateral head).
- Select the right or left anconeus.
- Select the right or left triceps tendon.
- Select the right or left biceps brachii (long head).
- Select the right or left brachioradialis.
- Select the right or left biceps brachii (short head).

**Anterior Forearm (Muscular System)**
- Select the right or left palmaris longus.
- Select the right or left flexor digitorum superficialis.
- Select the right or left flexor carpi ulnaris.
- Select the right or left flexor carpi radialis.
- Select the right or left pronator teres.
Select the right or left flexor pollicis longus.
Select the right or left pronator quadratus.
Select the right or left flexor digitorum profundus.

**Posterior Forearm (Muscular System)**
Select the right or left extensor digitorum.
Select the right or left extensor digiti minimi.
Select the right or left extensor carpi radialis longus.
Select the right or left extensor carpi radialis brevis.
Select the right or left extensor carpi ulnaris.
Select the right or left extensor pollicis brevis.
Select the right or left abductor pollicis longus.
Select the right or left supinator.
Select the right or left extensor pollicis longus.

**Superficial Hand (Muscular System)**
Select the right or left abductor digiti minimi.
Select the right or left abductor pollicis brevis.
Select the right or left palmaris brevis.
Select any of the lumbricals.

**Deep Hand (Muscular System)**
Select the right or left flexor digiti minimi brevis.
Select the right or left flexor pollicis brevis.
Select the right or left opponens digiti minimi.
Select the right or left opponens pollicis.
Select any of the dorsal interossei.

Select any of the palmar interossei.

**Erector Spinae (Muscular System)**
Select the right or left iliocostalis lumborum.
Select the right or left iliocostalis thoracis.
Select the right or left iliocostalis cervicis.
Select the right or left longissimus thoracis.
Select the right or left longissimus cervicis.
Select the right or left longissimus capitis.
Select the right or left spinalis cervicis.
Select the right or left spinalis thoracis.
Select the right or left multifidus.

**Neck II (Muscular System)**
Select the right or left rectus capitis anterior.
Select the right or left rectus capitis lateralis.
Select the right or left longus colli (vertical).
Select the right or left longus colli (inferior oblique).
Select the right or left longus colli (superior oblique).
Select the right or left longus capitis.
Select the right or left rectus capitis posterior minor.
Select the right or left rectus capitis posterior major.
Select the right or left obliquus capitis superior.
Select the right or left obliquus capitis inferior.
Select the right or left splenius cervicis.
Select the right or left splenius capitis.

**Transversospinalis (Muscular System)**
Select the right or left rotatores breves.
Select the right or left rotatores longi.
Select the right or left interspinales cervicis.
Select the right or left interspinales lumborum.
Select the right or left intertransversarii posteriores cervicis.
Select the right or left intertransversarii anteriores cervicis.
Select the right or left intertransversarii laterales lumborum.
Select the right or left intertransversarii mediales lumborum.
Select the right or left semispinales cervicis.
Select the right or left semispinales thoracis.
Select the right or left semispinales capitis (lateral fascicle).
Select the right or left semispinales capitis (medial fascicle).

**Anterior Thorax (Muscular System)**
Select the right or left pectoralis minor.
Select the right or left serratus anterior.
Select the right or left sternalis.
Select the right or left subclavius.
Select the diaphragm.

**Intercostals (Muscular System)**
Select the right or left external intercostal.
Select the right or left internal intercostal.
Select the right or left subcostal (innermost intercostal).
Select the right or left transversus thoracis (innermost intercostal).
**Posterior Thorax (Muscular System)**
- Select the right or left levatores costarum breves.
- Select the right or left levatores costarum longi.
- Select the right or left levator scapulae.
- Select the right or left quadratus lumborum.
- Select the right or left rhomboideus major.
- Select the right or left rhomboideus minor.
- Select the right or left serratus posterior inferior.
- Select the right or left serratus posterior superior.
- Select the right or left trapezius.

**Abdomen (Muscular System)**
- Select the right or left rectus abdominis.
- Select the right or left external oblique.
- Select the right or left transversus abdominis.
- Select the right or left pyramidalis.
- Select the right or left internal oblique.

**Hip (Muscular System)**
- Select the right or left gluteus medius.
- Select the right or left superior gemellus.
- Select the right or left obturator externus.
- Select the right or left gluteus maximus.
- Select the right or left quadratus femoris.
- Select the right or left piriformis.
- Select the right or left inferior gemellus.
- Select the right or left gluteus minimus.
- Select the right or left obturator internus.

**Inner Hip (Muscular System)**
- Select the right or left psoas major.
- Select the right or left psoas minor.
- Select the right or left iliacus.

**Pelvic Floor (M) (Muscular System)**
- Select the right or left deep transverse perineal muscle.
- Select the right or left levator ani (pubococygeus).
- Select the right or left iliococcygeus.
- Select the right or left external anal sphincter.
- Select the right or left coccygeus.
- Select the central tendon of the urogenital diaphragm.
- Select the right or left superficial transverse perineal muscle.

**Pelvic Floor (F) (Muscular System)**
- Select the right or left deep transverse perineal.
- Select the right or left superficial transverse perineal.
- Select the right or left puborectalis (part of levator ani).
- Select the right or left prerectal fibers (part of levator ani).

**Anterior Upper Leg (Muscular System)**
- Select the right or left illiotibial (Maissiat's) tract (band).
- Select the right or left tensor fascia lata (fasciae latae).
- Select the right or left vastus medialis.
- Select the right or left vastus intermedius.
- Select the right or left vastus lateralis.
- Select the right or left rectus femoris.
- Select the right or left sartorius.

**Medial Upper Leg (Muscular System)**
- Select the right or left adductor magnus.
- Select the right or left adductor longus.
- Select the right or left adductor brevis.
- Select the right or left gracilis.
- Select the right or left pectineus.

**Posterior Upper Leg (Muscular System)**
- Select the right or left biceps femoris (short head).
- Select the right or left biceps femoris (long head).
- Select the right or left semitendinosus.
- Select the right or left semimembranosus.
Lower Leg I (Muscular System)
- Select the right or left fibularis (peroneus) brevis.
- Select the right or left fibularis (peroneus) longus.
- Select the right or left tibialis anterior.
- Select the right or left extensor hallucis longus.
- Select the right or left extensor digitorum longus.
- Select the right or left fibularis (peroneus) tertius.

Lower Leg II (Muscular System)
- Select the right or left gastrocnemius.
- Select the right or left plantaris.
- Select the right or left popliteus.
- Select the right or left flexor digitorum longus.
- Select the right or left tibialis posterior.
- Select the right or left Achilles tendon (calcaneal tendon).

Foot (Muscular System)
- Select the right or left flexor digitorum brevis.
- Select the right or left abductor digiti minimi.
- Select the right or left abductor hallucis.
- Select the right or left lumbricals.
- Select the right or left quadratus plantae (flexor accessorius).
- Select the right or left adductor hallucis (transverse head).
- Select the right or left adductor hallucis (oblique head).
- Select the right or left plantar interossei.
- Select the right or left dorsal interossei.
- Select the right or left flexor hallucis brevis.
- Select the right or left flexor digiti minimi brevis.
- Select the right or left extensor digitorum brevis.
- Select the right or left extensor hallucis brevis.

Head (Muscular System)
- Select the right or left zygomaticus minor.
- Select the right or left depressor septi.
- Select the right or left geniohyoid.
- Select the right or left superficial masseter.
- Select the right or left orbicularis oculi.
- Select the right or left temporalis.
- Select the right or left levator palpebrae superioris.
- Select the right or left depressor anguli oris.
- Select the right or left lateral rectus.
- Select the tongue.
- Select the right or left nasalis (alar portion).
- Select the right or left corrugator supercili.
- Select the right or left palatoglossus.
- Select the right or left nasalis (transverse portion).
- Select the right or left mentalis.
- Select the right or left levator labii superioris.
- Select the right or left lateral pterygoid (inferior head).
- Select the right or left occipitofrontalis (epicranius).
- Select the right or left medial rectus.

Neck and Laryngeal (Muscular System)
- Select the right or left anterior auricularis.
- Select the right or left hyoglossus.
- Select the right or left superior oblique.
- Select the right or left depressor supercili.
- Select the right or left procerus.
- Select the right or left posterior auricularis.
- Select the right or left common tendinous ring.
- Select the right or left inferior oblique.
- Select the right or left medial pterygoid.
- Select the right or left superior rectus.
- Select the right or left styloglossus.
- Select the right or left deep masseter.
- Select the right or left zygomaticus major.
- Select the right or left superior auricularis.
- Select the right or left inferior rectus.
- Select the right or left lateral pterygoid (superior head).
- Select the right or left levator labii superioris alaeque nasi.
- Select the right or left inferior oblique.
- Select the right or left depressor labii inferioris.
- Select the right or left platysma.
- Select the right or left levator anguli oris.
- Select the right or left risorius.
- Select the right or left genioglossus.
- Select the right or left omohyoid.
- Select the right or left transverse arytenoid.
- Select the right or left anterior scalene.
Select the right or left oblique cricothyroid.
Select the right or left thyrohyoid.
Select the right or left lateral cricoarytenoid.
Select the right or left vocalis.
Select the right or left sternocleidomastoid.
Select the right or left digastric.
Select the oblique arytenoid.
Select the right or left sternohyoid.
Select the right or left mylohyoid.
Select the right or left middle scalene.
Select the right or left aryepiglottic fold.
Select the right or left stylohyoid.
Select the right or left thyroarytenoid.
Select the right or left posterior cricoarytenoid.
Select the right or left sternothyroid.
Select the right or left posterior scalene.
Select the right or left straight cricothyroid.

Shoulder and Arm (Muscular System)
Select the right or left teres major.
Select the right or left coracobrachialis.
Select the right or left anconeus.
Select the right or left biceps brachii (long head).
Select the right or left triceps (medial head).
Select the right or left pectoralis major.
Select the right or left triceps tendon.
Select the right or left deltoid (posterior head).
Select the right or left infraspinatus.
Select the right or left triceps (lateral head).
Select the right or left deltoid (middle head).
Select the right or left brachialis.
Select the right or left bicipital aponeurosis.
Select the right or left teres minor.
Select the right or left deltoid (anterior head).
Select the right or left brachioradialis.
Select the right or left triceps (long head).
Select the right or left biceps brachii (short head).
Select the right or left supraspinatus.
Select the right or left subscapularis.
Select the right or left latissimus dorsi.

Forearm and Hand (Muscular System)
Select the right or left flexor digitorum superficialis.
Select the right or left extensor carpi radialis brevis.
Select any of the lumbricals.
Select the right or left palmaris brevis.
Select the right or left flexor digiti minimi brevis.
Select the right or left opponens pollicis.
Select the right or left extensor carpi radialis longus.
Select the right or left pronator quadratus.
Select any of the palmar interossei.
Select the right or left flexor digitorum profundus.
Select the right or left extensor digitorum.
Select the right or left palmaris longus.
Select the right or left extensor indicis.
Select any of the dorsal interossei.
Select the right or left extensor carpi ulnaris.
Select the right or left extensor digiti minimi.
Select the right or left flexor pollicis brevis.
Select the right or left extensor pollicis longus.
Select the right or left adductor pollicis.
Select the right or left pronator teres.
Select the right or left opponens digiti minimi.
Select the right or left flexor carpi ulnaris.
Select the right or left flexor carpi radialis.

Back (Muscular System)
Select the right or left spinalis thoracis.
Select the right or left rectus capitis posterior minor.
Select the right or left longus colli (superior oblique).
Select the right or left intertransversarii posteriores cervicis.
Select the right or left multifidus.
Select the right or left splenius cervicis.
Select the right or left rotatores breves.
Select the right or left splenius cervicis.
Select the right or left longissimus capitis.
Select the right or left iliocostalis thoracis.
Select the right or left longus colli (vertical).
Select the right or left splenius capitis.
Select the right or left semispinales capitis (medial fascicle).
Select the right or left rectus capitis lateralis.
Select the right or left iliocostalis cervicis.
Select the right or left intertransversarii laterales lumbarum.
Select the right or left splenius cervicis.
Select the right or left longissimus thoracis.
Select the right or left longus colli.
Select the right or left rotatores longi.
Select the right or left splenius capitis.
Select the right or left rectus capitis posterior major.
Select the right or left interspinales cervicis.
Select the right or left obliquus capitis inferior.
Select the right or left semispinales thoracis.
Select the right or left interspinales lumbarum.
Select the right or left longissimus cervicis.
Select the right or left rectus capitis anterior.
Select the right or left intertransversarii mediales lumbarum.
Select the right or left semispinales cervicis.
Select the right or left longus colli (inferior oblique).
Select the right or left semispinales capitis (lateral fascicle).
Select the right or left iliocostalis lumborum.
Select the right or left obliquus capitis superior.

**Thorax (Muscular System)**
Select the right or left external intercostal.
Select the right or left quadratus lumborum.
Select the right or left pectoralis minor.
Select the right or left trapezius.
Select the diaphragm.
Select the right or left subclavius.
Select the right or left levator scapulae.
Select the right or left serratus posterior inferior.
Select the right or left sternalis.
Select the right or left transversus thoracis (innermost intercostal).
Select the right or left rhomboideus minor.
Select the right or left serratus posterior superior.
Select the right or left internal intercostal.
Select the right or left levatores costarum breves.
Select the right or left subcostal (innermost intercostal).
Select the right or left rhomboideus major.
Select the right or left levatores costarum longi.
Select the right or left serratus anterior.

**Pelvis, Abdomen (Muscular System)**
Select the right or left external oblique.
Select the right or left superficial transverse perineal muscle.
Select the right or left iliococcygeus.
Select the right or left rectus abdominis.
Select the right or left coccygeus.

**Hip and Upper Leg (Muscular System)**
Select the right or left quadratus femoris.
Select the right or left vastus medialis.
Select the right or left iliacus.
Select the right or left gluteus medius.
Select the right or left tensor fascia lata (fasciae latae).
Select the right or left inferior gemellus.
Select the right or left semitendinosus.
Select the right or left superior gemellus.
Select the right or left pectineus.
Select the right or left biceps femoris (short head).
Select the right or left adductor brevis.
Select the right or left vastus intermedius.
Select the right or left psoas major.
Select the right or left iliobibial (Maissiat’s) tract (band).
Select the right or left gluteus minimus.
Select the right or left obturator externus.
Select the right or left biceps femoris (long head).
Select the right or left semimembranosus.
Select the right or left piformis.
Select the right or left obturator internus.
Select the right or left rectus femoris.
Select the right or left psoas minor.
Select the right or left sartorius.
Select the right or left adductor magnus.
Select the right or left vastus lateralis.
Select the right or left gluteus maximus.
Select the right or left adductor longus.
Select the right or left gracilis.

Lower Leg and Foot (Muscular System)
Select the right or left extensor digitorum longus.
Select the right or left quadratus plantae (flexor accessorius).
Select the right or left extensor hallucis brevis.
Select the right or left fibularis (peroneus) brevis.
Select the right or left popliteus.
Select the right or left flexor digitorum brevis.
Select the right or left adductor hallucis (transverse head).
Select the right or left lumbricals.
Select the right or left gastrocnemius.
Select the right or left tibia (anterior).
Select the right or left flexor digitorum longus.
Select the right or left tibia (posterior).
Select the right or left flexor hallucis brevis.
Select the right or left adductor hallucis (oblique head).

Cranial Nerves
Select the right or left olfactory nerve (CN01).
Select the right or left optic nerve (CN02).
Select the right or left oculomotor nerve (CN03).
Select the right or left trochlear nerve (CN04).
Select the right or left abducens (abducent) nerve (CN06).
Select the right or left trigeminal nerve (CN05) or any of its branches.
Select the right or left ophthalmic nerve and/or any of its branches.
Select the right or left maxillary nerve.
Select the right or left mandibular nerve (CN05).
Select the right or left facial nerve (CN07) or any of its branches.
Select the right or left vestibulocochlear nerve (CN08).
Select the right or left glossopharyngeal nerve (CN09) or any of its branches.
Select the right or left vagus nerve (CN10) or any of its branches.
Select the right or left accessory nerve (CN11) or any of its branches.
Select the right or left hypoglossal nerve (CN12) or any of its branches.

Nervous System
Overview, Nervous
Select the spinal cord.
Select any part of the cerebrum.
Select any structure of the right or left cervical plexus.
Select any structure of the right or left brachial plexus.
Select any cranial nerve.
Select a thoracic or intercostal nerve.
Select the right or left eye.
Select any part of the cerebellum.
Select the right or left lesser occipital nerve.
Select the right or left great auricular nerve.
Select the right or left transverse cervical nerve.
Select the right or left supraclavicular nerve.
Select the right or left phrenic nerve.

**Brachial Plexus**

Select the right or left C5 spinal nerve.
Select the right or left C6 spinal nerve.
Select the right or left C7 spinal nerve.
Select the right or left C8 spinal nerve.
Select a portion of the right or left T1 spinal nerve that contributes to the brachial plexus.
Select the right or left axillary nerve.
Select the right or left musculocutaneous nerve.
Select the right or left radial nerve.
Select the right or left median nerve.
Select the right or left ulnar nerve.
Select the right or left long thoracic nerve.
Select the right or left suprascapular nerve.
Select the right or left brachial plexus cutaneous nerve of the arm.
Select the right or left medial antebrachial cutaneous nerve.

**Sacral Plexus**

Select the right or left L4 spinal nerve.
Select the right or left L5 spinal nerve.
Select the right or left S1 spinal nerve.
Select the right or left S2 spinal nerve.
Select the right or left S3 spinal nerve.
Select the right or left S4 spinal nerve.
Select the right or left S5 spinal nerve.
Select the right or left posterior femoral cutaneous nerve.
Select the right or left sciatic nerve.
Select the right or left pudendal nerve.

**Lower Leg (Nervous System)**

Select the right or left tibial nerve.
Select the right or left common fibular nerve.
Select the right or left superficial fibular nerve or any of its branches.
Select the right or left deep fibular nerve or any of its branches.
Select the right or left sural nerve.
Select the right or left medial plantar nerve.
Select the right or left lateral plantar nerve.

**Central Nervous**

Select the spinal cord.
Select the brain stem.
Select any part of the cerebellum.
Select any part of the diencephalon.
Select any part of the cerebrum.
Select any part of the limbic system.
Select the right medulla oblongata.
Select the right midbrain.
Select the left pons.
Select the left midbrain.
Select the right pons.
Select the left medulla oblongata.

**Cerebellum**

Select any part of the cerebellum.
Select the left arbor vitae.
Select the right or left cerebellar peduncle.
Select the right or left vermis.
Select any part of the right or left posterior lobe.
Select any part of the right or left anterior lobe.
Select the right or left flocculus.

**Diencephalon**

Select the right or left thalamus.
Select the right or left hypothalamus.
Select the right or left part of the hypophysis (pituitary gland).
Select the right or left part of the infundibulum (pituitary stalk).
Select the right or left part of the optic chiasm.
Select the right or left part of the epiphysis (pineal gland).

Cerebrum
Select the right or left temporal lobe.
Select the right or left precentral gyrus.
Select the right or left central sulcus.
Select the right or left lateral sulcus.
Select the right or left occipital lobe.
Select the right or left frontal lobe.
Select the right or left parietal lobe.
Select the right or left parieto-occipital sulcus.
Select the right or left putamen.
Select the right or left side of the corpus callosum.

Limbic System
Select the right or left septal nucleus.
Select the right or left mammillary body.
Select the right or left hippocampus.
Select the right or left fornix.
Select the right or left dentate gyrus.
Select the right or left amygdala.
Select the right or left anterior commissure.

Pituitary Gland
Select any part of the right or left pars distalis.
Select any part of the right or left pars tuberalis.
Select any part of the right or left pars intermedia.

Select any part of the right or left neurohypophysis (posterior pituitary).
Select the right or left part of the infundibulum (pituitary stalk).

Thoracic Nerves
Select the right or left of any thoracic nerve.
Select a thoracic ventral ramus.
Select a thoracic dorsal ramus.
Select a thoracic dorsal ganglion.
Select a thoracic ventral root.
Select any thoracic lateral cutaneous branch.
Select any thoracic anterior cutaneous branch.

Reproductive System
Overview, Repro. (M)
Select any part of the prostate.
Select the glans penis.
Select one of the testes.
Select any part of the urethra.
Select the right or left vas deferens.
Select the right or left epididymis.
Select any part of the corpus cavernosum.
Select the right or left lateral cutaneous branch.
Select any part of the seminal vesicles (vesicular glands).
Select one of the ejaculatory ducts.
Select the right or left epididymis.

Overview, Repro. (F)
Select one of the ovaries.
Select the vestibule.
Select the labia minora.
Select the labia majora.
Select one of the fallopian tubes.
Select one of the fimbriae.
Select any part of the uterus.
External Genitalia (M)
Select the corpus spongiosum.
Select any part of the corpus cavernosum.
Select the glans penis.

Internal Genitalia (M)
Select one of the testes.
Select any part of the prostate.
Select one of the bulbourethral (Cowper’s) glands.
Repro. Ducts (M)
Select the right or left vas deferens.
Select any part of the seminal vesicles (vesicular glands).
Select one of the ejaculatory ducts.
Select the right or left epididymis.
External Genitalia (F)
Select the vestibule.
Select the labia minora.
Select the labia majora.
Select the prepuce (hood).
Select the urethral orifice.
Select the clitoris.

**Internal Genitalia (F)**
Select one of the fallopian tubes.
Select any part of the vagina.
Select one of the fimbriae.
Select any part of the uterus.

**Urinary & Repro. (M)**
Select the right or left vas deferens.
Select one of the seminal vesicles (vesicular glands).
Select one of the ejaculatory ducts.
Select the right or left epididymis.
Select one of the testes.
Select any part of the prostate.
Select one of the bulbourethral (Cowper's) glands.
Select the corpus spongiosum.
Select any part of the corpus cavernosum.
Select the glans penis.
Select any part of the urethra.
Select the prostatic urethra.
Select any of the renal pyramids.
Select the right or left renal pelvis.
Select one of the adrenal glands.
Select any part of the kidney.
Select one of the ureters.
Select the urethra.
Select the bladder.

**Respiratory System**

**Overview, Respiratory**
Select the nasal cavity.
Select a nasal cartilage.
Select the larynx.
Select any part of the pharynx.
Select any lobe of the left lung.
Select the trachea.
Select any lobe of the right lung.
Select the diaphragm.
Select the esophagus.

**Upper Respiratory**
Select a nasal cartilage.
Select one of the nasal conchae (turbinates).

**Lower Respiratory**
Select the larynx.
Select the esophagus.
Select the trachea.
Select any part of the stomach.
Select the laryngopharynx.

**Digestive, Respiratory**
Select the epiglottis.
Select the esophagus.
Select the trachea.
Select any part of the stomach.
Select the laryngopharynx.

**Nasal Cavity**
Select the nasal cavity.
Select any part of the nasal conchae (turbinates).
Select a nasal cartilage.
Select the nasopharynx.
Select one of the nasal bones.
Select the frontal bone.
Select the sphenoid bone.
Select one of the eustachian tubes.
Trachea & Bronchi
- Select the trachea.
- Select the tracheal cartilaginous rings.
- Select any of the tertiary (segmental) bronchi.
- Select the right secondary cartilaginous rings.
- Select any of the primary cartilaginous rings.
- Select any of the secondary (lobar) bronchi.
- Select a primary (main) bronchus.

Larynx
- Select the cricotracheal ligament.
- Select the cricothyroid membrane and ligament.
- Select the cricoid cartilage.
- Select the epiglottis.
- Select the thyrohyoid membrane.
- Select the thyroid cartilage.
- Select one of the vocal ligaments.
- Select one of the corniculate cartilages.
- Select one of the arytenoid cartilages.

Lungs, Exterior
- Select the right middle lobe.
- Select the right inferior lobe.
- Select the left inferior lobe.
- Select the horizontal fissure.
- Select one of the oblique fissures.
- Select the right superior lobe.
- Select the left superior lobe.
- Select the root (hilum) of one of the lungs.

Pulmonary Circuit
- Select the atrium which receives deoxygenated blood from the vena cava.
- Select the atrium which receives oxygenated blood from the pulmonary veins.
- Select any part of the pulmonary trunk.
- Select any of the pulmonary veins.
- Select any of the pulmonary arteries.

Full Respiratory
- Select the atrium which receives deoxygenated blood from the vena cava.
- Select the atrium which receives oxygenated blood from the pulmonary veins.
- Select any part of the pulmonary trunk.
- Select any of the pulmonary veins.
- Select any of the pulmonary arteries.
- Select the right middle lobe.
- Select the right inferior lobe.
- Select the left inferior lobe.
- Select the horizontal fissure.
- Select one of the oblique fissures.
- Select the right superior lobe.
- Select the left superior lobe.
- Select the root (hilum) of one of the lungs.
- Select the cricotracheal ligament.
- Select the cricothyroid membrane and ligament.
- Select the cricoid cartilage.
- Select the epiglottis.
- Select the thyrohyoid membrane.
- Select the thyroid cartilage.
- Select one of the vocal ligaments.
- Select one of the corniculate cartilages.
- Select one of the arytenoid cartilages.
- Select the cricotracheal ligament.
- Select the cricothyroid membrane and ligament.
- Select the cricoid cartilage.
- Select the trachea.
- Select the tracheal cartilaginous rings.
- Select any of the tertiary (segmental) bronchi.
- Select the right secondary cartilaginous rings.
- Select any of the primary cartilaginous rings.
- Select any of the secondary (lobar) bronchi.
- Select a primary (main) bronchus.
- Select the nasal cavity.
- Select any part of the nasal conchae (turbinates).
- Select a nasal cartilage.
- Select the esophagus.
- Select any part of the stomach.
- Select the laryngopharynx.
- Select the larynx.
- Select the right primary bronchus.
- Select any lobe of the right lung.
- Select any lobe of the left lung.
- Select any part of the pharynx.
- Select the diaphragm.
- Select the nasopharynx.
- Select the oropharynx.
- Select one of the nasal bones.
- Select the frontal bone.
- Select the sphenoid bone.
- Select one of the eustachian tubes.
Skeletal System

Skull
- Select the right or left maxilla.
- Select any part of the mandible.
- Select the right or left zygomatic bone.
- Select the right or left parietal bone.
- Select the right or left temporal bone.
- Select the right or left nasal bone.
- Select the right or left lacrimal bone.
- Select the right or left palatine bone.
- Select the vomer.
- Select any part of the occipital bone.
- Select the frontal bone.
- Select any part of the ethmoid.
- Select any part of the sphenoid.
- Select the hyoid bone.
- Select any of the nasal cartilages.
- Select the right or left inferior nasal concha.

Teeth (Skeletal System)
- Select a lateral incisor.
- Select a second molar.
- Select a canine (cuspid).
- Select a first premolar (bicuspide).
- Select a third molar.
- Select a central incisor.
- Select a second premolar (bicuspide).
- Select a first molar.

Laryngeal (Skeletal System)
- Select the cricoid cartilage.
- Select the cricothyroid membrane and ligament.
- Select the cricotracheal ligament.
- Select the epiglottis.
- Select the hyoepiglottic ligament.
- Select the thyrohyoid membrane.
- Select the thyroid cartilage.
- Select the right or left arytenoid cartilage.
- Select the right or left corniculate cartilage.
- Select the right or left vocal ligament.
- Select the hyoid (os hyoideum, lingual bone).

Thoracic Cage
- Select any part of the sternum.
- Select any part of the manubrium.
- Select the xiphioid process.
- Select any part of a false rib.
- Select any part of a vertebral (floating) rib.
- Select any part of a true rib.
- Select any part of a vertebrochondral rib.

Sternum
- Select the body of sternum.
- Select the manubrium.
- Select the xiphioid process.

Vertebral Column
- Select any part of the sacral spine.
- Select a thoracic vertebra.
- Select the seventh cervical vertebra.
- Select the coccyx.
Select the 1st proximal phalanx (pollex).
Select the 2nd distal phalanx (hand).
Select the 2nd middle phalanx (hand).
Select the 2nd proximal phalanx (hand).
Select the 3rd distal phalanx (hand).
Select the 3rd middle phalanx (hand).
Select the 3rd proximal phalanx (hand).
Select the 4th distal phalanx (hand).
Select the 4th middle phalanx (hand).
Select the 4th proximal phalanx (hand).
Select the 5th distal phalanx (hand).
Select the 5th middle phalanx (hand).
Select the 5th proximal phalanx (hand).
Select the humerus (arm, brachium).
Select the interosseous membrane (antebrachial).
Select the radius (forearm, antebrachium).
Select the ulna (forearm, antebrachium).

Hand (Skeletal System)
Select the capitate.
Select the hamate.
Select the lunate.
Select the pisiform.
Select the scaphoid.
Select the trapezium.
Select the trapezoid.
Select the triquetral (triangular).
Select the 1st metacarpal (pollex).
Select the 2nd metacarpal.
Select the 3rd metacarpal.
Select the 4th metacarpal.
Select the 5th metacarpal.
Select the 1st distal phalanx (pollex).
Select the 1st proximal phalanx (pollex).
Select the 2nd distal phalanx (hand).
Select the 2nd middle phalanx (hand).
Select the 2nd proximal phalanx (hand).
Select the 3rd distal phalanx (hand).
Select the 3rd middle phalanx (hand).
Select the 3rd proximal phalanx (hand).
Select the 4th distal phalanx (hand).
Select the 4th middle phalanx (hand).
Select the 4th proximal phalanx (hand).
Select the 5th distal phalanx (hand).
Select the 5th middle phalanx (hand).
Select the 5th proximal phalanx (hand).

Lower Limb (Skeletal System)
Select the femur.
Select the fibula.
Select the 1st metatarsal.
Select the 2nd metatarsal.
Select the 3rd metatarsal.
Select the 4th metatarsal.
Select the 5th metatarsal.
Select the 1st distal phalanx.
Select the 1st proximal phalanx.
Select the 2nd distal phalanx.
Select the 2nd proximal phalanx.
Select the 3rd distal phalanx.
Select the 3rd proximal phalanx.
Select the 4th distal phalanx.
Select the 4th middle phalanx.
Select the 4th proximal phalanx.
Select the 5th distal phalanx.
Select the 5th middle phalanx.
Select the 5th proximal phalanx.
Select the calcaneus.
Select the cuboid.
Select the intermediate cuneiform.
Select the lateral cuneiform.
Select the medial cuneiform.
Select the navicular.
Select the talus.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the lateral meniscus.
Select the medial collateral (tibial collateral) ligament.
Select the anterior cruciate ligament.
Select the lateral collateral (fibular collateral) ligament.
Select the 1st distal phalanx.
Select the 1st proximal phalanx.
Select the 2nd distal phalanx.
Select the 2nd middle phalanx.
Select the 2nd proximal phalanx.
Select the 3rd distal phalanx.
Select the 3rd middle phalanx.
Select the 3rd proximal phalanx.
Select the 4th distal phalanx.
Select the 4th middle phalanx.
Select the 4th proximal phalanx.
Select the 5th distal phalanx.
Select the 5th middle phalanx.
Select the 5th proximal phalanx.
Select the calcaneus.
Select the cuboid.
Select the intermediate cuneiform.
Select the lateral cuneiform.
Select the medial cuneiform.
Select the navicular.
Select the talus.

Overview, Urinary (M)
Select one of the adrenal glands.
Select any part of the kidney.
Select one of the ureters.
Select the urethra.
Select the bladder.

Overview, Urinary (F)
Select one of the adrenal glands.
Select any part of the kidney.
Select one of the ureters.
Select the urethra.
Select the bladder.

Kidneys
Select any of the renal pyramids.
Select the right or left renal pelvis.
Select one of the adrenal glands.
Select one of the renal arteries.
Select one of the renal veins.

Urinary & Repro. (M)
Select the right or left vas deferens.
Select one of the seminal vesicles (vesicular glands).
Select one of the ejaculatory ducts.
Select the right or left epididymis.
Select one of the testes.
Select any part of the prostate.
Select one of the bulbourethral (Cowper's) glands.
Select the corpus spongiosum.
Select any part of the corpus cavernosum.
Select the glans penis.
Select any part of the urethra.
Select the prostatic urethra.
Select any of the renal pyramids.
Select the right or left renal pelvis.
Select one of the adrenal glands.
Select any part of the kidney.
Select the bladder.

Urinary & Repro. (F)
Select the vestibule.
Select the labia minora.
Select the prepuce (hood).
Select the clitoris.
Select one of the ovaries.
Select any part of the vagina.
Select one of the fallopian tubes.
Select one of the fimbriae.
Select any part of the uterus.
Select any of the renal pyramids.
Select the right or left renal pelvis.
Select one of the adrenal glands.
Select any part of the kidney.
Select one of the ureters.
Select the urethra.
Select the bladder.
Bony Landmark Quizzes (Dissection)
Fibula Landmarks Dissection Quiz

- Select the apex.
- Select the articular facet.
- Select the head of the fibula.
- Select the interosseous border.
- Select the lateral malleolus.
- Select the shaft of the fibula.
- Select the malleolar fossa.

Tibia Landmarks Dissection Quiz

- Select the lateral condyle.
- Select the medial condyle.
- Select the medial malleolus.
- Select the posterior intercondylar area.
- Select the medial border.
- Select the articular facet for the fibula.
- Select the anterior intercondylar area.
- Select a tubercle of the intercondylar eminence.
- Select the anterior border.
- Select the soleal line.
- Select the shaft of the tibia.
- Select the interosseous border.
- Select the tibial tuberosity.
- Select the fibular notch.

Femur Landmarks Dissection Quiz

- Select the medial condyle.
- Select the gluteal tuberosity.
- Select the popliteal surface of the femur.
- Select the intertrochanteric crest.
- Select the intercondylar fossa.
- Select the greater trochanter.
- Select the head of the femur.
- Select the medial epicondyle.
- Select the neck of the femur.
- Select the patellar surface of the femur.
- Select the lesser trochanter.
- Select the medial supracondylar line.
- Select the lateral condyle.
- Select the quadrate tubercle.
- Select the shaft of the femur.
- Select the linea aspera.
- Select the lateral epicondyle.
- Select the lateral supracondylar line.
- Select the trochanteric fossa.

Pubis Landmarks Dissection Quiz

- Select the body of the pubis.
- Select the iliopubic eminence.
- Select the pubis portion of the pubic arch.
- Select the obturator crest.
- Select the pubic tubercle.
- Select the acetabular fossa.
- Select the pubis surface of the obturator foramen.
- Select the superior ramus.
- Select the pubic crest.
- Select the acetabular notch.
- Select the lunate surface of the acetabulum.
- Select the inferior ramus.

Ischium Landmarks Dissection Quiz

- Select the ischial tuberosity.
- Select the acetabular rim.
- Select the ischial spine.
- Select the ramus.
- Select the acetabular fossa.
- Select the ischial surface of the obturator foramen.
- Select the body of the ischium.
- Select the lunate surface of the acetabulum.
- Select the ischial portion of the pubic arch.
- Select the lesser sciatic notch.

Ilium Landmarks Dissection Quiz

- Select the posterior superior iliac spine.
- Select the auricular surface.
- Select the acetabular rim.
- Select the greater sciatic notch.
- Select the body of the ilium.
- Select the acetabular fossa.
- Select the posterior inferior iliac spine.
- Select the iliac fossa.
- Select the tubercle of the iliac crest.
- Select the anterior inferior iliac spine.
- Select the anterior superior iliac spine.
- Select the arcuate line.
- Select the lunate surface of the acetabulum.
- Select the iliac crest.
**Ulna Landmarks Dissection Quiz**
- Select the trochlear notch.
- Select the head of the ulna.
- Select the radial notch.
- Select the olecranon.
- Select the shaft of the ulna.
- Select the tuberosity.
- Select the coronoid process.
- Select the styloid process.

**Radius Landmarks Dissection Quiz**
- Select the dorsal tubercle.
- Select the ulnar notch.
- Select the head of the radius.
- Select the neck of the radius.
- Select the tubercle.
- Select the shaft of the radius.
- Select the styloid process.

**Humerus Landmarks Dissection Quiz**
- Select the deltoïd tuberosity.
- Select the capitulum.
- Select the greater tubercle.
- Select the lesser tubercle.
- Select the trochea.
- Select the head of the humerus.
- Select the medial epicondyle.
- Select the neck of the humerus.
- Select the intertubercular groove.
- Select the radial groove.
- Select the surgical neck of the humerus.
- Select the shaft of the humerus.
- Select the olecranon fossa.
- Select the lateral epicondyle.
- Select the coronoid fossa.
- Select the radial fossa.

**Clavicle Landmarks Dissection Quiz**
- Select the sternal end.
- Select the acromial end.
- Select the shaft of the clavicle.
- Select the conoid tubercle.

**Scapula Landmarks Dissection Quiz**
- Select the glenoid cavity.
- Select the acromion.
- Select the subscapular fossa.
- Select the supragnoid tubercle.
- Select the medial border.
- Select the spine of the scapula.
- Select the spinoglenoid notch.
- Select the inferior angle.
- Select the neck of the scapula.
- Select the coracoid process.
- Select the acromial angle.
- Select the superior angle.
- Select the lateral border.
- Select the superior border.

**Lumbar Spine Landmarks Dissection Quiz**
- Select a pedicle.
- Select the vertebral foramen.
- Select the body of the vertebra.
- Select an inferior notch.
- Select a mamillary process.
- Select a transverse process.
- Select the spinous process.
- Select a superior articular process.
- Select an inferior articular process.
- Select a lamina.

**Thoracic Spine Landmarks Dissection Quiz**
- Select a costal facet of a transverse process.
- Select a pedicle.
- Select an inferior costal facet.
- Select the vertebral foramen.
- Select the body of the vertebra.
- Select an inferior notch.
- Select a transverse process.
- Select the spinous process.
- Select a superior articular process.
- Select a superior costal facet.
Select an inferior articular process.
Select a lamina.

Cervical Spine Landmarks Dissection Quiz
- Select an anterior tubercle of a transverse process.
- Select a posterior tubercle of a transverse process.
- Select a pedicle.
- Select the vertebral foramen.
- Select the body of the vertebra.
- Select the bifid spinous process.
- Select a transverse process.
- Select a superior articular process.
- Select an inferior articular process.
- Select a lamina.

Mandible Landmarks Dissection Quiz
- Select the maxillary process.
- Select the conchal crest.
- Select the perpendicular plate.
- Select the sphenoid process.
- Select the orbital process.
- Select the horizontal part.

Lacrimal Bone Landmarks Dissection Quiz
- Select the lacrimal fossa.
- Select the lacrimal bone.

Palatine Bone Landmarks Dissection Quiz
- Select the greater palatine canal.
- Select the pyramidal process.
- Select the posterior nasal spine.

Maxilla Landmarks Dissection Quiz
- Select the alveolar process.
- Select the canine eminence.
- Select the incisive fossa.
- Select the anterior nasal spine.
- Select an alveolar canal.
- Select the body of the maxilla.
- Select the maxillary sinus.
- Select the canine fossa.
- Select the infraorbital canal and foramen.
- Select the frontal process.
- Select the zygomatic process.
- Select the maxillary surface of the inferior orbital fissure.
- Select the maxillary tuberosity.
- Select the hard palate.

Ethmoid Bone Landmarks Dissection Quiz
- Select the labyrinth.
- Select the perpendicular plate.
- Select a sinus.
- Select an orbital plate.
- Select a middle concha.
- Select the cribriform plate.
- Select the crista galli.
Sphenoid Bone Landmarks Dissection Quiz
➢ Select a medial pterygoid plate.
➢ Select an infratemporal crest of a greater wing.
➢ Select a foramen rotundum.
➢ Select a superior orbital fissure.
➢ Select the sphenoidal surface of a foramen lacerum.
➢ Select a foramen ovale.
➢ Select a greater wing.
➢ Select the sella turcica.
➢ Select a pterygoid canal.
➢ Select the posterior clinoid process.
➢ Select a lateral pterygoid plate.
➢ Select an optic foramen.
➢ Select a pterygoid process.
➢ Select the dorsum sellae.
➢ Select the sphenoid surface of an inferior orbital fissure.
➢ Select a foramen spinosum.
➢ Select an anterior clinoid process.
➢ Select the body of the sphenoid bone.
➢ Select a lesser wing.

Temporal Bone Landmarks Dissection Quiz
➢ Select the aqueduct of the vestibule.
➢ Select the postglenoid tubercle.
➢ Select the mastoid foramen.
➢ Select the temporal surface of the jugular foramen.
➢ Select the temporal surface of the foramen lacerum.
➢ Select the external auditory (acoustic) meatus.
➢ Select the base of the temporal bone.
➢ Select the carotid canal.
➢ Select the jugular fossa.
➢ Select the articular tubercle.
➢ Select the stylomastoid foramen.
➢ Select the petrous part.
➢ Select the arcuate eminence.
➢ Select the zygomatic process.
➢ Select the mastoid process.
➢ Select the internal auditory (acoustic) meatus.
➢ Select the mandibular fossa.
➢ Select the styloid process.

Frontal Bone Landmarks Dissection Quiz
➢ Select a supraorbital margin.
➢ Select the glabella.
➢ Select a superciliary arch.
➢ Select the base of the frontal bone.
➢ Select a zygomatic process.

Occipital Bone Landmarks Dissection Quiz
➢ Select the external occipital protuberance.
A&P Pre-Lab and Post-Lab Quizzes
Pre-Lab Quiz: Skeletal System Overview

1. What is produced inside the bone marrow of spongy bone?
   a. Calcium
   b. Phosphorus
   ✔ c. Red blood cells
   d. Osteoblasts

2. How does the skeletal system facilitate body movement?
   ✔ a. Muscles attach to the bones and cause movement when they relax.
   b. Muscles attach to the bones and cause movement when they contract.
   c. Stem cells within the bone marrow cause the bones to move surrounding muscles.
   d. Calcium causes the bones to grow, moving surrounding muscles.

3. All of the following statements describe how bones of the axial skeleton protect vital organs except
   a. The bones of the skull surround and protect the brain.
   b. The bones of the thoracic cage surround and protect the heart and lungs.
   ✔ c. The bones of the pelvic girdle surround and protect the kidneys.
   d. The bones of the vertebral column surround and protect the spinal cord.

Pre-Lab Quiz: Types of Bones

1. Which of the following bones are classified as flat bones?
   ✔ a. The scapulae and sternum
   b. The metacarpals and metatarsals
   c. The humerus and femur
   d. The vertebrae and pelvic bones

2. _____ bones protect internal organs.
   a. Long
   b. Sesamoid
   ✔ c. Flat
   d. Short

3. All of the following bones are classified as long bones except
   a. The humerus.
   b. The ribs.
   ✔ c. The metatarsals.
   d. The phalanges.

4. Which bone type reinforces tendons to protect them from wear?
   ✔ a. Flat bones
   b. Sesamoid bones
   c. Long bones
   d. Irregular bones

5. Which bone type is found in the wrist?
   a. Long bones
   b. Sesamoid bones
   ✔ c. Short bones
   d. Flat bones

Pre-Lab Quiz: Bone Tissue

1. All of the following statements accurately describe bone cells except
   a. Osteoclasts secrete enzymes to break down bone matrix.
   b. Osteocytes maintain bone tissue structure and sense bone health.
   ✔ c. Osteoblasts secrete enzymes to break down bone matrix.
   d. Osteoblasts synthesize bone matrix.

2. What is the purpose of the central canal in osteons?
   a. To provide space for red bone marrow
   b. To provide space for osteocytes
   ✔ c. To provide space for yellow bone marrow
   d. To provide space for the passage of blood vessels and nerves

3. What is the basic functional unit of compact bone?
   a. The trabecula
   ✔ b. The osteon
   c. Red bone marrow
   d. The periosteum

4. Which of the following statements accurately describes the exterior structures of a long bone?
   a. A long bone consists of an epiphysis (shaft) and a diaphysis at each end.
   b. The entire long bone is covered with articular cartilage.
   ✔ c. A long bone consists of a diaphysis (shaft) and an epiphysis at each end.
   d. The ends of the long bone are covered with periosteum.
5. Which of the following accurately lists the layers of long bones, from superficial to deep?
   a. Compact bone, medullary cavity, spongy bone
   b. Spongy bone, compact bone, medullary cavity
   c. Spongy bone, medullary cavity, compact bone
   ✔ d. Compact bone, spongy bone, medullary cavity

6. All of the following statements accurately describe bone marrow except
   ✔ a. Red bone marrow is found in the medullary cavity of long bones.
   b. Yellow bone marrow consists mostly of fat.
   c. Yellow bone marrow is found in the medullary cavity of long bones.
   d. Red bone marrow is located in flat bones, spongy bone, and the ends of long bones.

**Pre-Lab Quiz: Flat and Long Bone Formation**

1. How are osteoblasts delivered to the areas where long bone forms?
   a. They arrive in the cartilage that is secreted by chondroblasts into the bone template.
   b. They arrive in the bone matrix that is secreted by the mesenchymal cells.
   ✔ c. They arrive in the blood as blood vessels penetrate the bone template.
   d. They arrive in the periosteum that covers the bone matrix.

2. What is the role of chondroblasts in long bone formation?
   a. They lay down bone material, and as the bone grows, they calcify and die.
   b. They develop into osteoblasts, which secrete bone matrix.
   c. They develop into osteocytes that deposit calcium and other mineral salts that harden the bone matrix.
   ✔ d. They secrete cartilage, and as the cartilage grows, they calcify and die.

3. Which substance forms the framework on which long bones will be based?
   a. Bone matrix
   b. Periosteum
   ✔ c. Hyaline cartilage
   d. Spongy bone

4. What is the structure of flat bones?
   a. They consist of a layer of compact bone surrounding spongy bone and a medullary cavity.
   ✔ b. They consist of two layers of compact bone enclosing an interior of spongy bone.
   c. They consist of a lattice of trabeculae with spaces that are filled with red bone marrow.
   d. They consist of concentric lamellae enclosing a central canal through which blood vessels pass.

5. All of the following statements accurately describe steps in the process of flat bone formation except
   ✔ a. Chondroblasts secrete cartilage that develops in the shape of bones.
   b. Mesenchymal cells develop into osteoblasts.
   c. Osteoblasts secrete bone matrix and develop into osteocytes.
   d. Osteocytes deposit calcium and other mineral salts that harden the forming bone matrix.

6. What is the process of flat bone formation called?
   a. Endochondral ossification
   b. Calcification
   ✔ c. Intramembranous ossification
   d. Deposition

**Pre-Lab Quiz: Bone Fractures and Osteoporosis**

1. All of the following statements accurately describe osteoporosis except
   a. Its symptoms include bone pain and tenderness, as well as weak or brittle bones.
   ✔ b. It develops when bone resorption occurs faster than bone deposition.
   c. It developed when the bones absorb too much calcium.
   d. It is characterized by thinning of the spongy and compact bone.

2. All of the following statements accurately describe steps in the process of bone repair except
   a. Blood at the fracture site clots and forms a hematoma.
   ✔ b. Osteoclasts transform the callus into bone.
   c. Fibroblasts penetrate the fracture site and build a callus that bridges the broken bone.
   d. Osteoblasts transform the callus into bone.

3. Which cells are responsible for removing dead bone tissue during the bone repair process?
   a. Osteoblasts
   b. Osteocytes
   ✔ c. Fibroblasts
   d. Osteoclasts

4. Which type of fracture results when a bone is crushed into pieces?
   a. A compound fracture
   b. An impacted fracture
   ✔ c. A comminuted fracture
   d. A greenstick fracture
5. What distinguishes a greenstick fracture from the other types of fractures?
   a. The bone breaks in multiple places.
   b. The broken bone ends pierce the skin.
   c. The ends of the broken bone are driven into each other.
   ✔ d. Part of the bone breaks, but not all the way through.

Pre-Lab Quiz: Joints

1. All of the following statements accurately describe osteoarthritis except
   a. It is most common in the knee, elbow, shoulder, and hip joints.
   b. It causes pain and inflammation in joints.
   ✔ c. It is characterized by swollen joint cartilage, which prevents bone articulation.
   d. It is characterized by loss of joint cartilage, which causes articulating bones to rub against each other.

2. All of the following ligaments stabilize the knee except
   a. The anterior and posterior cruciate ligaments.
   b. The annular ligament.
   ✔ c. The collateral ligaments.
   d. The patellar ligament.

3. The thumb is a _____ joint, which allows for the unique movement of _____.
   a. Condyloid, circumduction
   b. Ball and socket, opposition
   ✔ c. Pivot, circumduction
   d. Saddle, opposition

4. The joint between the axis and atlas is a _____ joint.
   ✔ a. Pivot
   b. Hinge
   c. Gliding
   d. Condyloid

5. All of the following statements accurately describe synovial joints except
   a. They are movable joints that occur throughout the body.
   b. They are characterized by an articular capsule between the two joined bones.
   ✔ c. They are joints where a ligament connects two bones, allowing for a little movement.
   d. They are often supported by surrounding ligaments.

6. Which of the following joints is an example of a syndesmosis?
   ✔ a. The elbow joint
   b. The tibiofibular joint
   c. An intervertebral disc
   d. A carpal joint

7. Which of the following statements accurately describes synarthroses?
   a. They are joints that allow for slight movement and include syndesmoses and symphyses.
   b. They are joints that allow for full movement and are also known as synovial joints.
   ✔ c. They are joints that allow for different types of movement and include gliding, hinge, pivot, condyloid, saddle, and ball and socket joints.
   d. They are immovable joints that include skull sutures, gomphoses, and synchondroses.

Axial Skeleton Pre-Lab Quizzes

Pre-Lab Quiz: Skull, Cranial Bones

1. All of the following statements are true regarding fontanelles except
   a. They are large fibrous membranes between the cranial bones in fetuses and newborns.
   ✔ b. The sphenoid, mastoid, posterior, and anterior fontanelles are present in infants up to the age of two years.
   c. They allow the skull to enlarge to accommodate the growing brain.
   d. The sphenoid, mastoid, and posterior fontanelles close after two months, while the anterior fontanelle may exist for up to two years.

2. Which of the following statements accurately describes one of the skull sutures?
   a. The coronal suture is located between the two parietal bones.
   ✔ b. The lambdoid suture is located between the occipital and parietal bones.
   c. The sagittal suture is located between the temporal and parietal bones.
   d. The squamos suture is located between the frontal and parietal bones.

3. All of the following are key landmarks of the ethmoid bone except
   ✔ a. The sella turcica.
   b. The crista galli.
   c. The cribriform plate.
   d. The middle nasal conchae.

4. Which aperture is located on the occipital bone?
   ✔ a. Foramen magnum
   b. Foramen ovale
   c. Foramen rotundum
   d. Foramen spinosum
5. All of the following are cranial bones except
   a. The occipital bone.
   b. The temporal bones.
   ✔ c. The palatine bones.
   d. The sphenoid.

6. What is the purpose of the cranial bones?
   a. To support the primary organs of smell, taste, and sight
   ✔ b. To support and protect the brain
   c. To give shape to the face
   d. To provide openings for the respiratory and digestive systems

**Pre-Lab Quiz: Skull, Facial Skeleton**

1. Which are the smallest and most fragile facial bones?
   a. The palatine bones
   ✔ b. The lacrimal bones
   c. The zygomatic bones
   d. The nasal bones

2. What is a key landmark of the maxillae?
   a. The coronoid process
   b. The mental foramen
   ✔ c. The zygomatic process
   d. The maxillary process

3. All of the following bones articulate with the zygomatic bones except
   a. The maxillae.
   ✔ b. The parietal bones.
   c. The temporal bones.
   d. The frontal bone.

4. Which of the following statements accurately describes the mandible?
   a. It forms boundaries of the oral cavity, nasal cavity, and orbits.
   b. It contains the largest paranasal sinus.
   c. It is triangular in shape.
   ✔ d. It is the largest and strongest facial bone and the only movable skull bone.

5. All of the following bones are facial bones except
   a. The lacrimal bones.
   ✔ b. The parietal bones.
   c. The zygomatic bones.
   d. The maxillae.

**Pre-Lab Quiz: Skull, Cavities and Foramina**

1. All of the following statements accurately describe the hyoid bone except
   a. It articulates with the styloid processes of the temporal bones.
   b. It anchors the muscles of the tongue, larynx, epiglottis, and pharynx.
   c. It does not articulate with any other bone.
   d. It is attached to the base of the skull by ligaments.

2. The nasal septum includes the
   a. Sphenoid.
   b. Inferior nasal conchae.
   ✔ c. Vomer.
   d. Nasal bones.

3. All of the following bones are involved in forming the orbits except
   a. The ethmoid.
   ✔ b. The temporal bones.
   c. The palatine bones.
   d. The frontal bone.

4. Which of the following statements accurately describes the foramen magnum?
   a. Through it, the cranial cavity communicates with the vertebral canal.
   b. It is the gap where the sphenoid, occipital, and temporal bones meet.
   c. It is located on the superior surface of the lateral part of the occipital bone.
   d. It is located in the mandible.

5. Which of the following statements accurately describes the foramina of the skull?
   a. They are immovable joints that connect the cranial bones.
   b. They are spaces between the cranial bones that are present in fetuses and young infants.
   c. They are shallow depressions that allow the cranial bones to articulate with each other.
   ✔ d. They are holes that allow for passage of blood vessels, nerves, and the spinal cord.

6. All of the following statements accurately describe the auditory ossicles except
   a. They are located in the petrous part of the temporal bones.
   b. They are located in the petrous part of the parietal bones.
   c. They include the malleus, incus, and stapes.
   d. They transfer vibrations from the tympanic membrane to the inner ear.

**Pre-Lab Quiz: Vertebral Column**

1. The sacrum and _____ comprise the sacral spine.
   a. Atlas
   b. Axis
   ✔ c. Coccyx
   d. Pedicle
2. What is the significance of the lumbar vertebrae's body size?
   a. Their smaller size helps to support body movement.
   b. Their smaller size helps to support body flexibility.
   ✔ c. Their larger size helps to support more body weight.
   d. Their larger size helps to maintain the position of the spinal cord.

3. What is the function of the costal facets of the thoracic vertebrae?
   a. They attach the thoracic vertebrae to the cervical and lumbar vertebrae.
   b. They allow for passage of the spinal nerves to innervate the organs of the thoracic cage.
   ✔ c. They attach the thoracic vertebrae to each other.
   d. They attach the thoracic vertebrae to the ribs.

4. All of the following statements describe the structure of the cervical, thoracic, and lumbar vertebrae except
   a. They consist of an anterior body and a posterior vertebral arch.
   ✔ b. Their body consists of paired pedicles and laminae.
   c. Their vertebral arch consists of paired pedicles and laminae.
   d. They include an opening, called the vertebral foramen, through which the spinal cord passes.

5. How many cervical vertebrae are there?
   a. 7
   ✔ b. 12
   c. 5
   d. 2

6. What is the primary function of the vertebrae?
   a. To facilitate movement
   ✔ b. To protect the spinal cord
   c. To anchor the spinal nerves
   d. To support the skull

7. All of the following are part of the vertebral column except
   a. 24 vertebrae.
   ✔ b. The sacrum.
   c. The hyoid.
   d. The coccyx.

**Pre-Lab Quiz: Thoracic Cage**

1. All of the following statements accurately describe the false ribs except
   a. They give the thoracic cage flexibility.
   b. They include the vertebrochondral and floating ribs.
   c. They consist of ribs 8–12.
   ✔ d. They consist of ribs 1–7.

2. Ribs ____ are called true ribs because they ____. 
   a. 1–7, are not connected to the sternum
   b. 1–7, articulate directly with the sternum via individual costal cartilages
   ✔ c. 8–12, articulate directly with the sternum via individual costal cartilages
   d. 8–12, are not connected to the sternum

3. Which of the following statements accurately describes the manubrium of the sternum?
   a. It is the smallest part of the sternum.
   b. It is the middle part of the sternum.
   ✔ c. It is broad, thick, and triangular in shape.
   d. It is the inferior part of the sternum.

4. Which of the following is part of the sternum?
   a. The spinous process
   b. The transverse process
   ✔ c. The xiphoid process
   d. The superior articular process

5. All of the following are functions of the thoracic cage except
   a. Protecting the spinal cord.
   ✔ b. Protecting the heart.
   c. Protecting the lungs.
   d. Anchoring respiratory muscles.

**Axial Skeleton Multiple Choice Quiz 3**

1. All of the following are key landmarks of the temporal bone except
   a. The foramen ovale.
   ✔ b. The external auditory meatus.
   c. The styloid process.
   d. The mandibular fossa.

2. Which of the following lists the auditory ossicles, from inner to outer?
   a. Malleus, incus, stapes
   b. Incus, malleus, stapes
   ✔ c. Stapes, incus, malleus
   d. Stapes, malleus, incus
3. If you were explaining the purpose of the foramina of the skull to a friend, which of the following would you likely include in your explanation?

✔ a. The foramina are holes that allow for the passage of blood vessels, nerves, and the spinal cord.

b. The foramina are fibrous membranes that allow the skull to enlarge to accommodate the growing brain.

c. The foramina are immobile joints where cranial bones are connected with dense fibrous tissue.

d. The foramina are ligaments that facilitate movement of the skull.

4. All of the following are part of the axial skeleton except

a. The skull.

✔ b. The arm.

c. The vertebral column.

d. The thoracic cage.

5. Ribs 1–7 are called _____ ribs because they articulate directly to the sternum.

a. False

✔ b. True

c. Secondary

d. Vertebrochondral

6. If you were explaining the location of the skull sutures to a friend, you would likely include all of the following except

a. The lambdoid suture is between the occipital and parietal bones.

b. The coronal suture is between the frontal and parietal bones.

c. The squamous sutures are between the temporal and parietal bones.

✔ d. The sagittal suture is between the temporal and parietal bones.

7. Which part of the spine includes the atlas and axis?

a. Sacral spine

b. Thoracic spine

c. Lumbar spine

d. Cervical spine

8. If your friend asked you to explain the ligaments of the spine that support and reinforce the joints of the vertebral column, your explanation might include all of the following points except

a. The vertebral bodies are connected by anterior and posterior longitudinal ligaments.

b. The atlanto-occipital membranes, the alar ligaments, the transverse ligament of the atlas, and the tectorial membranes reinforce the craniovertebral joints.

✔ c. The vertebral bodies are connected by the alar ligaments and the transverse ligament of the atlas.

d. The vertebral arches are connected by the ligamenta flava, the interspinous ligaments, the supraspinous ligament, the nuchal ligament, and the intertransverse ligaments.

9. Which bone is part of the orbit and the nasal septum?

✔ a. Ethmoid

b. Frontal bone

c. Palatine bones

d. Lacrimal bones

10. How does the sacrum differ in the male and female body?

a. In the female, the sacrum is longer and narrower than in the male and directed more obliquely forward, decreasing the size of the pelvic cavity.

b. In the male, the sacrum is shorter and wider than in the female and directed more obliquely forward, decreasing the size of the pelvic cavity.

c. In the male, the sacrum is shorter and wider than in the female and directed more obliquely backward, increasing the size of the pelvic cavity.

✔ d. In the female, the sacrum is shorter and wider than in the male and directed more obliquely backward, increasing the size of the pelvic cavity.

Axial Skeleton Dissection Quiz

- Select the right or left parietal bone.
- Select the occipital bone.
- Select any part of the sphenoid.
- Select any part of the mandible.
- Select the hyoid.
- Select any part of the sternum.
- Select the coccyx.
- Select the axis.
- Select a false rib.
- Select a thoracic vertebrae.
Axial Skeleton Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Axial Skeleton

1. All of the following are parts of the sternum except
   a. The manubrium.
   b. The body.
   c. The xiphoid process.
   d. The coccyx.

2. Which of the following statements accurately compares the true and false ribs?
   a. The false ribs articulate directly with the sternum via individual costal cartilages, whereas the true ribs attach to the sternum via shared cartilage.
   b. The true ribs articulate directly with the sternum via individual costal cartilages, whereas the false ribs attach to the sternum via shared cartilage.
   c. The true and false ribs articulate directly with the sternum, but only the true ribs articulate with the vertebral column.
   d. The true and false ribs articulate directly with the sternum, but only the false ribs articulate with the vertebral column.

3. If you were a dentist administering a lidocaine injection prior to dental work, where would be a good place to make the injection?
   a. The mandibular foramen
   b. The foramen magnum
   c. The jugular foramen
   d. The foramen spinosum

4. If you were a medical examiner working on a dead body with a broken hyoid bone and no other injuries, which of the following would be the most likely cause of death?
   a. Gunshot
   b. Stabbing
   c. Car accident
   d. Strangulation

5. How many cervical, thoracic, and lumbar vertebrae are there?
   a. 12 cervical vertebrae, 7 thoracic vertebrae, and 5 lumbar vertebrae
   b. 7 cervical vertebrae, 12 thoracic vertebrae, and 5 lumbar vertebrae
   c. 5 cervical vertebrae, 12 thoracic vertebrae, and 7 lumbar vertebrae
   d. 7 cervical vertebrae, 5 thoracic vertebrae, and 12 lumbar vertebrae

6. Which bone marking distinguishes the thoracic vertebrae from the other types of vertebrae?
   a. Transverse processes
   b. A vertebral foramen
   c. Costal facets
   d. Superior articular processes and facets

7. If you were explaining the occipital bone to your lab partner, you should make all of the following points except
   a. It is located at the base of the cranium and supported by the vertebral column.
   b. It contains the optic foramen, foramen ovale, foramen lacerum, and foramen spinosum.
   c. It articulates with the atlas in a way that allows for head rotation.
   d. It contains the foramen magnum, which allows the brain stem and spinal cord to connect.

8. Which of the following statements accurately explains how fontanelles and sutures are related?
   a. Sutures are spaces between the skull bones in fetuses and infants that close over time to be replaced by fontanelles.
   b. Fontanelles and sutures are two types of immovable joints that connect the cranial bones.
   c. Some of the cranial bones are connected by sutures and others are separated by fontanelles.
   d. Fontanelles are spaces between the skull bones in fetuses and infants that close over time to be replaced by sutures.

9. Which of the following statements accurately compares the functions of the cranial bones and facial bones?
   a. The cranial bones support the special senses, whereas the facial bones protect the brain and shape the face.
   b. Both the cranial bones and facial bones support the special senses.
   c. The cranial bones protect the brain, whereas the facial bones support the special senses and shape the face.
   d. Both the cranial bones and facial bones protect the brain.

10. The axial skeleton consists of bones in all the following body regions except
    a. The pectoral girdle.
    b. The skull.
    c. The thoracic cage.
    d. The vertebral column.

Axial Skeleton Dissection Quiz

Select the right or left parietal bone.
Select the occipital bone.
Select any part of the sphenoid.
Select any part of the mandible.
Select the hyoid.
Select any part of the sternum.
Select the coccyx.
Select the axis.
Select a false rib.
Select a thoracic vertebrae.

Appendicular Skeleton Pre-Lab Quizzes

Pre-Lab Quiz: Pectoral Girdle
1. Why do skeletal muscles play such a large role in the stabilization of the pectoral girdle?
   a. Its only connection to the rest of the skeleton is between the scapula and humerus.
   ✔️ b. Its only connection to the rest of the skeleton is between the scapula and manubrium.
   ✔️ c. Its only connection to the rest of the skeleton is between the clavicle and manubrium.
   d. It doesn't have any connections to the rest of the skeleton.

2. What structure articulates with the clavicle?
   a. The head of the humerus
   ✔️ b. The manubrium of the sternum
   c. The first thoracic vertebra
   d. The infraspinous fossa of the scapula

3. All of the following statements are true regarding the pectoral girdle except
   ✔️ a. It is rigid and capable of limited mobility.
   b. The scapulae form its posterior portion.
   c. The clavicles form its anterior portion.
   d. It connects the upper limb bones to the axial skeleton.

4. All of the following statements accurately describe bone markings of each scapula except
   a. The lateral border is thick and irregular and provides attachment for the origins of the deltoids.
   b. The glenoid cavity is a concave articular surface that accepts the head of the humerus.
   c. The acromion is a large triangular process that overhangs the glenoid cavity, forming the summit of the shoulder.
   ✔️ d. The greater and lesser tubercles are rounded projections that attach to muscles and ligaments.

5. The scapula articulates with the humerus via a _____ joint that provides _____ mobility to the shoulder joint.
   ✔️ a. Ball and socket, limited
   b. Ball and socket, extensive
   c. Pivot, extensive
   d. Pivot, limited

Pre-Lab Quiz: The Upper Limb
1. Which nerve is compressed in carpal tunnel syndrome?
   a. The ulnar nerve
   ✔️ b. The radial nerve
   c. The median nerve
   d. The axillary nerve

2. Which finger lacks a middle phalanx?
   a. Digit 1
   ✔️ b. Digit 2
   c. Digit 4
   d. Digit 5

3. Which bone is the largest carpal bone?
   a. The hamate
   b. The triquetral
   ✔️ c. The capitate
   d. The trapezium

4. Which two carpal bones articulate with the radius?
   a. The triquetral and pisiform
   ✔️ b. The trapezium and trapezoid
   c. The scaphoid and lunate
   d. The capitate and hamate

5. All of the following statements accurately describe the radius and ulna except
   ✔️ a. The radius is parallel and medial to the ulna.
   b. They allow for supination and pronation of the forearm.
   c. They articulate with each other proximally and distally.
   d. The ulna is larger than the radius.

6. Which part of the humerus helps limit hyperextension of the elbow?
   a. The greater tubercle
   ✔️ b. The olecranon fossa
   c. The lateral epicondyle
   d. The coronoid fossa

7. Which bone is the longest and largest bone of the upper limbs?
   a. The radius
   ✔️ b. The humerus
   c. The ulna
   d. The trapezium
**Pre-Lab Quiz: The Pelvic Girdle**

1. Which of the following statements accurately compares the male and female pelvises?
   - ✔ a. The female pubic arch is greater than 90 degrees, whereas the male pubic arch is less than 90 degrees.
   - b. The female pubic arch is less than 90 degrees, whereas the male pubic arch is greater than 90 degrees.
   - c. The male pelvic rim is larger and wider than that of the female.
   - d. The female pelvis is deeper than the male pelvis.

2. Where do the ischium and pubis converge?
   - ✔ a. At the pubic crest
   - b. At the superior ramus
   - c. At the obturator crest
   - d. At the obturator foramen

3. Which part of the ischium attaches to the muscles of the thigh?
   - ✔ a. The ischial spine
   - b. The ischiopubic ramus
   - c. The ischial tuberosity
   - d. The lesser sciatic notch

4. All of the following pass through the greater sciatic notch of the ilium except
   - ✔ a. The gluteal vessels and nerves.
   - b. The obturator internus tendon.
   - c. The internal pudendal vessels and nerves.
   - d. The sciatic nerve.

5. Which hip bone forms the superior part of the pelvic girdle that extends upward from acetabulum?
   - ✔ a. The ilium
   - b. The ischium
   - c. The pubis
   - d. The sacrum

**Pre-Lab Quiz: The Lower Limb**

1. All of the following are functions of the foot arches except
   - a. To absorb shock.
   - b. To support body weight.
   - ✔ c. To connect the foot bones.
   - d. To distribute stress evenly during walking.

2. Which bones shape the transverse arch of the foot?
   - ✔ a. The cuboid and calcaneus
   - b. The cuboid and cuneiforms
   - c. The cuneiforms and talus
   - d. The navicular and talus

3. Which bone is the largest foot bone?
   - ✔ a. The navicular
   - b. The talus
   - c. The calcaneus
   - d. The cuboid

4. Which part of the tibia articulates with the head of the fibula?
   - ✔ a. The lateral condyle
   - b. The medial condyle
   - c. The medial malleolus
   - d. The tibial tuberosity

5. All of the following bones form part of the knee joint except
   - a. The ilium.
   - b. The tibia.
   - ✔ c. The femur.
   - d. The patella.

6. All of the following statements accurately describe the femur except
   - a. It is the longest bone in the body.
   - b. It articulates with the pelvis via a ball and socket joint that provides a wide range of motion.
   - c. It articulates with the tibia and fibula at the knee joint.
   - ✔ d. It is the larger of the two parallel bones in the leg.

**Appendicular Skeleton Multiple Choice Quiz 3**

1. Which of the following is the longest bone in the body?
   - a. Tibia
   - ✔ b. Humerus
   - c. Femur
   - d. Sternum

2. Which of the following is a difference between the shoulder girdle and pelvic girdle?
   - a. The pelvic girdle connects to the axial skeleton, whereas the shoulder girdle does not.
   - b. The shoulder girdle connects to the axial skeleton, whereas the pelvic girdle does not.
   - ✔ c. The shoulder girdle is rigid, whereas the pelvic girdle is light and capable of great mobility.
   - d. The pelvic girdle is rigid, whereas the shoulder girdle is light and capable of great mobility.
3. Carpal tunnel syndrome occurs when
   a. A carpal bone is fractured, causing bleeding in the carpal tunnel.
   ✔ b. Inflammation of the synovial membranes surrounding the flexor tendons compress the median nerve.
   c. The flexor reticulum spasms, tightening the carpal tunnel.
   d. The median nerve sends signals to the carpal tunnel, causing bleeding and inflammation.

4. Which of the following accurately compares the male and female pelvis?
   a. The female pelvis is deeper than the male pelvis.
   b. The female pelvic brim is larger and wider than the male pelvic brim.
   ✔ c. The female has a pubic arch angle of less than 90 degrees, whereas the male has a pubic arch angle of more than 90 degrees.
   d. The female pelvis has a smaller pelvic brim and a narrower pelvic outlet than that of the male pelvis.

5. All of the following are tarsal bones except
   ✔ a. The triquetral.
   b. The navicular.
   c. The calcaneus.
   d. The cuboid.

6. Which of the following is a type of bone that is present in both the upper and lower limbs?
   a. Phalanges
   ✔ b. Tarsals
   c. Carpals
   d. Metacarpals

7. If you were giving an oral report on the arches of the foot, you would include all of the following points except
   a. The transverse arch helps distribute body weight from side to side within the foot, thus allowing it to accommodate uneven terrain.
   ✔ b. The longitudinal arch runs from the calcaneus to the heads of the metatarsals.
   c. The transverse arch runs from the calcaneus to the heads of the metatarsals.
   d. The longitudinal arch has a medial and lateral part.

8. If your instructor asked you to compare the structure of the upper and lower extremities, which of the following might you say?
   a. There are no similarities in the structures of the upper and lower extremities.
   b. Both the upper and lower extremities are divided into two regions.
   ✔ c. Both the upper and lower extremities are divided into four regions.
   d. The upper and lower extremities have a similar structure, with a large bone articulating with two smaller bones via a joint.

9. Which of the following is a muscle of the shoulder girdle?
   a. The intercostals
   b. The triceps brachii
   ✔ c. The coracobrachialis
   d. The biceps brachii

10. All of the following are part of the appendicular skeleton except
    ✔ a. The neck.
    b. The shoulder girdle.
    c. The pelvic girdle.
    d. The legs.

Appendicular Skeleton Dissection Quiz

Select the right or left humerus.
Select a metacarpal bone.
Select one of the tarsal bones.
Select the right or left femur.
Select the right or left ilium.
Select the right or left first distal phalanx of the foot.
Select the right or left fibula.
Select the right or left radius.
Select the right or left scapula.
Select the right or left talus.

Appendicular Skeleton Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Appendicular Skeleton

1. Which of the following statements accurately compares the bones of the upper and lower limbs?
   a. Since the lower limb bones need to provide strength and flexibility, they are generally larger and lighter than the upper limb bones.
   ✔ b. Since the lower limb bones need to provide more range of motion, they are generally smaller and lighter than the upper limb bones.
   c. Since the lower limb bones need to support the body’s weight, they are generally larger and heavier than the upper limb bones.
   d. Since the upper and lower limb bones need to perform similar body movements, they are generally around the same size and weight.
2. Which foot bone articulates with the tibia and fibula?
   a. The navicular ✓
   b. The talus
   c. The cuboid
d. The calcaneus

3. The _____ of the tibia and the _____ of the fibula are responsible for making the protrusions of the ankle, just above the foot.
   a. Lateral malleolus, medial malleolus ✓
   b. Medial condyle, lateral condyle
c. Medial malleolus, lateral malleolus
d. Lateral condyle, medial condyle

4. All of the following statements accurately compare the female and male pelvises except
   a. The female pelvic brim is larger and wider than that of the male. ✓
   b. The male pelvis is shallower than the female pelvis.
c. The female pubic arch is greater than 90 degrees, whereas the male pubic arch is less than 90 degrees.
d. The male pelvic outlet is narrower than that of the female.

5. If your lab partner asked you to explain the articulations that make the wrist and hand so mobile and allow them to use the forearm’s powerful extensors and flexors, you would likely make all of the following points except
   a. The scaphoid and lunate articulate with the radius to form the condyloid wrist joint.
   b. The proximal carpals articulate with each other via gliding synovial joints. ✓
   c. The distal carpals articulate with each other and with the metacarpals via gliding synovial joints.
d. The distal carpals articulate with each other and with the metacarpals via ligaments.

6. Which of the following accurately lists the distal carpal bones, from the radial to ulnar side?
   a. Trapezium, trapezoid, capitate, hamate
   b. Trapezoid, trapezium, hamate, capitate ✓
c. Hamate, capitate, trapezoid, trapezium
d. Capitate, trapezoid, trapezium, hamate

7. Which of the following statements accurately compares the radius and ulna?
   a. The proximal and distal ends of the radius are larger than those of the ulna, and they form the main part of the elbow and wrist joints. ✓
   b. The proximal end of the radius is larger than that of the ulna, and it forms the main part of the elbow joint with the humerus.
c. The distal end of the ulna is larger than that of the radius, and it forms the main part of the wrist joint with the carpals.
d. The proximal end of the ulna is larger than that of the radius, and it forms the main part of the elbow joint with the humerus.

8. All of the following parts of the scapula attach to rotator cuff muscles except
   a. The infraspinous fossa. ✓
   b. The coracoid process.
c. The supraspinous fossa.
d. The subscapular fossa.

9. If you fell with your arm outstretched and broke your clavicle, how would the appearance of your shoulder change?
   a. Since the clavicle holds the arm close to the body, your shoulder with the broken clavicle would protrude upward.
   b. Since the clavicle holds the arm close to the body, your shoulder with the broken clavicle would slump outward, away from the body. ✓
c. Since the clavicle braces the arm away from the body, your shoulder with the broken clavicle would protrude even further from the body.
d. Since the clavicle braces the arm away from the body, your shoulder with the broken clavicle would slump downward.

10. If your lab partner asked you to explain how the shape of the glenoid cavity and acetabulum impacts the mobility of the pectoral and pelvic girdles, which of the following would you most likely say?
    ✓ a. Since the glenoid cavity is shallower than the acetabulum, the pectoral girdle has more mobility than the pelvic girdle.
    b. Since the glenoid cavity is shallower than the acetabulum, the pectoral girdle has less mobility than the pelvic girdle.
c. Since the glenoid cavity is deeper than the acetabulum, the pectoral girdle has more mobility than the pelvic girdle.
d. Since the glenoid cavity is deeper than the acetabulum, the pectoral girdle has less mobility than the pelvic girdle.

Appendicular Skeleton Dissection Quiz
- Select the right or left humerus.
- Select a metacarpal bone.
- Select one of the tarsal bones.
- Select the right or left femur.
Muscular System Overview Quizzes

Pre-Lab Quiz: Muscular System Overview

1. All of the following are functions of the muscular system except
   a. Moving structures and internal organs.
   b. Moving and containing substances throughout the body.
   ✔ c. Triggering the release of hormones.
   d. Facilitating body functions.

2. To accomplish its main function, a muscle _____, changing its shape and length.
   a. Abducts
   b. Inverts
   ✔ c. Contracts
   d. Retracts

3. What stimulates skeletal muscle to contract?
   ✔ a. Signals from the nervous system
   b. Hormones and involuntary signals from the nervous system
   c. Hormones
   d. The conduction system

4. What stimulates smooth muscle to contract?
   a. Signals from the somatic nervous system
   b. Hormones and involuntary signals from the nervous system
   ✔ c. Hormones
   d. The conduction system

5. What stimulates cardiac muscle to contract?
   a. Signals from the nervous system
   b. Hormones
   ✔ c. Hormones and involuntary signals from the nervous system
   d. The conduction system

Pre-Lab Quiz: Muscle Types

1. All of the following statements accurately describe skeletal muscle tissue except
   a. It can be found throughout the body.
   ✔ b. It has branching fibers connected by intercalated discs.
   c. It has multinucleate cells.
   d. It responds to voluntary commands from the nervous system.

2. Which of the following statements accurately describes smooth muscle?
   a. It is non-striated and contracts voluntarily in response to nervous system signals.
   b. It is non-striated and contracts involuntarily in peristaltic waves.
   ✔ c. It is striated and contracts voluntarily in peristaltic waves.
   d. It is striated and contracts involuntarily in response to nervous system signals.

3. Smooth muscle can be found in all of the following places except
   a. In the heart.
   b. In the gastrointestinal tract.
   ✔ c. In the respiratory tract.
   d. In the urinary organs.

4. Which of the following characteristics is unique to cardiac muscle tissue?
   a. Striations
   b. Multinucleate cells
   ✔ c. Intercalated discs
   d. Uninucleate cells

5. Where can cardiac muscle be found?
   a. Throughout the heart and in the blood vessels
   b. Throughout the body
   ✔ c. Only in the respiratory system
   d. Only in the myocardium of the heart

Pre-Lab Quiz: Skeletal Muscle Function and Action Potentials

1. What is the initial stimulus for muscle contraction?
   a. An influx of sodium ions into a muscle fiber
   ✔ b. An action potential from a motor neuron
   c. The release of acetylcholine in the neuromuscular junction
   d. The release of calcium ions into a muscle fiber

2. At the neuromuscular junction, a neurotransmitter called _____ is released. When it binds to receptors on the muscle fiber, they open, allowing an influx of _____ ions.
   a. Acetylcholine, calcium
   b. Epinephrine, sodium
   ✔ c. Acetylcholine, sodium
   d. Epinephrine, calcium
3. All of the following statements are true regarding the action potential generated at the sarcolemma except
   a. It travels through the transverse tubules.
   b. It reaches the myofibrils within the muscle fiber.
   c. It triggers the release of calcium ions from the sarcoplasmic reticulum.
   ✔ d. It triggers the release of acetylcholine from the sarcoplasmic reticulum.

4. All of the following systems interact to produce body movement except
   a. The nervous system.
   ✔ b. The integumentary system.
   c. The muscular system.
   d. The skeletal system.

5. What creates the striated appearance of skeletal muscles?
   ✔ a. The arrangement of actin and myosin inside the cells that form muscle tissue
   b. The presence of motor neurons inside the cells that form muscle tissue
   c. A chemical reaction in the muscle fibers, initiated by acetylcholine binding to its receptors
   d. The friction of skeletal muscle movement

Pre-Lab Quiz: Cross Bridge Formation

1. Skeletal muscle fibers are organized into basic functional units called
   ✔ a. Sarcomeres.
   b. Cross bridges.
   c. Filaments.
   d. Myofibrils.

2. Thick filaments are composed of _____ and thin filaments are composed of _____.
   a. Actin, myosin
   b. Sodium, calcium
   c. Calcium, sodium
   ✔ d. Myosin, actin

3. Which of the following statements accurately describes cross bridge formation?
   a. When the myosin heads detach from actin, the cross bridges are established.
   b. When ATP binds to myosin, the cross bridges are established.
   ✔ c. When the myosin heads bind to actin, the cross bridges are established.
   d. When calcium ions bind to troponin, the cross bridges are established.

4. When a myosin head moves the actin toward the center of the sarcomere, this is called the
   a. Action potential.
   ✔ b. Cross bridge.
   c. Power stroke.
   d. Resting potential.

5. What is the energy source that powers muscle contraction?
   a. Acetylcholine
   b. Phosphate
   c. Calcium
   ✔ d. ATP

Pre-Lab Quiz: Skeletal Muscle Interactions and Attachments

1. Muscles that perform the main force of an action are called _____ and muscles that perform the paired action are called _____.
   a. Antagonists, agonists
   ✔ b. Agonists, antagonists
   c. Prime movers, agonists
   d. Antagonists, prime movers

2. In elbow flexion, which of the following muscles is the agonist?
   ✔ a. The biceps brachii
   b. The triceps brachii
   c. The anconeus
   d. The teres minor

3. All of the following are paired actions except
   a. Flexion and extension.
   ✔ b. Elevation and supination.
   c. Elevation and depression.
   d. Pronation and supination.

4. Skeletal muscles are attached to the skeleton by
   a. Ligaments.
   b. Bones.
   ✔ c. Cartilage.
   d. Tendons.

5. Tendons attach skeletal muscles to articulating bones via the _____ point on the moveable bone and the _____ point on the fixed bone.
   a. Origin, insertion
   ✔ b. Insertion, origin
   c. Middle, origin
   d. Insertion, middle
Pre-Lab Quiz: Skeletal Muscles Acting as Levers

1. All of the following statements accurately describe the third-class lever system except
   a. The effort is the biceps contracting and pulling the forearm upward.
   b. The load is the forearm and hand being lifted.
   ✔️ c. The effort is the elbow joint flexing as the biceps contract.
   d. The fulcrum is the elbow joint flexing as the biceps contract.

2. A third-class lever works like a _____, with the _____ at one end, the load at the opposite end, and the _____ in the middle.
   a. See-saw, effort, fulcrum
   b. Wheelbarrow, effort, fulcrum
   ✔️ c. Fishing rod, fulcrum, effort
   d. Yo-yo, fulcrum, effort

3. Which of the following statements accurately describes the second-class lever system?
   ✔️ a. When the calf muscles contract, they pull upward and move the weight of the body onto the ball of the foot.
   b. When the neck muscles contract, they pull the back of the skull downward, causing the front of the skull to lift upward.
   c. When the biceps contract, they pull the bones of the forearm and hand upward.
   d. When the calf muscles relax, the weight of the body pushes the heel down.

4. In the chin raise movement, _____ provides the effort and the _____ is the load that is moved.
   ✔️ a. Contraction of neck muscles, anterior skull
   b. Relaxation of neck muscles, anterior skull
   c. Contraction of neck muscles, posterior skull
   d. Relaxation of neck muscles, posterior skull

5. In a first-class lever, where is the fulcrum located in relation to the effort and the load?
   a. It is located on the left side, with the effort on the right side and the load in the middle.
   ✔️ b. It is located on the left side, with the load on the right side and the effort in the middle.
   c. It is located in the middle, between the effort and the load.
   d. It is located on the right side, with the load on the left side and the effort in the middle.

6. How do the skeletal and muscular systems work together to produce leverage?
   a. When muscles contract, they provide the fulcrum to stabilize a load.
   ✔️ b. When muscles contract, they provide the effort to move a load.
   c. When muscles relax, they provide the effort to move a load.
   d. When muscles relax, they provide the fulcrum to move a load.

Head and Neck Muscles Pre-Lab Quizzes

Pre-Lab Quiz: Facial Expression Muscles

1. Which muscle moves the lower mouth?
   a. The zygomaticus minor
   b. The orbicularis oris
   ✔️ c. The levator anguli oris
   d. The platysma

2. All of the following statements accurately describe the depressor anguli oris and depressor labii inferioris muscles except
   a. They originate from the oblique line of the mandible.
   b. They are innervated by the mandibular branch of the facial nerve.
   ✔️ c. They insert on the skin of the lower lip.
   d. They draw the lower lip and corners of the mouth downward.

3. Which muscle compresses the cheeks?
   a. The orbicularis oris
   b. The levator anguli oris
   ✔️ c. The buccinator
   d. The zygomaticus major

4. All of the following muscles originate from the zygomatic bone except
   a. The levator anguli oris.
   ☑️ b. The levator labii superioris.
   c. The zygomaticus major.
   d. The zygomaticus minor.

5. The facial nerve innervates all of the following muscles except
   a. The occipitofrontalis.
   b. The levator palpebrae superioris.
   c. The corrugator supercilii.
   ✔️ d. The orbicularis oculi.

6. Which muscle elevates and retracts the eyelid?
   a. The orbicularis oculi
   b. The occipitofrontalis
   ✔️ c. The levator palpebrae superioris
   d. The corrugator supercilii
7. Which muscle raises the eyebrows?
   a. The corrugator supercilii  ✔
   b. The occipitofrontalis
c. The levator palpebrae superioris
d. The orbicularis oculi

Pre-Lab Quiz: Mastication Muscles
1. All of the following muscles have insertion points on the ramus of the mandible except
   a. The medial pterygoid.
   b. The temporalis.
   c. The superficial masseter.  ✔
d. The lateral pterygoid.
2. Which muscle protrudes the mandible?
   a. The lateral pterygoid.  ✔
   b. The temporalis
c. The deep masseter
d. The superficial masseter
3. All of the following muscles elevate the mandible except
   a. The deep masseter.
   ✔ b. The medial pterygoid.
c. The superficial masseter.
d. The temporalis.
4. Which of the following statements is true of all the mastication muscles?
   ✔ a. They are innervated by the mandibular branch of the trigeminal nerve.
b. They originate from the zygomatic arch.
c. They elevate the mandible.
d. They insert on the mandibular condyle.

Pre-Lab Quiz: Tongue Muscles
1. Which of the following statements is true regarding the genioglossus and hyoglossus muscles?
   a. They both insert into the hyoid bone.
   ✔ b. They are both innervated by the hypoglossal nerve.
c. They both originate from the hyoid bone.
d. They both elevate the posterior tongue.
2. What is the purpose of the intrinsic muscles of the tongue?
   a. They work together to depress the tongue.
   b. They work together to elevate the tongue.
   c. They work together to protrude the tongue.  ✔
d. They work together to give the tongue its great flexibility.
3. All of the following statements accurately describe the styloglossus muscle except
   a. It originates from the styloid process of the temporal bone.
   ✔ b. It depresses and extends the tongue for sucking.
c. It inserts into the lateral border of the tongue.
d. It draws the sides of the tongue upward and draws the tongue back for swallowing.
4. Which extrinsic tongue muscle is innervated by the vagus nerve?
   a. The genioglossus
c. The styloglossus  ✔
b. The hyoglossus
d. The palatoglossus

5. All of the following are extrinsic muscles of the tongue except
   a. The genioglossus.
   b. The hyoglossus.  ✔
c. The transverse lingualis.
d. The palatoglossus.

Pre-Lab Quiz: Mandible Depression Muscles
1. All of the following statements accurately describe the stylohyoid muscle except
   a. It elevates the hyoid bone.
   ✔ b. It is innervated by the trigeminal nerve.
c. It originates from the styloid process of the temporal bone.
d. It inserts into the body of the hyoid.
2. Which two muscles of mandible depression originate from parts of the mandible?
   a. The mylohyoid and geniohyoid  ✔
b. The stylohyoid and digastric
c. The stylohyoid and mylohyoid
d. The geniohyoid and digastric
3. All of the following muscles play a role in mandible depression except
   a. The sternohyoid.
   ✔ b. The digastric.
c. The mylohyoid.
d. The geniohyoid.
4. Which of the following statements is true regarding all the muscles of mandible depression?
   ✔ a. They insert into the hyoid bone.
b. They depress the hyoid bone.
c. They are innervated by the trigeminal nerve.
d. They originate from the hyoid bone.
Pre-Lab Quiz: Laryngeal Muscles

1. All of the following statements accurately describe how the laryngeal muscles affect the vocal folds except
   a. The posterior cricoarytenoid separates the vocal folds.
   b. The cricothyroid lengthens and stretches the vocal folds.
   ✔️ c. The lateral cricoarytenoid tenses and relaxes the vocal folds.
   d. The vocalis tenses and relaxes the vocal folds.

2. Which muscle relaxes the vocal ligament?
   a. The vocalis
   b. The cricothyroid
   ✔️ c. The posterior cricoarytenoid
   d. The thyroarytenoid

3. All of the following laryngeal muscles are innervated by the inferior laryngeal nerve except
   a. The thyroepiglottic.
   b. The vocalis.
   ✔️ c. The cricothyroid.
   d. The oblique arytenoid.

4. The ______ opens the glottis and the ______ closes the glottis.
   ✔️ a. Posterior cricoarytenoid, lateral cricoarytenoid
   b. Lateral cricoarytenoid, posterior cricoarytenoid
   c. Aryepiglottic, thyroepiglottic
   d. Thyroepiglottic, aryepiglottic

Pre-Lab Quiz: Neck Muscles

1. All of the following are origin points of the trapezius except
   a. The occipital bone.
   b. The ligamentum nuchae.
   c. The spinous processes of T01–T12.
   ✔️ d. The lateral third of the clavicle.

2. Which of the following statements accurately describes the action of the scalenes?
   a. They rotate, retract, elevate, and depress the scapula.
   ✔️ b. They elevate the first and second ribs and bend the spinal column laterally.
   c. They bend the head and turn the face to the same side.
   d. They support the head and draw it backward.

3. Where is the insertion point for the semispinalis capitis?
   a. On the lateral surface of the mastoid process
   b. Between the superior and inferior nuchal lines of the occipital bone
   c. On the articular processes of C05–C07 and the transverse processes of T01–T12
   d. On the mastoid process of the temporal bone and on the occipital bone

4. All of the following muscles are innervated by the dorsal rami of certain spinal nerves except
   a. The semispinalis capitis.
   b. The splenius capitis.
   c. The longissimus capitis.
   ✔️ d. The splenius cervicis.

5. Which way does the longissimus capitis turn the face?
   a. Toward the opposite side
   ✔️ b. Downward, toward the ground
   c. Toward the same side
   d. Upward, toward the sky

6. All of the following are actions performed by the sternocleidomastoid except
   ✔️ a. Drawing the head directly backward.
   b. Flexing the cervical part of the vertebral column.
   c. Assisting in elevating the thorax.
   d. Drawing the head toward the shoulder on the same side.

Pre-Lab Multiple Choice Quiz: Head and Neck Muscles

1. All of the following statements accurately compare the extrinsic tongue muscles except
   ✔️ a. They are all innervated by the hypoglossal nerve.
   b. The palatoglossus and styloglossus both insert on the lateral border of the tongue.
   c. The genioglossus and hyoglossus both depress the tongue.
   d. The genioglossus, hyoglossus, and styloglossus are innervated by the hypoglossal nerve, whereas the palatoglossus is innervated by the vagus nerve.

2. If your lab partner asked you to explain the muscles that open and close the eyes, which of the following statements would you likely make?
   a. The orbicularis oculi opens the eyes and the levator palpebrae superioris closes the eyes.
   ✔️ b. The levator palpebrae superioris opens the eyes and the orbicularis oculi closes the eyes.
   c. The occipitofrontalis opens the eyes and the corrugator supercilii closes the eyes.
   d. The corrugator supercilii opens the eyes and the occipitofrontalis closes the eyes.
3. All of the following muscles play a role in swallowing except
   a. The geniohyoid.
   ✔ b. The scalenes.
   c. The digastric.
   d. The palatoglossus.

4. If you were describing the characteristics of the lower mouth muscles to your lab partner, which of the following statements would you likely make?
   a. The platysma originates from the oblique line of the mandible.
   ✔ b. The mentalis inserts on the risorius and orbicularis oris.
   c. The risorius retracts the angle of the mouth.
   d. The depressor anguli oris is innervated by the cervical branch of the facial nerve.

5. Which muscle compresses the cheeks?
   a. The levator labii superioris
   ✔ b. The buccinator
   c. The levator anguli oris
   d. The orbicularis oris

6. All of the following muscles play a role in tilting the head upward except
   a. The levator palpebrae superioris
   ✔ b. The splenius capitis.
   c. The semispinalis capitis.
   d. The longissimus cervicis.

7. All of the following statements accurately describe characteristics of specific suprahyoid and infrahyoid muscles except
   a. The mylohyoid raises the floor of the mouth, elevates the hyoid, and depresses the mandible.
   b. The digastric is innervated by the mylohyoid branch of the trigeminal nerve.
   c. The thyrohyoid inserts on the lower border of the body and the greater cornu of the hyoid.
   ✔ d. The sternothyroid originates from the oblique line on the side of the thyroid cartilage.

8. Which mastication muscle originates at the zygomatic arch?
   a. The temporalis
   ✔ b. The medial pterygoid
c. The deep masseter
d. The lateral pterygoid

9. Which of the following muscles is involved in neck flexion?
   a. Masseters
   ✔ b. Sternocleidomastoid
c. Temporalis
d. Inferior oblique

10. All of the following muscles elevate the mandible during mastication except
    a. The deep masseter.
    b. The superficial masseter.
    ✔ c. The pterygoid muscles.
    d. The temporalis.

Pre-Lab Dissection Quiz: Head and Neck Muscles
   ✔ Select any of the pterygoid muscles.
   Select any of the extrinsic muscles of the tongue that move it around the mouth to manipulate food.

Head and Neck Muscles Post-Lab Quizzes
Post-Lab Multiple Choice Quiz: Head and Neck Muscles

1. Which of the following accurately lists the muscles that move the tongue around the mouth to manipulate food?
   a. The geniohyoid, mylohyoid, and styloglossus
   b. The genioglossus, hypoglossus, palatoglossus, and styloglossus
   ✔ c. The temporalis, deep masseter, superficial masseter, medial pterygoid, and lateral pterygoid
d. The depressor anguli oris, depressor labii inferioris, risorius, mentalis, and platysma
2. All of the following statements accurately describe similarities among the suprahyoid muscles except
✔ a. The stylohyoid and digastric muscles originate from the mandible.
b. The digastric, mylohyoid, and geniohyoid muscles depress the mandible and elevate the hyoid bone.
c. The stylohyoid and mylohyoid muscles insert into the body of the hyoid bone.
d. The digastric and mylohyoid muscles are innervated by the trigeminal nerve.

3. Which muscle depresses the lower jaw?
 a. The mentalis
 b. The risorius
c. The depressor labii inferioris
✔ d. The platysma

4. Which of the following accurately lists two actions shared by the sternocleidomastoid and scalene muscles?
✔ a. Chewing and whistling
 b. Nodding and shaking the head
c. Swallowing and whistling
d. Frowning and smiling

5. All of the following statements are true regarding the muscles of the upper and lower mouth except
✔ a. The muscles of the upper mouth push the mouth downward, whereas the muscles of the lower mouth push the mouth upward.
b. Many different muscles are necessary for speaking, eating, whistling, and performing other actions of the mouth.
c. The muscles of the upper and lower mouth originate in different places, but they all insert on the mouth.
d. The angle where the upper and lower mouth muscles attach to the mouth determine how they move the mouth.

6. All of the following muscles are innervated by the inferior laryngeal nerve except
 a. The vocalis.
b. The thyroepiglottic.
✔ c. The cricothyroid.
d. The lateral cricoarytenoid.

7. Which of the following statements accurately compares the actions of two neck muscles?
✔ a. The semispinalis capitis and splenius capitis both draw the head to one side, but the semispinalis capitis turns the face to the opposite side, whereas the splenius capitis turns the face to the same side.
b. The splenius capitis and splenius cervicis both draw the head to one side and rotate it, turning the face to the opposite side.
c. The semispinalis capitis bends the spinal column laterally, whereas the scalenes extend the vertebral column.
d. The trapezius elevates the first and second ribs, whereas the scalenes rotate, retract, elevate, and depress the scapula.

8. All of the following are characteristics of the deep masseter except
✔ a. It originates from the mandible.
b. It originates from the zygomatic arch.
c. It is innervated by the trigeminal nerve.
d. It raises the mandible.

9. Which of the following actions does the zygomaticus major muscle perform?
✔ a. Lowering the angle of the mouth
 b. Drawing the angle of the mouth laterally and upward
c. Drawing the upper lip outward, upward, and laterally
d. Closing and protruding the lips

10. Which of the following statements accurately compares the scalp and eyebrow muscles?
 a. The occipitofrontalis and orbicularis oculi muscles move the forehead and eyebrows, whereas the levator palpebrae superioris and corrugator supercili muscles open and close the eyes.
b. The corrugator supercili muscles and levator palpebrae superioris muscles move the forehead and eyebrows, whereas the occipitofrontalis and orbicularis oculi muscles open and close the eyes.
✔ c. The occipitofrontalis and corrugator supercili muscles move the forehead and eyebrows, whereas the levator palpebrae superioris and orbicularis oculi muscles open and close the eyes.
d. The levator palpebrae superioris and orbicularis oculi muscles move the forehead and eyebrows, whereas the occipitofrontalis and corrugator supercili muscles open and close the eyes.

Post-Lab Dissection Quiz: Head and Neck Muscles
▷ Select any of the pterygoid muscles.
▷ Select any of the extrinsic muscles of the tongue that move it around the mouth to manipulate food.
▷ Select any of the right or left semispinalis capitis muscles that are involved in the first-class lever system that lifts the chin.
▷ Select any of the right or left infrahyoid muscles.
▷ Select the right or left vocalis muscle.
▷ Select any of the muscles of the lower mouth.
▷ Select the right or left digastric muscle.
Select any of the zygomaticus muscles (right or left).

Select any of the muscles that move the eyebrows.

**Thoracic and Abdominal Muscles Pre-Lab Quizzes**

**Pre-Lab Quiz: Inspiratory Muscles**

1. All of the following muscles play a role in forced inspiration except
   a. The external intercostals.
   ✔ b. The internal intercostals.
   c. The serratus posterior superior.
   d. The scalenes.

2. All of the following statements accurately describe the external intercostals except
   ✔ a. They depress the ribs, aiding in forced expiration.
   b. They elevate the ribs, aiding in normal inspiration.
   c. They insert on the upper border of ribs 2–12.
   d. They originate from the lower border of ribs 1–11.

3. All of the following pass through the diaphragm except
   a. The aorta.
   ✔ b. The trachea.
   c. The inferior vena cava.
   d. The esophagus.

4. Which muscle marks the anatomical division between the thoracic and abdominal cavities?
   ✔ a. The diaphragm
   b. The pectoralis minor
   c. The serratus anterior
   d. The transversus thoracis

5. Which muscles are primarily responsible for inspiration?
   a. The diaphragm and internal intercostals
   b. The external and internal intercostals
   ✔ c. The diaphragm and external intercostals
   d. The transversus thoracis and serratus posterior inferior

**Pre-Lab Quiz: Expiratory Muscles**

1. All of the following statements accurately describe how the expiratory muscles insert on the ribs except
   a. The transversus thoracis inserts on the costal cartilages of ribs 2–6.
   ✔ b. The internal obliques insert on the inferior border of ribs 10–12.
   c. The serratus posterior superior inserts on ribs 2–5.
   d. The serratus posterior inferior inserts on ribs 9–12.

2. Which expiratory muscle is innervated by the intercostal nerves?
   a. The transversus abdominis
   ✔ b. The transversus thoracis
   c. The rectus abdominis
   d. The internal obliques

3. The internal intercostals ____ the ribs, aiding in ____.
   ✔ a. Depress, normal inspiration
   b. Elevate, normal inspiration
   c. Depress, forced expiration
   d. Elevate, forced expiration

4. All of the following muscles play a role in forceful exhalation except
   a. The serratus posterior superior.
   b. The internal intercostals.
   c. The serratus posterior inferior.
   d. The internal obliques.

5. In normal, quiet exhalation, the relaxation of the ____ and ____ is responsible for air departing the lungs.
   ✔ a. Diaphragm, external intercostals
   b. External intercostals, internal intercostals
   c. Internal intercostals, pectoralis minor
   d. Serratus anterior, serratus posterior superior

**Pre-Lab Quiz: Thoracic Muscles and Scapula Movements**

1. What is the origin point of the rhomboid major?
   a. The spinous processes of C07–T01
   ✔ b. The spinous processes of T02–T05
   c. The transverse processes of C01–C04
   d. The spinous processes of T01–T12

2. All of the following are actions of the trapezius except
   a. Rotating, retracting, elevating, and depressing the scapula.
   b. Elevating the arm.
   c. Extending the neck.
   d. Stabilizing the shoulder.
3. Which of the following statements is true regarding the posterior muscles that move and stabilize the shoulder?
   a. They all depress the scapula. ✔
   b. They all insert on the scapula.
   c. They are all innervated by the dorsal scapular nerve.
   d. They all originate from the scapula.

4. Which muscle that moves and stabilizes the shoulder girdle can elevate the ribs to assist in more forceful inspiration?
   a. The pectoralis minor
   b. The subclavius
   c. The levator scapulae
   d. The trapezius

   ✔

5. Which muscle that moves and stabilizes the shoulder girdle is located on the anterior side of the body?
   a. The levator scapulae
   b. The subclavius
   c. The rhomboid major
   d. The trapezius

Pre-Lab Quiz: Back Muscles

1. All of the following statements accurately describe the semispinalis muscles except
   a. They extend the vertebral column and draw the head directly backward.
   b. They are innervated by the dorsal rami of the spinal nerves.
   ✔ c. They rotate the face to the same side.
   d. They are deep back muscles.

2. The interspinales _____ the vertebral column, and the intertransversarii _____ the vertebral column.
   a. Flex, extend
   b. Extend, rotate
   ✔ c. Rotate, flex
   d. Extend, flex

3. The erector spinae are _____ back muscles that act as prime movers in _____ of the vertebral column.
   a. Superficial, flexion
   b. Superficial, extension
   ✔ c. Deep, extension
   d. Deep, flexion

4. Which of the following statements accurately describes how the splenius muscles rotate the head?
   a. They draw the head to one side and rotate it to face the same side.
   ✔ b. They draw the head to one side and rotate it to face the opposite side.
   c. They draw the head directly forward and rotate it to face the ground.
   d. They draw the head slightly forward and rotate it to face the opposite side.

5. All of the following muscles are part of the transversospinales group except
   a. The semispinalis muscles.
   b. The multifidus muscles.
   ✔ c. The rotatores muscles.
   d. The spinalis muscles.

6. All of the following muscles are part the erector spinae group except
   a. The spinalis muscles.
   b. The longissimus muscles.
   ✔ c. The semispinalis muscles.
   d. The iliocostalis muscles.

Pre-Lab Quiz: Abdominal Muscles

1. Which of the following is an origin point of the external obliques?
   a. The lateral half of the inguinal ligament
   b. The middle lip of the iliac crest
   c. The sternum
   d. The lumbodorsal fascia

   ✔

2. All of the following are insertion points of the rectus abdominis except
   a. The iliac crest.
   b. The pubis.
   c. The cartilages of ribs 5–7.
   d. The xiphoid process.

3. What is a function of the abdominal muscles?
   a. They aid in normal respiration.
   b. They rotate the trunk.
   ✔ c. They extend the vertebral column.
   d. They compress the spine.

4. All of the following are muscles of the abdominal wall except
   a. The rectus abdominis.
   b. The internal obliques.
   ✔ c. The internal intercostals.
   d. The external obliques.

Pre-Lab Multiple Choice Quiz: Thoracic and Abdominal Muscles

1. All of the following respiratory muscles are innervated by the intercostal nerves except
   a. The transversus thoracis.
   b. The internal obliques.
   ✔ c. The serratus posterior inferior.
   d. The external intercostals.
2. If you were swinging a baseball bat, which muscles would you be using?
   ✔ a. The external and internal intercostals
   b. The external and internal obliques
   c. The interspinales and intertransversarii muscles
   d. The iliocostalis and spinalis muscles

3. If you were standing upright, you’d be using all of the following muscles except
   ✔ a. The scalenes.
   b. The longissimus muscles.
   c. The rotatores muscles.
   d. The interspinales.

4. All of the following abdominal muscles play a role in forceful expiration except
   a. The internal obliques.
   b. The rectus abdominis.
   c. The transversus abdominis.
   ✔ d. The external obliques.

5. All of the following statements accurately describe the transversospinales muscles except
   a. They include the semispinalis, multifidus, and rotatores muscles.
   b. They are located between the transverse and spinous processes on the vertebrae.
   ✔ c. They include the spinalis, longissimus, and iliocostalis muscles.
   d. They are deep back muscles.

6. What is the action of the multifidus?
   ✔ a. It stabilizes the vertebrae in local movements of the vertebral column.
   b. It flexes the vertebral column.
   c. It stabilizes the lumbar spine and raises the pelvis.
   d. It extends the vertebral column and draws the head directly backward.

7. If your lab partner asked you to distinguish between the rhomboid major and rhomboid minor muscles, which of the following points would you likely make?
   a. The rhomboid major elevates the scapula, whereas the rhomboid minor depresses the scapula.
   b. The rhomboid major is innervated by the dorsal scapular nerve, whereas the rhomboid minor is innervated by the accessory nerve.
   ✔ c. The rhomboid major inserts on the medial border of the scapula, whereas the rhomboid minor inserts on the lateral border of the scapula.
   d. The rhomboid major originates from the spinous processes of T02–T05, whereas the rhomboid minor originates from the spinous processes of C07–T01.

8. All of the following thoracic muscles that move and stabilize the shoulder insert on the scapula except
   a. The trapezius.
   ✔ b. The subclavius.
   c. The rhomboid major.
   d. The serratus anterior.

9. All of the following are accessory respiratory muscles that assist in forceful inspiration except
   a. The pectoralis minor.
   b. The internal intercostals.
   ✔ c. The serratus posterior superior.
   d. The scalenes.

10. Which of the following statements accurately compares the external and internal intercostals?
   a. The external intercostals assist in forced expiration, whereas the internal intercostals assist in normal inspiration.
   b. Both the external and internal intercostals assist in forced expiration.
   ✔ c. The external intercostals assist in normal inspiration, whereas the internal intercostals assist in forced expiration.
   d. Both the external and internal intercostals assist in normal inspiration.

Pre-Lab Dissection Quiz: Thoracic and Abdominal Muscles

- Select any of the semispinalis muscles.
- Select the right or left multifidus muscle.
- Select any of the intertransversarii muscles.
- Select the diaphragm
- Select the right or left serratus anterior.
- Select the right or left transversus abdominis muscle.
- Select the right or left external oblique.
- Select the right or left external intercostals.
- Select the right or left trapezius.
- Select the right or left internal intercostals.
Thoracic and Abdominal Muscles

Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Thoracic and Abdominal Muscles

1. Which muscle plays a role in taking a bow after a performance?
   a. The transversus abdominis  ✔
   b. The rectus abdominis
   c. The serratus posterior superior
   d. The interspinales

2. If you were rowing a boat, you would use all of the following muscles except
   ✔ a. The external obliques.
   b. The trapezius.
   c. The serratus anterior.
   d. The rhomboid minor.

3. How would you explain what happens when regurgitated stomach acid irritates the phrenic nerve and makes it fire spontaneously?
   a. It triggers spontaneous diaphragm relaxation, known as sighing.
   b. It triggers spontaneous collapse of the diaphragm.
   ✔ c. It triggers spontaneous diaphragm contraction, known as hiccups.
   d. It triggers spontaneous diaphragm relaxation, known as burping.

4. All of the following are functions of the abdominal muscles except
   ✔ a. Extending the spine.
   b. Compressing and protecting the viscera.
   c. Aiding in forced respiration.
   d. Rotating the trunk.

5. Which of the following statements is true regarding the erector spinae muscles?
   a. They include the semispinalis, multifidus, and rotatores muscles.
   ✓ b. They are deep back muscles.
   c. They are positioned between the transverse and spinous processes of the vertebrae.
   d. They lie parallel to the spine and extend the back.

6. Which of the following statements accurately compares the splenius capitis and semispinalis capitis?
   a. The splenius capitis rotates the face to the same side, whereas the semispinalis capitis rotates the face to the opposite side.
   ✓ b. The splenius capitis rotates the face to the opposite side, whereas the semispinalis capitis rotates the face to the same side.
   c. Both the splenius capitis and semispinalis capitis rotate the face to the same side.
   d. Both the splenius capitis and semispinalis capitis rotate the face to the opposite side.

7. What impact do the rhomboid major and rhomboid minor muscles have on the scapula?
   a. They depress the scapula.  ✔
   b. They steady the scapula.
   c. They elevate the scapula.
   d. They retract the scapula.

8. Which muscles are involved in forceful inspiration and shoulder girdle movements?
   a. The pectoralis minor and serratus posterior superior  ✔
   b. The serratus anterior and subclavius
   c. The subclavius and serratus posterior superior
   d. The pectoralis minor and serratus anterior

9. Which of the following statements accurately compares the serratus posterior superior and serratus posterior inferior muscles?
   a. The serratus posterior superior assists in forceful expiration, whereas the serratus posterior inferior assists in forceful inspiration.
   b. Both the serratus posterior superior and the serratus posterior inferior assist in forceful expiration.
   c. Both the serratus posterior superior and the serratus posterior inferior assist in forceful inspiration.
   ✓ d. The serratus posterior superior assists in forceful inspiration, whereas the serratus posterior inferior assists in forceful expiration.

10. If you were explaining the diaphragm to your lab partner, you would likely make all of the following points except
    a. It marks the division between the thoracic and abdominal cavities.  ✔
    b. It compresses the thoracic cavity and expands the abdominal cavity when it contracts.
    c. It has several apertures that allow for passage of the aorta, inferior vena cava, esophagus, nerves, and lymph vessels.
    d. It is the prime mover of inspiration.

Post-Lab Dissection Quiz: Thoracic and Abdominal Muscles

- Select any of the semispinalis muscles.
- Select the right or left multifidus muscle.
- Select any of the intertransversarii muscles.
- Select the diaphragm
- Select the right or left serratus anterior.
- Select the right or left transversus abdominis muscle.
- Select the right or left external oblique.

Graded Quiz Bank: Instructor’s Manual
Select the right or left external intercostals.
Select the right or left trapezius.
Select the right or left internal intercostals.

Upper Limb Muscles Pre-Lab Quizzes

Pre-Lab Quiz: Shoulder Muscles
1. Since the scapula is a _____ bone, it must be _____ in order for the arm to be able to move.
   a. Moveable, stabilized
   b. Stationary, moving
   c. Moveable, moving
   d. Stationary, stabilized

2. Which of the following muscles is considered to be a prime mover of the arm?
   a. The pectoralis minor
   b. The teres major
   c. The pectoralis major
   ✔ d. The teres minor

3. All of the following statements accurately describe the deltoid muscle except
   a. It is a prime mover of the arm.
   b. It has three heads that originate from the lateral third of the clavicle, the acromion, and the scapular spine.
   ✔ c. It is a rotator cuff muscle.
   d. It abducts, flexes, extends, and laterally and medially rotates the humerus.

4. All of the following are muscles of the rotator cuff except
   a. The supraspinatus.
   ✔ b. The teres major.
   c. The subscapularis.
   d. The teres minor.

5. All of the following muscles originate from the scapula except
   a. The coracobrachialis.
   b. The teres major.
   c. The teres minor.
   ✔ d. The latissimus dorsi.

6. All of the following statements are true of the latissimus dorsi muscle except
   a. It originates from the spinous processes of T07–T12 and L01–L05.
   b. It laterally rotates and flexes the arm.
   c. It inserts into the intertubercular groove of the humerus.
   d. It is innervated by the thoracodorsal nerve.

7. Which muscle is innervated by the axillary nerve?
   a. The latissimus dorsi
   b. The coracobrachialis
   c. The subscapularis
   ✔ d. The deltoid

Pre-Lab Quiz: Forearm Muscles
1. What is the action of the anconeus muscle?
   a. It extends the elbow.
   b. It flexes the elbow.
   c. It supinates the elbow.
   d. It pronates the elbow.

2. All of the following statements accurately identify the origin of a head of the triceps brachii except
   a. The long head originates from the posterior surface of the humerus, below the groove for the radial nerve.
   b. The lateral head originates from the posterior surface of the humerus.
   c. The long head originates from the infraglenoid tuberosity.
   d. The medial head originates from the posterior surface of the humerus, below the groove for the radial nerve.

3. All of the following muscles flex the elbow except
   a. The biceps brachii.
   b. The triceps brachii.
   c. The brachialis.
   d. The brachioradialis.

4. Which of the following statements accurately describes the origin of the long and short heads of the biceps brachii?
   a. The long head originates from the coracoid process of the scapula, and the short head originates from the supraglenoid tubercle of the scapula.
   ✔ b. The long head originates from the supraglenoid tubercle of the scapula, and the short head originates from the coracoid process of the scapula.
   c. Both heads originate from the coracoid process of the scapula.
   d. Both heads originate from the supraglenoid tubercle of the scapula.
5. All of the following statements accurately describe the biceps brachii except
   a. It flexes and supinates the elbow.
   b. It has two heads.
   ✔ c. It extends the elbow.
   d. It is innervated by the musculocutaneous nerve.

6. Which of the following statements accurately describes a characteristic of all elbow flexors?
   a. They are located on the posterior side of the forearm.
   b. They are innervated by the radial nerve.
   ✔ c. They are located on the anterior side of the humerus.
   d. They insert into the ulna.

7. All of the following statements accurately describe the pronator teres and pronator quadratus muscles except
   a. They are both innervated by the median nerve.
   ✔ b. The pronator teres pronates the hand, whereas the pronator quadratus pronates and flexes the forearm.
   c. They both insert into the radius.
   d. The pronator teres pronates and flexes the forearm, whereas the pronator quadratus pronates the hand.

8. The pronator muscles turn the palm ______., whereas the supinator muscle turns the palm ______.
   a. Up, down
   b. Right, left
   ✔ c. Left, right
   d. Down, up

Pre-Lab Quiz: Wrist and Hand Muscles

1. All of the following are actions of the lumbricals except
   a. Flexing the MCP joints.
   ✔ b. Abducting the MCP joints.
   c. Extending the PIP joints.
   d. Extending the DIP joints.

2. Which of the following statements accurately describes the hypothenar muscles?
   ✔ a. They move the little finger (digit 5).
   b. They move the thumb (digit 1).
   c. They are located primarily in the forearm and cross the wrist to insert on the hand.
   d. They are innervated by the median nerve.

3. All of the following muscles are located entirely within the hand except
   a. The flexor pollicis brevis
   ✔ b. The abductor digiti minimi
   c. The extensor pollicis brevis
   d. The adductor pollicis

4. Pollicis refers to the
   a. Index finger (digit 2).
   ✔ b. Thumb (digit 1).
   c. Middle finger (digit 3).
   d. Little finger (digit 5).

5. All of the following statements accurately describe the extensor digitorum muscle except
   a. It is innervated by the deep radial nerve.
   b. It extends the wrist and extends and abducts digits 2–5.
   ✔ c. It originates from the lateral epicondyle of the humerus.
   d. It inserts into the dorsal digital expansion of the proximal phalanx of digit 5.

6. The flexors of the hand are located on the _____ part of the forearm, whereas the extensors of the hand are located on the _____ part of the forearm.
   a. Posterior, anterior
   b. Proximal, distal
   c. Distal, proximal
   ✔ d. Anterior, posterior

7. Which of the following statements is true regarding the superficial flexors?
   a. They are all innervated by the ulnar nerve.
   ✔ b. They all flex digits 2–5.
   c. They all insert into the middle phalanx of digits 2–5.
   d. They all have an origin point on the medial epicondyle of the humerus.

8. Which muscle is a deep flexor of the hand?
   a. The flexor carpi radialis
   ✔ b. The flexor pollicis longus
   c. The flexor carpi ulnaris
   d. The palmaris longus

Pre-Lab Multiple Choice Quiz: Upper Limb Muscles

1. All of the following are actions of the lumbricals except
   ✔ a. Abducting the MCP joints.
   b. Flexing the MCP joints.
   c. Extending the PIP joints.
   d. Extending the DIP joints.
2. All of the following statements accurately describe the deltoid muscle except
   a. It is a prime mover of the arm.
   b. It has three heads that originate from the lateral third of the clavicle, the acromion, and the scapular spine.
   ✔ c. It is a rotator cuff muscle.
   d. It abducts, flexes, extends, and laterally and medially rotates the humerus.

3. All of the following are steps in the cross-bridge formation process except
   a. Calcium ions released from the sarcoplasmic reticulum bind to a protein complex causing it to shift and expose myosin-binding sites.
   ✔ b. Calcium ions released from the sarcoplasmic reticulum power the movement of the myosin head.
   c. The myosin head binds to actin.
   d. ADP and phosphate power the movement of the myosin head.

4. If you were explaining the action potential phase of muscle contraction to a peer who doesn’t understand this phase, which of the following details would you include in your explanation?
   a. Calcium ions stimulate the sarcolemma and generate an action potential that travels through the transverse tubules.
   ✔ b. Sodium ions stimulate the sarcolemma and generate an action potential that travels through the transverse tubules.
   c. When acetylcholine binds to receptors, they close, preventing sodium ions from entering the muscle fiber.
   d. The arrival of action potential in the sarcoplasmic reticulum triggers the release of sodium ions.

5. The musculocutaneous nerve supplies all of the following except
   a. The biceps brachii.
   b. The teres minor.
   ✔ c. The teres major.
   d. The subscapularis.

6. Which body system initiates the process of muscle contraction?
   a. Muscular system
   b. Skeletal system
   ✔ c. Nervous system
   d. Endocrine system

7. The pectoralis major is innervated by the _____ and supplied with blood by the _____.
   a. Lumbosacral plexus, axillary vein
   ✔ b. Abdominal aortic plexus, cephalic vein
   c. Brachial plexus, thoracoacromial artery
   d. Cavernous plexus, subclavian artery

8. If you and your friends were discussing the muscles that flex and extend different body parts, and they asked you which muscle allows you to point at something of interest, which muscle would you indicate?
   ✔ a. Extensor indicis
   b. Extensor pollicis longus
   c. Extensor pollicis brevis
   d. Extensor digiti minimi

9. All of the following are muscles of the rotator cuff except
   a. The supraspinatus.
   b. The teres minor.
   ✔ c. The teres major.
   d. The subscapularis.

10. In elbow extension, the _____ is the agonist and the _____ is the antagonist.
    ✔ a. Biceps brachii, triceps brachii
    b. Triceps brachii, biceps brachii
    c. Brachioradialis, extensor digitorum
    d. Brachialis, brachioradialis

Pre-Lab Dissection Quiz: Upper Limb Muscles

Select the bone (right or left) that contains the origin points of the biceps brachii.
Select the right or left pectoralis major.
Select the right or left pronator quadratus.
Select any part of the muscle (right or left) that acts as the primary agonist of elbow extension.
Select the bone (right or left) that serves as the insertion for the triceps brachii.
Select any of the superficial flexors of the hand.
Select any part of the right or left deltoid.
Select a muscle of the rotator cuff.
Select the right or left extensor digitorum.
Select any of the lumbricals.
Upper Limb Muscles Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Upper Limb Muscles

1. All of the following statements accurately compare the origins and insertions of muscles associated with thumb movement except
   a. The flexor pollicis longus originates from the forearm and inserts into the hand, whereas the flexor pollicis brevis is entirely located within the hand.
   b. Both the extensor pollicis longus and extensor pollicis brevis muscles originate from the forearm and insert into the base of the thumb's proximal phalanx.
   c. The abductor pollicis longus originates from the forearm and inserts into the hand, whereas the abductor pollicis brevis is entirely located within the hand.
   ✔ d. Both the opponens pollicis and adductor pollicis muscles originate from the forearm and insert into the medial surface of the thumb's proximal phalanx.

2. If you were describing carpal tunnel syndrome to a classmate, which of the following statements would you not want to make?
   a. It can result from repetitive finger motions.
   ✔ b. It only affects the extensor muscles of the forearm.
   c. It can result in tingling, numbness, and muscle weakness of the wrist.
   d. It occurs when inflammation compresses the median nerve.

3. The pectoralis major is used when performing all the following actions except
   ✔ a. Rowing a boat.
   b. Raising your hand during class.
   c. Bringing your hand to your heart.
   d. Reaching in front of you.

4. Which of the following statements distinguishes the midpalmar muscles from the thenar and hypothenar hand muscles?
   a. The midpalmar muscles are individual muscles that each move one finger.
   b. The midpalmar muscles originate in the forearm and insert into the hand.
   ✔ c. The midpalmar muscles are groups of muscles that move multiple fingers.
   d. The midpalmar muscles form the fleshy protrusion in the hand at the base of the thumb.

5. Which of the following muscles is categorized as a superficial flexor of the hand?
   ✔ a. The palmaris longus
   b. The abductor pollicis longus
   c. The flexor pollicis longus
   d. The flexor digitorum profundus

6. Which of the following accurately lists the rotator cuff muscles?
   a. Deltoid, supraspinatus, infraspinatus, and latissimus dorsi
   b. Coracobrachialis, subscapularis, infraspinatus, and teres minor
   c. Supraspinatus, teres major, teres minor, and subscapularis
   ✔ d. Supraspinatus, infraspinatus, teres minor, and subscapularis

7. All of the following statements accurately compare the muscles that pronate and supinate the forearm except
   ✔ a. The pronator and supinator muscles are all innervated by the median nerve.
   b. The pronator muscles turn the palm down, whereas the supinator muscle turns the palm up.
   c. The pronator and supinator muscles all insert into the radius.
   d. The pronator teres and supinator muscles originate from the humerus and ulna, whereas the pronator quadratus only originates from the ulna.

8. The _____ is an elbow flexor, whereas the _____ is an elbow extensor.
   ✔ a. Brachialis, triceps brachii
   b. Triceps brachii, anconeus
   c. Brachioradialis, biceps brachii
   d. Triceps brachii, biceps brachii

9. Which of the following statements accurately compares the origins of the long and short heads of the biceps brachii?
   a. The long head originates from the coracoid process, whereas the short head originates from the supraglenoid tubercle of the scapula.
   b. The long and short heads both originate from the radial tuberosity.
   ✔ c. The long head originates from the supraglenoid tubercle of the scapula, whereas the short head originates from the coracoid process.
   d. The long and short heads both originate from the coracoid process.
10. All of the following muscles stabilize the shoulder joint except
   a. The infraspinatus. ✔
   b. The pronator teres.
   c. The supraspinatus.
   d. The teres minor.

Post-Lab Dissection Quiz: Upper Limb Muscles

Select the bone (right or left) that contains the origin points of the biceps brachii.
Select the right or left pectoralis major.
Select the right or left pronator quadratus.
Select any part of the muscle (right or left) that acts as the primary agonist of elbow extension.
Select the bone (right or left) that serves as the insertion for the triceps brachii.
Select any of the superficial flexors of the hand.
Select any part of the right or left deltoid.
Select a muscle of the rotator cuff.
Select the right or left extensor digitorum.
Select any of the lumbricals.

 Lower Limb Muscles Pre-Lab Quizzes

Pre-Lab Quiz: Hip and Gluteal Muscles

1. Which of the following statements accurately describes the origin of one of the lateral rotators of the hip?
   a. The inferior gemellus originates from the ischial spine, with the upper part of the tendon of the obturator internus.
   b. The obturator internus originates from the medial side of the obturator foramen.
   c. The obturator externus originates from the inner surface of the obturator foramen and the surfaces of surrounding bones.
   ✔ d. The superior gemellus originates from the ischial spine, with the upper part of the tendon of the obturator internus.

2. Which of the following statements accurately describes the action of the quadratus femoris?
   a. It externally rotates the thigh and stabilizes the pelvis. ✔
   b. It externally rotates and adducts the hip.
   c. It laterally rotates and abducts the thigh.
   d. It externally rotates, abducts, and extends the hip.

3. Which muscle does not insert onto the femur?
   a. The psoas major
   b. The gluteus medius ✔
   c. The tensor fasciae latae
   d. The obturator externus

4. All of the following gluteal muscles are innervated by the superior gluteal nerve except
   a. The gluteus medius.
   ✔ b. The gluteus maximus.
   c. The gluteus minimus.
   d. The tensor fasciae latae.

5. The lateral rotators of the hip are located _____ to the gluteus maximus and _____ to the gluteus minimis.
   a. Deep, superior
   b. Superficial, inferior
   ✔ c. Deep, inferior
   d. Superficial, superior

6. All of the following muscles flex the hip except
   a. The psoas major.
   b. The psoas minor. ✔
   c. The iliacus.
   ✔ d. The piriformis.

Pre-Lab Quiz: Thigh Muscles

1. All of the following posterior thigh muscles originate from the ischial tuberosity except
   a. The long head of the biceps femoris.
   b. The semitendinosus. ✔
   c. The short head of the biceps femoris.
   d. The semimembranosus.

2. What are the posterior thigh muscles commonly known as?
   a. The hamstrings ✔
   b. The quadriceps
   c. The adductors
   d. The iliopsoas

3. All of the following statements accurately describe the gracilis except
   a. It originates from the lower half of the pubic symphysis and upper half of the pubic arch.
   b. It adducts, flexes, and laterally rotates the thigh. ✔
   c. It is innervated by the obturator nerve.
   d. It inserts into the medial surface of the superior shaft of the tibia via a common tendon of the pes anserinus.
4. What is the primary action of the muscles in the medial compartment of the thigh?
   a. Abduction
   b. Flexion
   ✓ c. Adduction
   d. Extension

5. What is the action of the quadriceps muscles?
   a. They flex the leg at the knee joint.
   ✓ b. They extend the leg at the knee joint.
   c. They flex the leg at the hip joint.
   d. They laterally rotate the leg at the hip joint.

6. All of the following muscles are part of the quadriceps group except
   a. The rectus femoris.
   b. The vastus medialis.
   ✓ c. The sartorius.
   d. The vastus intermedius.

Pre-Lab Quiz: Lower Leg Muscles

1. The _____ and _____ insert into the posterior surface of the calcaneus via the Achilles tendon.
   a. Plantaris, soleus
   b. Gastrocnemius, plantaris
   ✓ c. Popliteus, plantaris
   d. Gastrocnemius, soleus

2. Which of the following statements accurately describes the innervation of the lower leg muscles?
   a. All the lateral compartment lower leg muscles are innervated by the deep fibular nerve.
   b. All the anterior compartment lower leg muscles are innervated by the deep fibular nerve.
   ✓ c. All the posterior compartment lower leg muscles are innervated by the superficial fibular nerve.
   d. All the lateral compartment lower leg muscles are innervated by the tibial nerve.

3. All of the following posterior compartment muscles of the lower leg cross the ankle joint on the posterior side and are involved in plantarflexion of the foot except
   a. The plantaris.
   ✓ b. The popliteus.
   c. The soleus.
   d. The gastrocnemius.

4. The fibularis (peroneus) longus and fibularis (peroneus) brevis _____ and _____ the foot.
   a. Plantarflex, evert
   ✓ b. Plantarflex, invert
   c. Dorsiflex, evert
   d. Dorsiflex, invert

5. Which of the following is an anterior lower leg muscle?
   a. The fibularis (peroneus) longus
   b. The fibularis (peroneus) brevis
   ✓ c. The flexor digitorum longus
   d. The fibularis (peroneus) tertius

6. What is one of the actions of all the anterior lower leg muscles?
   ✓ a. Dorsiflexion of the foot
   b. Plantarflexion of the foot
   c. Inversion of the foot
   d. Eversion of the foot

Pre-Lab Quiz: Foot Muscles

1. All of the following statements accurately describe the plantar interossei except
   a. They are innervated by the lateral plantar branch of the tibial nerve.
   ✓ b. They insert into the bases of the proximal phalanges of digits 2–4 and the aponeurosis of the extensor digitorum longus tendons.
   c. They insert into the bases of the proximal phalanges of digits 3–5.
   d. They originate from the bases and medial sides of the metatarsals 3–5.

2. Which third plantar layer muscle is innervated by the medial plantar branch of the tibial nerve?
   a. The adductor hallucis
   b. The flexor digiti minimi brevis
   ✓ c. The flexor hallucis brevis
   d. The opponens digiti minimi

3. All of the following are actions of the lumbricals except
   a. They flex the metatarsophalangeal joints.
   b. They extend the proximal interphalangeal joints.
   ✓ c. They extend the metatarsophalangeal joints.
   d. They extend the distal interphalangeal joints.

4. Which of the following muscles is part of the first and most superficial plantar layer of foot muscles?
   a. The adductor hallucis
   ✓ b. The opponens digit minimi
   c. The abductor hallucis
   d. The flexor hallucis brevis
5. All of the following statements accurately describe the extensor digitorum brevis and extensor hallucis brevis except
   a. They are innervated by the deep fibular nerve. ✔
   b. They insert into proximal phalanges of the toes. ✓
   c. They originate from the calcaneus. ✓
   d. They extend the toes.

6. Which term refers to the big toe (digit 1)?
   a. Digitorum           ✔
   b. Digitus minimi
   c. Pollex
   d. Hallucis

Pre-Lab Multiple Choice Quiz: Lower Limb Muscles

1. Which of the following accurately compares the impact the anterior and lateral lower leg have on the ankle? Muscles of the anterior lower leg ______ the ankle, and muscles in the lateral lower leg ______ the ankle.
   ✔ a. Dorsiflex, stabilize
   b. Plantarflex, extend
   c. Plantarflex, dorsiflex
   d. Stabilize, extend

2. Which of the following accurately describes the four plantar layers?
   a. Plantar layer 1 muscles adduct the toes, plantar layer 2 muscles flex and abduct the toes, plantar layer 3 muscles abduct and adduct the toes, and plantar layer 4 muscles flex the toes. ✔
   b. Plantar layer 1 muscles flex and abduct the toes, plantar layer 2 muscles flex the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles abduct and adduct the toes.
   c. Plantar layer 1 muscles flex and adduct the toes, plantar layer 2 muscles abduct and adduct the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles flex the toes.
   d. Plantar layer 1 muscles flex and abduct the toes, plantar layer 2 muscles adduct the toes, plantar layer 3 muscles flex and adduct the toes, and plantar layer 4 muscles flex and abduct the toes.

3. Which of the following muscles is involved in maintaining upright posture?
   a. Iliacus ✔
   b. Psoas major
   c. Psoas minor
   d. Tensor fasciae latae

4. Which of the following is not a prime mover of knee flexion and thigh extension?
   a. Biceps femoris
   b. Semimembranosus
   ✔ c. Rectus femoris
   d. Semitendinosus

5. Which muscle is involved in extending the leg to kick a ball?
   ✔ a. The vastus lateralis
   b. The semitendinosus
   c. The obturator internus
   d. The inferior gemellus

6. All of the following muscles are involved in sitting cross-legged except
   ✔ a. The rectus femoris.
   b. The sartorius.
   c. The obturator externus.
   d. The quadratus femoris.

7. The term digiti minimi refers to digit
   a. 1.
   b. 2. ✓
   ✔ c. 5.
   d. 3.

8. All of the following statements accurately compare the long and short heads of the biceps femoris except
   a. The long head originates from the ischial tuberosity, whereas the short head originates from the linea aspera of the femur.
   b. The long and short heads insert into the lateral surface of the head of the fibula.
   c. The long head is innervated by the tibial nerve, whereas the short head is innervated by the common fibular nerve.
   ✔ d. The long and short heads extend the hip.
9. If you were explaining the quadriceps muscles to your lab partner, you would likely make all of the following points except
a. They are innervated by the femoral nerve.
✔ b. Their contraction causes lateral rotation of the hip.
c. They share a common tendon.
d. Their contraction pulls the tibia upward and extends the knee.

10. Which of the following statements accurately compares the gluteal muscles?

a. The gluteus maximus, gluteus medius, and gluteus minimis insert into the iliotibial tract, whereas the tensor fasciae latae insert into the trochanter of the femur.
✔ b. The gluteus maximus is innervated by the inferior gluteal nerve, whereas the gluteus medius, gluteus minimis, and tensor fasciae latae are innervated by the superior gluteal nerve.
c. The gluteus maximus, gluteus medius, and gluteus minimis abduct and laterally rotate the hip, whereas the tensor fasciae latae extend the hip.
d. The gluteus maximus and gluteus medius originate from the gluteal surface of the ilium, whereas the gluteal minimis and tensor fasciae latae originate from the anterior superior iliac spine.

Pre-Lab Dissection Quiz: Lower Limb Muscles

Select any of the interossei muscles (right or left) that abduct and adduct the toes.
Select the right or left gluteus maximus.
Select any of the right or left lateral rotators of the hip.
Select one of the major muscles involved in adducting and rotating the hip.

Lower Limb Muscles Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Lower Limb Muscles

1. All of the following statements accurately describe the hallucis muscles except
a. The abductor hallucis is a plantar layer 1 muscle.
✔ b. The flexor hallucis brevis is a dorsum muscle.
c. The flexor hallucis brevis and adductor hallucis are plantar layer 3 muscles.
d. The extensor hallucis brevis is a dorsum muscle.

2. Which of the following statements accurately describes the relationship between the psoas major and iliacus muscles?

a. They both insert into the lesser trochanter of the femur and act as extensors of the thigh.
✔ b. They both originate from the upper two-thirds of the iliac fossa and act as flexors of the thigh.
c. They both insert into the lesser trochanter of the femur and act as flexors of the thigh.
d. They both originate from the upper two-thirds of the iliac fossa and act as extensors of the thigh.

3. If you sustained a foot injury that resulted in foot drop, the inability or impaired ability to lift the front of your foot, which nerve would most likely be affected?

a. The lateral plantar nerve
✔ b. The deep fibular nerve
c. The medial plantar nerve
d. The tibial nerve

4. All of the following posterior compartment muscles of the lower leg cross the ankle joint on the posterior side and are involved in plantarflexion except

a. The popliteus.
✔ b. The soleus.
c. The plantaris.
d. The gastrocnemius.

5. Which of the following distinguishes the semitendinosus from the semimembranosus?

a. It originates from the ischial tuberosity.
b. It flexes the leg at the knee joint and mediates the leg.
✔ c. It inserts into the medial surface of the superior shaft of the tibia.
d. It is innervated by the tibial nerve.
6. Which of the following statements accurately compares how the anterior compartment muscles of the thigh move the knee?
   a. The four heads of the quadriceps femoris flex and internally rotate the knee, whereas the sartorius extends the knee.
   b. The four heads of the quadriceps femoris and the sartorius extend the knee.
   ✔ c. The four heads of the quadriceps femoris extend the knee, whereas the sartorius flexes and internally rotates the knee.
   d. The four heads of the quadriceps femoris and the sartorius flex and internally rotate the knee.

7. All of the following lateral rotators are innervated by spinal nerves except
   a. The obturator internus.
   ✔ b. The obturator externus.
   c. The superior gemellus.
   d. The piriformis.

8. All of the following muscles are involved in elevating your body on your tiptoes except
   ✔ a. The semitendinosus.
   b. The soleus.
   c. The gastrocnemius.
   d. The tibialis posterior.

9. If your lab partner asked you to explain how the hamstrings and quadriceps are involved in climbing stairs, which of the following would you most likely say?
   a. The quadriceps are involved in raising the body up and lifting a leg, whereas the hamstrings are involved in stepping up to the next step.
   ✔ b. The hamstrings are involved in raising the body up and lifting a leg, whereas the quadriceps are involved in stepping up to the next step.
   c. The hamstrings and quadriceps are both involved in raising the body up and lifting a leg.
   d. The hamstrings and quadriceps are both involved in stepping up to the next step.

10. If you tore your Achilles tendon, you would be unable to perform all of the following muscle actions except
    a. Bending your foot downward.
    b. Standing on your toes.
    ✔ c. Pulling your knees to your chest.
    d. Walking.

Post-Lab Dissection Quiz: Lower Limb Muscles
   ✔ Select any of the right or left muscles that unite their tendons to form the Achilles tendon.
   ✔ Select any of the foot or lower leg muscles (right or left) that are involved in the motion of standing on tiptoe.
   ✔ Select any of the right or left quadriceps muscles.

Nervous System and Special Senses Overview Quizzes

Pre-Lab Quiz: Nervous System Overview

1. The brain coordinates all of the following except
   a. Bodily functions.
   b. Muscle movements.
   ✗ c. Neuron functions.
   d. Transmission of sensory information.

2. The brain sends information _____ and receives information from ______.
   a. Through peripheral nerves, the body
   ✔ b. Throughout the body, peripheral nerves
   c. Throughout the body, neurotransmitters
   d. Through neurotransmitters, the body

3. What is the function of neurons?
   a. Forming a protective layer around the brain and spinal cord
   b. Conducting electrical signals and passing information rapidly throughout the body
   ✗ c. Secreting mucus to prevent friction during nervous system functions
   d. Contracting and relaxing to produce body movements
4. All of the following structures make up the nervous system except
   a. The brain.
   ✔ b. Muscles.
   c. The spinal cord.
   d. Nerves.

Pre-Lab Quiz: The Central and Peripheral Nervous Systems

1. All of the following are types of spinal nerves except
   a. Cervical spinal nerves.
   ✔ b. Thoracic spinal nerves.
   c. Brachial spinal nerves.
   d. Lumbar spinal nerves.

2. Which of the following statements accurately describes the functions of cranial nerves?
   a. They coordinate the activities of the neck, arm, and leg muscles.
   b. They supply motor and sensory fibers to the diaphragm that aid in breathing.
   ✔ c. They are responsible for sensation of the skin.
   d. They coordinate the activities of the special sensory organs and the head and neck muscles.

3. There are _____ pairs of cranial nerves and _____ pairs of spinal nerves.
   a. 31, 12
   ✔ b. 12, 31
   c. 20, 40
d. 40, 20

4. All of the following structures make up the peripheral nervous system except
   a. The spinal cord.
   ✔ b. The spinal nerves.
   c. The cranial nerves.
   d. The ganglia.

5. The brain is contained within the _____ and the spinal cord is contained within the _____.
   a. Cranium, thoracic cavity
   b. Skull foramen, vertebral foramen
   ✔ c. Vertebral canal, cranium
d. Cranium, vertebral canal

6. Which two structures make up the central nervous system?
   a. The spinal nerves and cranial nerves
   ✔ b. The brain and spinal cord
   c. The spinal nerves and spinal cord
   d. The brain and cranial nerves

7. Which of the following accurately lists the regional and functional types of brain structures?
   a. The diencephalon, cerebrum, cerebellum, and limbic system
   ✔ b. The forebrain, midbrain, hindbrain, and limbic system
   c. The cerebrum, midbrain, medulla oblongata, and pons
d. The forebrain, diencephalon, cerebrum, and cerebellum

Pre-Lab Quiz: Neuron Anatomy and Function

1. The electrical signal, or action potential, can be transmitted from the axon terminal to all of the following except
   a. Other axon terminals.
   ✔ b. Other neurons.
   c. Muscles.
d. Glands.

2. When the signal reaches the axon terminal, the _____ triggers the release of _____ from the presynaptic cell.
   a. Increased polarity, neurotransmitters
   b. Change in polarity, negatively charged ions
   ✔ c. Change in polarity, neurotransmitters
d. Increased polarity, negatively charged ions

3. Which of the following occurs as the messaging signal passes along the axon?
   a. The membrane remains polarized.
   ✔ b. The membrane depolarizes and then repolarizes.
   c. The membrane polarizes and then depolarizes.
d. The membrane depolarizes and remains in that state.

4. The resting neuron is polarized, meaning there is a net _____ charge outside the neuron and a net _____ charge inside the neuron.
   a. Negative, positive
   b. Positive, positive
   ✔ c. Negative, negative
d. Positive, negative

5. Which part of the neuron receives the messaging signal?
   a. The dendrites
   ✔ b. The axon
c. The axon terminal
d. The nucleus
6. Which of the following statements is true regarding myelin sheaths?
   a. All axons are surrounded by myelin sheaths.
   ✔ b. When a myelin sheath surrounds an axon, it provides insulation that decreases conduction speed.
   c. When a myelin sheath surrounds an axon, it provides insulation that increases conduction speed.
   d. The entire neuron is surrounded by a myelin sheath.

7. All of the following are parts of a neuron except
   a. The neuroglia.
   ✔ b. The soma.
   c. Dendrites.
   d. The axon.

Pre-Lab Quiz: Special Sensory Organs
1. _____ is another term for smell and _____ is another term for taste.
   a. Gustation, olfaction
   ✔ b. Spatial, equilibrium
   c. Olfaction, gustation
   d. Equilibrium, spatial

2. All of the following cranial nerves innervate the tongue except
   a. The facial nerves (VII).
   ✔ b. The vagus nerves (X).
   c. The vestibulocochlear nerves (VIII).
   d. The glossopharyngeal nerves (IX).

3. In addition to hearing, the ears are involved in _____, and they are innervated by the _____ nerves.
   a. Touch, glossopharyngeal (IX)
   ✔ b. Balance, glossopharyngeal (IX)
   c. Touch, vestibulocochlear (VIII)
   d. Balance, vestibulocochlear (VIII)

4. Which cranial nerves are associated with the sense of vision?
   a. The olfactory nerves (I)
   ✔ b. The optic nerves (II)
   c. The facial nerves (VII)
   d. The vagus nerves (X)

5. All of the following are special sensory organs except
   a. The teeth.
   ✔ b. The tongue.
   c. The eyes.
   d. The ears.

Pre-Lab Quiz: Sensory Processing in the Brain
1. In the midbrain, the superior colliculi control _____ reflexes and the inferior colliculi control _____ reflexes.
   a. Auditory, visual
   ✔ b. Visual, olfactory
   c. Visual, auditory
   d. Olfactory, auditory

2. Which of the following statements is true regarding the role diencephalon structures play in sensory information processing?
   a. The hypothalamus manages sensory impulses, including smell, taste, and vision.
   ✔ b. The hypothalamus relays sensory information between the brain stem and the cerebral cortex.
   c. The thalamus manages sensory impulses, including smell, taste, and vision.
   d. The thalamus contributes to the olfactory functions of the limbic system.

3. The medulla oblongata plays a role in the processing of all of the following senses except
   a. Hearing.
   b. Balance.
   ✔ c. Taste.
   d. Vision.

4. The limbic system contributes to _____ processing.
   a. Visual
   b. Auditory
   ✔ c. Olfactory
   d. Gustatory

5. Which lobe of the cerebrum contains the visual cortex?
   a. The temporal lobe
   b. The occipital lobe
   ✔ c. The parietal lobe
   d. The frontal lobe

6. Which lobe of the cerebrum contains the auditory cortex?
   a. The occipital lobe
   b. The parietal lobe
   ✔ c. The temporal lobe
   d. The frontal lobe

Cranial Nerves Pre-Lab Quizzes
Pre-Lab Quiz: Cranial Nerves Overview
1. Which cranial nerves have both sensory and motor fibers?
   a. The olfactory nerves (I)
   ✔ b. The facial nerves (VII)
   c. The hypoglossal nerves (XII)
   d. The vagus nerves (X)
2. All of the following are purely motor cranial nerves except
   a. The oculomotor nerves (III).
   b. The trochlear nerves (IV).
   c. The accessory nerves (XI).
   ✔ d. The optic nerves (III).
3. Which cranial nerves are purely sensory?
   a. The hypoglossal nerves (XII)  ✔
   b. The vestibulocochlear nerves (VIII)
   c. The accessory nerves (XI)
   ✔ d. The trigeminal nerves (V)
4. All of the following are cranial nerves except
   a. The abducens nerves.
   ✔ b. The glossopharyngeal nerves.
   c. The thoracic nerves.
   d. The trigeminal nerves.
5. There are _____ pairs of cranial nerves in the body that connect certain muscles and organs of the head and body directly to the _____.
   ✔ a. 12, brain
   b. 12, spinal cord
   c. 31, brain
   d. 31, spinal cord

Pre-Lab Quiz: Special Sensory Cranial Nerves

1. Which brain structure is part of both the auditory and equilibrium pathways of the vestibulocochlear nerves (VIII)?
   a. The pons
   ✔ b. The midbrain
   c. The medulla oblongata
   d. The thalamus

2. The cochlear branches of the vestibulocochlear nerves (VIII) transmit signals for _____, and the vestibular branches transmit signals for _____.
   a. Equilibrium, hearing
   b. Olfaction, gustation
   ✔ c. Gustation, olfaction
   d. Hearing, equilibrium

3. Which of the following statements accurately describes the optic chiasm?
   ✔ a. The optic chiasm allows for the complete crossing of the fibers of the optic nerves.
   b. The crossed fibers occupy the lateral part of the optic chiasm.
   c. The optic chiasm allows for the partial crossing of the fibers of the optic nerves.
   d. The uncrossed fibers occupy the medial part of the optic chiasm.

4. Which bone contains the optic foramina through which the optic nerves (II) pass?
   ✔ a. The ethmoid bone
   b. The sphenoid bone
   c. The zygomatic bone
   d. The temporal bone

5. Which extracellular structures in the olfactory epithelium contain the nervous system receptors for the sense of smell?
   ✔ a. Olfactory bulbs
   b. Neurons
   c. Olfactory tracts
   d. Cilia

6. All of the following statements are true regarding the olfactory nerves (I) except
   a. They originate from the olfactory epithelium of the nasal cavity.
   b. They terminate in the olfactory bulbs.
   ✔ c. They pass through the cribriform plate of the ethmoid bone.
   d. They are mixed cranial nerves with sensory and motor fibers.

7. All of the following statements accurately describe the special sensory cranial nerves except
   a. The olfactory nerves (I) transmit signals for taste and smell.
   b. The optic nerves (II) transmit signals for vision.
   ✔ c. The olfactory nerves (I) transmit signals for smell.
   d. The vestibulocochlear nerves (VIII) transmit signals for hearing and equilibrium.

Pre-Lab Quiz: Motor Cranial Nerves

1. The hypoglossal nerves (XII) pass from the _____ through the hypoglossal canals to innervate the extrinsic and intrinsic _____ muscles.
   a. Medulla oblongata, eye
   b. Medulla oblongata, tongue
   ✔ c. Pons, tongue
   d. Pons, eye

2. Which muscles do the accessory nerves (XI) innervate?
   a. The extrinsic and intrinsic tongue muscles
   b. The superior and inferior oblique muscles
   ✔ c. The sternocleidomastoid and trapezius muscles
   d. The medial and lateral rectus muscles
3. Which of the following statements is true regarding the accessory nerves (XI)?
   ✔ a. They originate from the first five segments of the cervical portion of the spinal cord.
   b. They originate from the medulla oblongata in the brain.
   c. They enter the cranium through the jugular foramina.
   d. They exit the cranium through the foramen magnum.

4. The abducens nerves (VI) pass from the _____ through the superior orbital fissures to innervate the _____ muscles.
   a. Pons, medial rectus
   ✔ b. Pons, lateral rectus
   c. Midbrain, lateral rectus
   d. Midbrain, medial rectus

5. The trochlear nerves (IV) pass from the midbrain through the _____ to innervate the _____ muscles.
   a. Superior orbital fissures, inferior oblique
   b. Infraorbital foramen, superior oblique
   ✔ c. infraorbital foramen, inferior oblique
   d. Superior orbital fissures, superior oblique

6. All of the following muscles are innervated by the oculomotor nerves (III) except
   a. The medial rectus muscle.
   ✔ b. The lateral rectus muscle.
   c. The inferior oblique muscle.
   d. The superior rectus muscle.

7. All of the following motor cranial nerves stimulate muscles associated with eye movement except
   a. The oculomotor nerves (III).
   ✔ b. The accessory nerves (XI).
   c. The trochlear nerves (IV).
   d. The abducens nerves (VI).

### Pre-Lab Quiz: Mixed Cranial Nerves

1. Which of the following is an origin point for the sensory fibers of the vagus nerves (X)?
   a. Chemoreceptors in the carotid body
   b. Taste buds and receptors on the posterior portion of the tongue
   c. Proprioreceptors in face and scalp muscles
   ✔ d. Proprioreceptors in throat and neck muscles

2. All of the following statements accurately describe vagus nerve (X) functions except
   a. Their motor fibers innervate the mastication muscles to control biting and chewing.
   ✔ b. Their motor fibers innervate muscles of the pharynx, larynx, and soft palate for vocalization and swallowing.
   c. Their parasympathetic fibers control heart rate, breathing, sweating, and gut movements.
   d. They divide into numerous branches that supply the larynx, lungs, heart, liver, and abdomen.

3. All of the following statements accurately describe functions of the glossopharyngeal nerves (IX) except
   a. Its sensory fibers transmit signals for touch, temperature, and pressure, but not taste, to the anterior portion of the tongue.
   ✔ b. Its motor fibers innervate the stylopharyngeus muscle to elevate the pharynx and larynx during swallowing.
   c. Its motor fibers innervate the parotid gland to stimulate saliva secretion.
   d. Its sensory fibers transmit signals for touch and taste to the medulla oblongata, somatosensory cortex, and gustatory cortex.

4. The glossopharyngeal nerves (IX) originate in the _____ and exit the skull through the _____.
   a. Medulla oblongata, stylomastoid foramina
   ✔ b. Pons, jugular foramina
   c. Medulla oblongata, jugular foramina
   d. Pons, stylomastoid foramina

5. The motor part of the facial nerves (VII) transmits signals that control _____, and the sensory part transmits signals related to _____.
   a. Facial expressions, touch
   ✔ b. Facial expressions, taste
   c. Mastication, taste
   d. Mastication, touch

6. All of the following are motor branches of the facial nerves (VII) except
   a. The temporal branch.
   ✔ b. The ophthalmic branch.
   c. The mandibular branch.
   d. The buccal branch.

7. All of the following statements accurately describe the trigeminal nerves (V) except
   a. They are the largest cranial nerves.
   ✔ b. They are mixed cranial nerves that innervate structures of the face.
   c. Their sensory fibers originate in the pons and their motor fibers terminate in the trigeminal ganglion.
   d. Their motor fibers originate in the pons and their sensory fibers terminate in the trigeminal ganglion.
8. Which of the following statements accurately describes one of the branches of the trigeminal nerves (V)?
   a. The ophthalmic branch is a motor cranial nerve.
   b. The maxillary branch is a mixed cranial nerve.
   c. The mandibular branch is a sensory cranial nerve.
   ✔️ d. The maxillary branch is a sensory cranial nerve.

Cranial Nerves Multiple Choice Quiz 3

1. Which of the following cranial nerves is purely a motor nerve?
   a. Vestibulocochlear (VIII)
   b. Olfactory (I)
   c. Optic (II)
   ✔️ d. Accessory (XI)

2. _____ fibers of the optic nerve cross over to the opposite side of the brain, whereas _____ fibers continue on the same side.
   ✔️ a. Medial, lateral
   b. Lateral, medial
   c. Superior, inferior
   d. Inferior, superior

3. All of the following are true of the trigeminal nerves (V) except
   a. They are the largest cranial nerves.
   b. They consist of ophthalmic, maxillary, and mandibular branches.
   ✔️ c. They perform sensory functions only.
   d. They pass sensory and motor signals between the pons and structures of the face.

4. Sensory axons of the glossopharyngeal nerve (IX) arise from all of the following except
   a. Proprioceptors in swallowing muscles.
   b. Chemoreceptors in the carotid body.
   c. Baroreceptors in the carotid sinus.
   ✔️ d. Nuclei in the medulla oblongata.

5. The fibers of the vagus nerve (X) originate in the
   a. Pons.
   ✔️ b. Medulla oblongata.
   c. Cerebrum.
   d. Cerebellum.

6. If you were describing how the olfactory nerves (I) transmit impulses for smell to a friend who does not understand the process, which of the following would you most likely say?
   a. They pass from the olfactory bulbs through the cribriform plate of the ethmoid and into the nasal cavity.
   ✔️ b. They pass from the nasal cavity through the cribriform plate of the ethmoid and end in the olfactory bulbs.
   c. They pass from the cribriform plate of the ethmoid through the nasal canal and end in the olfactory bulbs.
   d. They pass from the nasal cavity through the olfactory bulbs and end in the cribriform plate of the ethmoid.

7. Which of the following correctly explains the difference between the rods and cones in the retina?
   a. Cones interpret the intensity of light, whereas rods interpret the color of light.
   ✔️ b. Cones interpret the color of light, whereas rods interpret the intensity of light.
   c. Cones interpret images in the dark, whereas rods interpret moving objects.
   d. Cones interpret moving objects, whereas rods interpret images in the dark.

8. Which of the following accurately explains the motor and sensory functions of the facial nerve (VII)?
   a. The motor part transmits signals that control lateral movements of the face, whereas the sensory part transmits signals related to vision.
   ✔️ b. The motor part transmits signals that control eye movement, whereas the sensory part transmits signals related to hearing.
   c. The motor part transmits signals that control facial expressions, whereas the sensory part transmits signals related to taste.
   d. The motor part transmits signals that control neck movements, whereas the sensory part transmits signals related to olfaction.

9. If your instructor asked you to compare the branches of the vestibulocochlear nerves (VIII), which of the following would you most likely say?
   a. The cochlear nerves transmit signals for hearing, whereas the vestibular nerves transmit signals for equilibrium.
   ✔️ b. The cochlear nerves transmit signals for equilibrium, whereas the vestibular nerves transmit signals for hearing.
   c. The cochlear nerves transmit signals for olfaction, whereas the vestibular nerves transmit signals for taste.
   d. The cochlear nerves transmit signals for taste, whereas the vestibular nerves transmit signals for olfaction.
10. Which of the following accurately explains the role the jugular foramen plays in the transmittal of the cranial nerves?

✔ a. The intermediate compartment of the jugular foramen transmits the glossopharyngeal (IX), vagus (X), and accessory (XI) nerves.
b. The anterior compartment of the jugular foramen transmits the facial (VII), hypoglossal (XII), and vestibulocochlear (VIII) nerves.
c. The posterior compartment of the jugular foramen transmits the trigeminal (V), trochlear (IV), and abducens (VI) nerves.
d. The posterior compartment of the jugular foramen transmits the glossopharyngeal (IX), vagus (X), and accessory (XI) nerves.

Cranial Nerves Dissection Quiz

» Select the auriculotemporal branch of the right or left trigeminal (V) nerve.
» Select the buccal branches of the right or left facial (VII) nerve.
» Select the inferior ganglion of the right or left glossopharyngeal (IX) nerve.
» Select any part of the right or left vagus (X) nerve.
» Select any part of the right or left accessory (XI) nerve.
» Select the right or left optic (II) nerve.
» Select any part of the right or left hypoglossal (XII) nerve.
» Select the bulb of the right or left olfactory (I) nerve.
» Select the right or left trochlear (IV) nerve.
» Select the right or left internal carotid plexus.

Cranial Nerves Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Cranial Nerves

1. If you were explaining the trigeminal nerves (V) to a friend, you could say all of the following except

✔ a. They consist of ophthalmic, maxillary, and mandibular branches.
b. They are mixed motor and sensory nerves.
c. They innervate the muscles of mastication to control biting and chewing.
d. They innervate the anterior portion of the tongue with sensory fibers related to taste.

2. Which of the following statements accurately compares the origin of two cranial nerves?

✔ a. Both the hypoglossal (XII) and vagus (X) nerves originate from the medulla oblongata.
b. The oculomotor nerves (III) originate from the pons, whereas the trigeminal nerves (V) originate from the medulla oblongata.
c. Both the trochlear (IV) and facial (VII) nerves originate from the midbrain.
d. The abducens nerves (VI) originate from the midbrain, whereas the glossopharyngeal nerves (IX) originate from the pons.

3. All of the following cranial nerves are associated with swallowing except

✔ a. The glossopharyngeal nerves (IX).
b. The facial nerves (VII).
c. The vagus nerves (X).
d. The hypoglossal nerves (XII).

4. If your aunt was in an accident and lost control of her accessory nerves (XI), which of the following would she not be able to do?

✔ a. Breathe
b. Move her face
c. Move her neck
d. Swallow food

5. Which of the following statements accurately describes the vagus nerves (X)?

a. They transmit signals for hearing and equilibrium.
✔ b. They innervate the lungs, heart, liver, stomach, aorta, and intestines.
c. They innervate the parotid gland to stimulate saliva secretion.
d. They originate from the spinal cord, not from the brain.

6. Which of the following statements accurately describes one of the facial nerves’ (VII) motor branches and the region it innervates?

✔ a. The buccal branch innervates the facial muscles of the lower cheek and lips.
b. The cervical branch innervates the facial muscles of the forehead and scalp.
c. The zygomatic branch innervates the muscles of the anterior neck.
d. The temporal branch innervates the muscles of the eye.

7. If you sustained an injury to your trochlear nerves (IV), which of the following could happen?

✔ d. Inability to properly move your eyeball

8. All of the following are purely motor nerves except

✔ a. The oculomotor nerves (III).
b. The optic nerves (II).
c. The hypoglossal nerves (XII).
d. The abducens nerves (VI).
9. Which cranial nerves facilitate the sensory functions of hearing and equilibrium?
   a. The optic nerves (II)
   ✔ b. The vestibulocochlear nerves (VIII)
   c. The vagus nerves (X)
   d. The trigeminal nerves (V)

10. All of the following statements accurately compare the functions of the cranial nerves and spinal nerves except
   a. Both cranial nerves and spinal nerves coordinate muscle activity of the neck.
   ✔ b. Both cranial nerves and spinal nerves coordinate muscle activity of the neck.
   c. Cranial nerves may be classified as sensory, motor, or mixed, whereas all spinal nerves have dorsal roots that transmit sensory signals and ventral roots that transmit motor signals.
   d. Cranial nerves coordinate activities of the special sensory organs, whereas spinal nerves play a role in sensation of the skin.

Cranial Nerves Dissection Quiz
   ✔ Select the auriculotemporal branch of the right or left trigeminal (V) nerve.
   ✔ Select the right or left trochlear (IV) nerve.
   ✔ Select the right or left interior carotid plexus.
   ✔ Select any part of the right or left hypoglossal (XII) nerve.
   Select the bulb of the right or left olfactory (I) nerve.

Hearing and Equilibrium Pre-Lab Quizzes

Pre-Lab Quiz: Ear Anatomy Overview
1. What stimulus directly interacts with the hair cells of the ear?
   a. Vibrations of the tympanic membrane
   b. Sound waves entering the outer ear
   c. Fluid waves in the inner ear
   d. Fluid waves in the middle ear

2. All of the following statements are true regarding the anatomy of the ear except
   a. The middle ear contains small, movable bones called the malleus, incus, and stapes.
   ❌ b. The inner ear contains small, movable bones called the malleus, incus, and stapes.
   c. The outer ear consists of an expanded portion of cartilage, called the auricle, and the external auditory canal.
   d. The inner ear consists of the bony and membranous labyrinths.

Pre-Lab Quiz: Outer Ear Anatomy
1. When sound waves strike the tympanic membrane, it creates _____ that travel to the middle ear bones to facilitate _____.
   a. Fluid waves, hearing
   b. Vibrations, hearing
   c. Vibrations, equilibrium
   d. Fluid waves, equilibrium

2. All of the following statements accurately describe the external acoustic meatus except
   a. It is a passageway from the bottom of the concha to the tympanic membrane.
   b. It contains cartilaginous, osseous, and membranous sections.
   c. It moves sound waves collected by the auricle to the middle ear.
   ❌ d. It is made up of a curved helix and an inferior part called the lobule.

3. What is the outer rim of the auricle called?
   ✔ a. The helix
   b. The antihelix
   c. The lobule
   d. The tragus

4. The outer ear is shaped like a _____, which helps it to _____.
   a. Funnel, move excess sound out of the ear
   ❌ b. Hammer, transfer sound vibrations to the tympanic membrane
   c. Funnel, move sound into the middle ear
   d. Hammer, stimulate hearing receptors
Pre-Lab Quiz: Middle Ear Anatomy

1. All of the following are auditory ossicles except
   a. The malleus.
   ✔ b. The tragus.
   c. The incus.
   d. The stapes.

2. The stapes vibrates against the _____, creating waves in the fluid inside the _____.
   a. Oval window, tympanic cavity
   b. Tympanic membrane, cochlea
   c. Tympanic membrane, tympanic cavity
   ✔ d. Oval window, cochlea

3. Which of the following lists the bones of the middle ear in their proper order, starting at the tympanum?
   a. Incus, stapes, malleus
   ✔ b. Stapes, malleus, incus
   c. Malleus, stapes, incus
   d. Malleus, incus, stapes

4. All of the following statements accurately describe the oval window except
   ✔ a. It is an opening that leads from the external acoustic meatus of the outer ear to the middle ear.
   b. It is an opening that leads from the middle ear to the vestibule of the inner ear.
   c. Its vibrations are 20 times more rapid than those of the eardrum.
   d. Its vibrations build pressure waves in the cochlea, beginning the process that generates nerve impulses.

5. All of the following statements accurately describe the tympanic cavity except
   a. It is an irregular, laterally compressed space within the temporal bone.
   b. It is filled with air, which reaches the nasopharynx through the auditory tube.
   ✔ c. It is filled with fluid, which vibrates when sound waves pass through the ear.
   d. It contains the auditory ossicles, which convey vibrations to the inner ear.

Pre-Lab Quiz: Inner Ear Anatomy

1. Which type of cells, found in the organ of Corti, are the receptors for hearing?
   ✔ a. Claudius's cells
   b. Hair cells
   c. Boettcher's cells
   d. Phalangeal cells

2. Nerve impulses are generated within the cochlear nerves when fluid pressure waves move the _____ of the spiral organ against the _____, bending the stereocilia.
   a. Hair cells, tectorial membrane
   b. Hair cells, basilar membrane
   ✔ c. Epithelial cells, tectorial membrane
   d. Epithelial cells, basilar membrane

3. When sound vibrations reach the inner ear, they push the oval window against the _____ of the cochlea, directly causing _____.
   a. Scala tympani, fluid pressure waves
   ✔ b. Scala vestibuli, fluid pressure waves
   c. Scala vestibuli, movement of the stereocilia
   d. Scala tympani, movement of the stereocilia

4. All of the following are fluid-filled channels of the cochlea that transfer vibrations except
   a. The scala vestibuli.
   b. The cochlear duct.
   ✔ c. The organ of Corti.
   d. The scala tympani.

5. As the head rotates or moves, what generates the nerve impulses for equilibrium?
   a. In the semicircular canals, fluid pressure waves build up as the oval window vibrates.
   b. In the cochlea, the movement of endolymph in the ampullae causes the hair cells to bend.
   ✔ c. In the cochlea, fluid pressure waves build up as the oval window vibrates.
   d. In the semicircular canals, the movement of endolymph in the ampullae causes the hair cells to bend.

6. All of the following statements accurately describe the semicircular canals except
   ✔ a. They are located in front of the vestibule.
   b. Each canal has an expansion at one end, called an ampulla, which contains endolymph.
   c. Each canal has a small elevation, called the crista, which has a cluster of hair cells.
   d. They open into the vestibule in five places.
7. Which of the following statements accurately identifies the structures that contain receptors for equilibrium and hearing?
   a. The semicircular canals and cochlea contain receptors for equilibrium, and the vestibule contains receptors for hearing.
   ✔ c. The semicircular canals and vestibule contain receptors for equilibrium, and the cochlea contains receptors for hearing.
   b. The cochlea contains receptors for equilibrium, and the semicircular canals and vestibule contain receptors for hearing.
   d. The vestibule contains receptors for equilibrium, and the semicircular canals and cochlea contain receptors for hearing.

3. All of the following statements accurately describe the cochlear nerves except
   ✔ a. Their fibers divide into superior, inferior, and posterior branches.
   b. Their fibers emerge from the organ of Corti in the cochlea.
   c. Their sensory bodies are found in the spiral ganglion.
   d. Their fibers synapse with cells in the cochlear nucleus of the medulla oblongata.

4. Signals for hearing pass through the vestibulocochlear nerves to the _____ lobe of the brain, where they are interpreted as sound.
   ✔ d. Temporal

5. Information about equilibrium is sent to the _____ for conscious perception.
   a. Medulla oblongata
   ✔ b. Pons
   c. Cerebral cortex
   d. Midbrain

2. Where are commands to maintain equilibrium sent?
   a. To the cerebral cortex
   b. To the medulla oblongata
   ✔ c. Directly out to the body
   d. To the pons

3. All of the following statements accurately describe the vestibular nerves except
   ✔ a. Their fibers emerge from the organ of Corti in the cochlea.
   b. Their sensory cell bodies are found in the vestibular ganglion.
   c. Their peripheral fibers divide into superior, inferior, and posterior branches.
   d. They transmit signals to the vestibular nuclei in the medulla oblongata and pons.

4. Where do nerve impulses for equilibrium originate?
   a. From the hair cell receptors in the cochlea
   ✔ b. From the hair cell receptors in the semicircular canals
   c. From the epithelial cell receptors in the cochlea
   d. From the epithelial cell receptors in the semicircular canals
5. What initiates the process of equilibrium?
   a. Movements of hair cells in the semicircular canals
   b. Fluid waves in the cochlea
   c. Nerve impulses from the medulla oblongata
   ✔ d. Changes in position

Pre-Lab Multiple Choice Quiz: Hearing and Equilibrium

1. All of the following statements accurately describe the hair cells in the organ of Corti except
   a. They are supported by several types of epithelial cells.
   b. They contain stereocilia that reach into the fluid of the cochlear duct.
   c. They are the receptors for equilibrium.
   ✔ d. They synapse with sensory and motor neurons from the cochlear branches of the vestibulocochlear nerves.

2. If you were explaining the location of the hearing and equilibrium receptors to your lab partner, which of the following would you most likely say?
   a. Hearing receptors are located in the semicircular canals and vestibule, whereas equilibrium receptors are located in the cochlea.
   ✔ b. Hearing receptors are located in the cochlea, whereas equilibrium receptors are located in the semicircular canals and vestibule.
   c. Hearing and equilibrium receptors are located in the cochlea.
   d. Hearing and equilibrium receptors are located in the semicircular canals and vestibule.

3. Impulses for equilibrium pass through which of the following nerves to the medulla oblongata and pons?
   a. Vestibulocochlear nerves
   ✔ b. Vagus nerves
   c. Trigeminal nerves
   d. Hypoglossal nerves

4. Which of the following accurately describes the process of hearing?
   a. When fluid moves out of the ear, it causes the auditory ossicles to stop moving, which triggers nerve impulses that the brain interprets as sound.
   ✔ b. When fluid moves out of the ear, it causes the hairs in the ear to move, which triggers nerve impulses that the brain interprets as sound.
   c. Sound waves create mechanical motions that cause fluid in the ear to move in waves and trigger nerve impulses that the brain interprets as sound.
   d. Sound waves travel through the ear in air, triggering nerve impulses that the brain interprets as sound.

5. All of the following are auditory ossicles except
   a. The malleus.
   ✔ b. The tympanic membrane.
   c. The incus.
   d. The stapes.

6. If you were explaining equilibrium to a classmate, which of the following statements might you make?
   a. Commands to maintain equilibrium are sent to the cerebral cortex, whereas information about equilibrium is sent directly out to the body.
   ✔ b. When there is an equilibrium change, signals to maintain balance are sent to the cerebellum and thalamus.
   c. When there is an equilibrium change, signals to maintain balance are sent from the medulla oblongata to the vestibulocochlear nerves.
   d. Commands to maintain equilibrium are sent directly out to the body, whereas information about equilibrium is sent to the cerebral cortex for conscious perception.

7. Which of the following is a similarity between the sense of hearing and equilibrium?
   ✔ a. They both occur in the inner ear.
   b. They both pass impulses to the midbrain.
   c. They both involve sound waves.
   d. They both pass impulses through the trigeminal nerves.
8. Which of the following explains how the frequency of sound waves determines the movement of the basilar membrane?
   a. Higher-frequency waves move the region of the basilar membrane that is near the tip of the cochlea, whereas lower-frequency waves move the region that is close to the base of the cochlea.
   ✔
   b. Higher-frequency waves move the region of the basilar membrane that is close to the base of the cochlea, whereas lower-frequency waves move the region that is near the tip of the cochlea.
   c. Higher-frequency waves move the region of the basilar membrane that is near the middle of the cochlea, whereas lower-frequency waves move the region near the base of the cochlea.
   d. Higher-frequency waves move the region of the basilar membrane that is closer to the scala tympani, whereas lower-frequency waves move the region that is closer to the scala vestibuli.

9. Which of the following would likely be included in a discussion of the auditory pathway?
   a. Impulses for hearing pass through the trigeminal nerves to the medulla oblongata and then on to the cerebellum.
   ✔
   b. Impulses for hearing pass through the vestibulocochlear nerves to the medulla oblongata and then on to the midbrain, thalamus, and cerebral cortex.
   c. Impulses for hearing pass from the medulla oblongata through the vestibulocochlear nerves to the midbrain, thalamus, and cerebral cortex.
   d. Impulses for hearing pass through the vagus nerves to the pons and then on to the thalamus and cerebellum.

10. If you were explaining the structure of the ear to a friend, all of the following would be part of your explanation except
   a. The outer ear consists of the auricle and the external acoustic meatus.
   b. The middle ear consists of the malleus, incus, and stapes.
   c. The inner ear consists of the auricle and auditory ossicles.
   ✔
   d. The inner ear contains canals filled with fluid.

Pre-Lab Dissection Quiz: Hearing and Equilibrium
   ▶️ Select the scala vestibuli.
   ▶️ Select the vestibule.
   ▶️ Select any part of the malleus.
   ▶️ Select any part of the cochlea.
   ▶️ Select any part of the incus.
   ▶️ Select any part of the auricular cartilage.
   ▶️ Select the tympanic cavity.
   ▶️ Select the cochlear duct.
   ▶️ Select the external acoustic meatus.
   ▶️ Select any inner hair cell.

Hearing and Equilibrium Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Hearing and Equilibrium
1. All of the following are membranes of the cochlea except
   a. The basilar membrane.
   ✔
   b. The tympanic membrane.
   c. The vestibular membrane.
   d. The tectorial membrane.

2. Which two brain structures are involved in the auditory pathway, but not in the equilibrium pathway?
   a. The medulla oblongata and pons
   ✔
   b. The midbrain and thalamus
   c. The midbrain and cerebral cortex
   d. The thalamus and cerebral cortex

3. All of the following statements accurately describe the semicircular canals except
   a. There is one semicircular canal for each plane, frontal, sagittal, and lateral.
   ✔
   b. They provide sensory input for hearing by detecting sound waves.
   c. Each canal has an ampulla with endolymph and a crista with a cluster of hair cells.
   d. They provide sensory input for equilibrium by detecting head rotation and movement.

4. If your lab partner asked you if the sense of equilibrium is conscious, which of the following would you most likely say?
   a. It is not entirely conscious because information about equilibrium is processed by the body, without routing through the cerebral cortex.
   b. It is entirely conscious because both maintenance of equilibrium and information about equilibrium are processed by the cerebral cortex.
   ✔
   c. It is not entirely conscious because maintenance of equilibrium happens directly through the body, without being processed by the cerebral cortex.
   d. It is not conscious at all because neither maintenance of equilibrium nor information about equilibrium is processed by the cerebral cortex.
5. Which of the following is a structure of the outer ear?
   a. The oval window ✔
   b. The auricle
   c. The vestibule
   d. The incus

6. Which of the following statements accurately compares the cochlear and vestibular branches of the vestibulocochlear nerves (VIII)?
   a. Both the cochlear and vestibular nerves divide into superior, inferior, and posterior branches. ✔
   b. Both the cochlear and vestibular nerves pass through the internal auditory meatus in the temporal bone.
   c. The cochlear nerves transmit signals for equilibrium, whereas the vestibular nerves transmit signals for hearing.
   d. The cochlear nerves transmit signals to the pons, whereas the vestibular nerves transmit signals to the medulla oblongata.

7. If you were explaining what occurs in the structures of the cochlea, you would most likely say all of the following except
   a. In the scala tympani, fluid pressure waves move the organ of Corti’s hair cells against the basilar membrane, bending the stereocilia and generating nerve impulses in the cochlear nerves. ✔
   b. Sound vibrations push the oval window against the scala vestibuli, building up fluid pressure waves in its perilymph.
   c. Fluid pressure waves from the scala vestibuli reach the cochlear duct, forming fluid pressure waves in its endolymph.
   d. In the cochlear duct, fluid pressure waves move the organ of Corti’s hair cells against the tectorial membrane, bending the stereocilia and generating nerve impulses in the cochlear nerves.

8. The _____ is a semitransparent membrane that separates the outer ear and middle ear, and the _____ is an opening that leads from the middle ear to the inner ear.
   a. Tympanic membrane, vestibule
   b. Basilar membrane, oval window
   c. Basilar membrane, vestibule
   d. Tympanic membrane, oval window ✔

9. All of the following are similarities between hearing and equilibrium except
   a. They both send information to the cerebral cortex for conscious perception. ✔
   b. They both involve receptors located in the cochlea.
   c. They both involve fluid moving hair cells.
   d. They both pass nerve impulses through the vestibulocochlear nerves.

10. What is the role of the auditory ossicles in the process of hearing?
    a. They work like funnels to move sound waves into the ear.
    b. They detect sound vibrations and generate nerve impulses.
    c. They work like levers to amplify the sound from the tympanic membrane. ✔
    d. They absorb and soften sound waves to prevent injury to the inner ear structures.

Post-Lab Dissection Quiz: Hearing and Equilibrium
   〉 Select the scala vestibuli.
   〉 Select the vestibule.
   〉 Select any part of the malleus.
   〉 Select any part of the cochlea.
   〉 Select any part of the incus.
   〉 Select any part of the auricular cartilage.
   〉 Select the tympanic cavity.

Vision Pre-Lab Quizzes

Pre-Lab Quiz: Eye Anatomy Overview
1. All of the following statements accurately describe the retina except
   a. It is the inner layer of the eye.
   b. It contains photoreceptors that turn light into neural signals.
   c. It is continuous with the optic nerve. ✔
   d. It is the outer layer of the eye.

2. Which of the following statements accurately describes the shape of the cornea and how it changes with age?
   a. The cornea is dome-shaped, and it becomes flatter with age. ✔
   b. The cornea is flat, and it becomes dome-shaped with age.
   c. The cornea is concave, and it becomes convex with age.
   d. The cornea is triangular, and it becomes rounder with age.

3. Which two eye structures refract incoming light?
   a. The cornea and lens
   b. The cornea and retina
   c. The retina and lens
   d. The retina and iris

   Select the cochlear duct.
   Select the external acoustic meatus.
   Select any inner hair cell.

visiblebody.com
4. In the context of the eye, which of the following accurately describes the process of refraction?
   a. The light wavelengths split into many points.
   b. The light wavelengths are deflected away from the eye.
   ✔ c. The light wavelengths come together into a single point.
   d. The light wavelengths are absorbed and softened by the eye.

5. What is the main function of the eye?
   a. To refract light away from the brain
   b. To reduce the intensity of light
   c. To brighten the color of light
   ✔ d. To take light information and transduce it into a neural signal

Pre-Lab Quiz: Layers of the Eye

1. When a person is nearsighted, the light is focused ______ the retina, and when a person is farsighted, the light is focused ______ the retina.
   a. Behind, in front of
   ✔ b. In front of, behind
   c. Onto, behind
   d. In front of, onto

2. All of the following statements accurately describe the vitreous body except
   a. It forms about four-fifths of the bulb of the eye.
   b. It holds the retina against the choroid, giving the retina a flat, even surface for receiving clear images.
   ✔ c. It consists of white fibrous tissue mixed with fine elastic fibers.
   d. It consists of transparent gel enclosed in a delicate membrane.

3. All of the following statements accurately describe the structures and functions of the ciliary body except
   a. Its internal surface contains folds, called ciliary processes, that secrete aqueous humor.
   b. It contains the ciliary muscle, which changes the tensions of the zonular fibers to adapt the shape of the lens for near or far vision.
   c. It contains zonular fibers that extend from the ciliary processes and attach to the lens.
   d. It consists of transparent gel enclosed in a delicate membrane.

4. By adjusting the size of the pupil, the _____ regulates the amount of light that flows through the pupil into the eyeball.
   a. Ciliary body
   b. Sclera
   ✔ c. Iris
   d. Cornea

5. ______ in the _____ absorbs stray light, preventing reflection in the eyeball.
   a. Melanin, choroid
   ✔ b. Melanin, cornea
   c. Aqueous humor, choroid
   d. Aqueous humor, cornea

6. What is the sclera's function?
   a. It provides nutrients to the retina and absorbs excess photons.
   b. It constricts the pupil in bright environments and dilates the pupil in dim environments.
   c. It maintains the shape and rigidity of the eyeball and attaches to the extrinsic eye muscles.
   d. It adapts the lens shape to focus light for objects at different distances.

7. All of the following are layers of the eye except
   a. The ciliary body.
   b. The fibrous tunic.
   c. The vascular tunic.
   d. The retina.

Pre-Lab Quiz: The Lacrimal Apparatus

1. What is the main function of the lacrimal apparatus?
   a. Producing tears and draining them out of the eye
   b. Draining tears, which are produced by the eye, out of the eye
   c. Adding protective enzymes to the tears that are produced by the eye
   ✔ d. Producing tears and draining them into the eye

2. Which of the following statements accurately describes the function of one of the excretory ducts of the lacrimal apparatus?
   a. The lacrimal ducts drain out of the eye.
   ✔ b. The lacrimal ducts drain into the eye.
   c. The nasolacrimal ducts drain from the nasal cavity into the eye.
   d. The lacrimal sac drains into the superior lacrimal canaliculi.

3. To generate tears, the lacrimal glands produce a watery solution that contains all of the following except
   a. Salts.
   b. Mucus.
   ✔ c. Aqueous humor.
   d. A protective enzyme.
Pre-Lab Quiz: The Retina and Photoreceptors

1. Approximately how many rods and cones does the retina contain?
   a. 6 million rods and 120 million cones
   b. 6 million rods and cones
   c. 120 million rods and cones
   ✔ d. 120 million rods and 6 million cones

2. All of the following statements accurately describe how the retina connects to other eye structures except
   a. Its outer surface is in contact with the choroid.
   b. Its inner surface connects with the hyaloid membrane of the vitreous body.
   ✔ c. It lines most of the sclera's internal surface.
   d. It is continuous with the optic nerve.

3. How does the presence of rods and cones affect the retina's appearance?
   a. Areas that contain a lot of rods and cones appear lighter in color and those with less rods and cones appear darker.
   ✔ b. Areas that contain a lot of rods and cones appear darker in color and those with less rods and cones appear lighter.
   c. Areas that contain a lot of rods and cones don't have any color.
   d. Areas that contain a lot of rods appear darker in color and those with a lot of cones appear lighter.

4. All of the following statements accurately describe the fovea centralis of the retina except
   ✔ a. It doesn't contain any photoreceptors.
   b. It is the darkest area of the retina.
   c. It is located within the macula lutea.
   d. It has the highest visual acuity.

5. Which of the following statements accurately describes the functions of the retina's rods and cones?
   a. Rods detect bright light and allow for color vision, and cones detect dim light.
   b. Rods detect dim and bright light, and cones allow for color vision.
   ✔ c. Rods detect dim light, and cones detect bright light and allow for color vision.
   d. Rods allow for color vision, and cones detect dim and bright light.

6. All of the following statements accurately describe the optic disc except
   a. It's called the blind spot because it's the only part of the retina's surface that is insensitive to light.
   ✔ b. It contains many rods and cones.
   c. It's the site where the optic nerve exits the eye.
   d. It's the site where the central retinal artery and vein exit the eye.

7. What is the function of the photoreceptors in the retina?
   ✔ a. They take light information and change it into a neural signal.
   b. They change the shape of the retina to maximize light absorption.
   c. They attract light to the appropriate parts of the retina.
   d. They alter the intensity and color of light.

Pre-Lab Quiz: Vision and the Vision Pathway

1. Which of the following statements explains why humans have binocular vision?
   ✔ a. The left and right visual fields don't overlap because each only communicates with the opposite side of the brain.
   b. The left and right visual fields have an area where they overlap.
   c. The left and right visual fields overlap completely.
   d. The left and right visual fields don't overlap because each only communicates with the same side of the brain.

2. What occurs when the optic nerves reach the optic chiasm?
   ✔ a. The lateral fibers cross over to the opposite side of the brain, and the medial fibers continue on the same side of the brain.
   b. The medial and lateral fibers cross over to the opposite side of the brain.
   c. The medial fibers cross over to the opposite side of the brain, and the lateral fibers continue on the same side of the brain.
   d. The medial and lateral fibers continue on the same side of the brain.

3. All of the following statements accurately describe the vision pathway except
   a. Impulses for vision pass from the retinas into the optic nerves.
   b. The optic nerves pass through the optic foramina of the sphenoid bone, converging at the optic chiasm.
   ✔ c. The optic fibers terminate in the medulla oblongata.
   d. Impulses for vision pass from the optic chiasm through the optic tracts to the cerebral cortex.
4. Visual information travels to the _____ lobe of the brain.
   a. Temporal ✓
   b. Occipital
c. Frontal
d. Parietal

5. Which of the following lists the correct order of the structures light passes through on its way to retina?
   a. Pupil, lens, cornea, aqueous humor, vitreous humor
   b. Lens, pupil, vitreous humor, cornea, aqueous humor
   c. Cornea, vitreous humor, lens, pupil, aqueous humor
   ✓ d. Cornea, aqueous humor, pupil, lens, vitreous humor

6. When photons of light enter the eye and contact receptors on the _____, it changes the electrical potential of the receptors, creating a neural signal.
   ✓ a. Retina
   b. Cornea
c. Iris
d. Vitreous humor

Pre-Lab Multiple Choice Quiz: Vision

1. Which of the following accurately compares nearsightedness and farsightedness?
   a. Nearsightedness results when the image is focused on an area beyond the retina, whereas farsightedness occurs when the point of focus does not reach the retina.
   ✓ b. Nearsightedness results when the eye is too shallow, whereas farsightedness results in a blurry image.
   c. Nearsightedness occurs when the lens focuses light onto the retina, whereas farsightedness results when the image is focused beyond the retina.
   d. Nearsightedness occurs when the point of focus does not reach the retina, whereas farsightedness results when the image is focused on an area beyond the retina.

2. If your friend asked you how the process of vision works, which of the following statements might you use to explain it to him or her?
   ✓ a. The process of seeing begins when the cones interpret the intensity of light and the rods interpret the color of light.
   b. The process of seeing begins when light enters the front of the eye through the pupil.
   c. Inside the eye, light is refracted by the retina and focused onto the lens.
   d. The optic nerve carries nerve signals from the occipital lobe of the brain to the retina, where signals are interpreted to represent an image.

3. Humans have _____ vision because of the overlap between the two visual fields.
   ✓ a. Monocular
   b. Lateral
   ✓ c. Binocular
d. Two-dimensional

4. Which of the following statements accurately compares the fovea centralis and optic disc of the retina?
   a. The fovea centralis is the lightest part of the retina, whereas the optic disc is the darkest part.
   ✓ b. The fovea centralis is the part of the retina with the most photoreceptors, whereas the optic disc doesn’t have any photoreceptors.
   c. The fovea centralis and optic disc both have many photoreceptors.
   d. The fovea centralis and optic disc both have high visual acuity.

5. All of the following statements accurately describe the functions of the iris except
   ✓ a. It constricts the pupil to allow in more light in bright environments.
   b. It constricts the pupil to allow in less light in bright environments.
   c. It dilates the pupil to allow in more light when light is scarce.
   d. It adjusts the size of the pupil to regulate the amount of light that flows into the eyeball.

6. All of the following structures make up the vascular tunic of the eye except
   a. The choroid.
   ✓ b. The iris.
   c. The sclera.
d. The ciliary body.

7. Which of the following statements accurately compares the shape of the lens and the cornea?
   ✓ a. They are both dome-shaped.
   b. They are both flat.
c. The lens is dome-shaped, whereas the cornea is flat.
   d. The lens is flat, whereas the cornea is dome-shaped.
8. The optic nerves cross at a region in the brain called the
   a. Optic tracts.
   b. Lateral geniculate nucleus.
   c. Visual cortex.
   ✔ d. Optic chiasm.

9. Which of the following statements accurately describes how depth perception is created?
   a. The brain independently interprets information from the left and right eyes to deduce the three-dimensional positioning of objects.
   b. The left and right eyes receive information from the brain that allows them to interpret the three-dimensional positioning of objects.
   c. The brain uses combined information from the left and right eyes to deduce the three-dimensional positioning of objects.
   ✔ d. The left and right eyes receive signals from the optic nerves that allow them to interpret the three-dimensional positioning of objects.

10. If you were explaining rods and cones to your lab partner, which of the following points would you want to make?
   ✔ a. Rods and cones contain pigment, so areas that have a lot of them appear darker in color.
   b. Rods and cones allow for color vision.
   c. Rods and cones detect light, but not color.
   d. Rods and cones are most numerous in areas where the axons of sensory receptors send their projections.

Pre-Lab Dissection Quiz: Vision
   ✔ » Select the cornea.
   » Select any part of the retina.

    ✔ Select the lens.
   » Select the nasolacrimal duct.
   » Select the iris.
   » Select the vitreous body.

3. All of the following statements accurately compare the rods and cones of the retina except
   a. Each retina has about 120 million rods and 6 million cones.
   b. Rods detect dim light, whereas cones detect bright light and color.
   ✔ c. Rods detect bright light and color, whereas cones detect dim light.
   d. Both rods and cones initiate the process of converting light rays into nerve impulses that can be translated by the brain.

4. If you were explaining the optic disc to your lab partner, you would likely make all of the following points except
   a. It is the lightest part of the retina.
   b. It doesn't include any photoreceptors.
   ✔ c. It is the site where axons of all the sensory receptors send their projections.
   d. It is the part of the retina with the highest visual acuity.

5. What is a shared characteristic of the choroid and ciliary body?
   a. They are both part of the fibrous tunic of the eye.
   ✔ b. They are both part of the vascular tunic of the eye.
   c. They both provide nutrients to the retina.
   d. They both adapt the lens shape for near or far vision.

6. The cornea becomes _____ with age, which causes _____.
   a. Flatter, nearsightedness
   b. Rounder, farsightedness
   ✔ c. Flatter, farsightedness
   d. Rounder, nearsightedness
7. The _____ changes shape to focus light on the retina.
   a. Iris
   ✔ b. Lens
   c. Pupil
   d. Cornea

8. If your lab partner asked you to explain how light that enters the eye is transduced into a neural signal, which of the following would you most likely say?
   ✔ a. Photons of light contact the retina’s receptors, changing their electrical potential and creating a neural signal.
   b. Photons of light travel through the eye and optic nerve into the optic chiasm, where they activate their receptors and create a neural signal.
   c. Photons of light travel through the eye and optic nerve into the cerebral cortex, where they activate their receptors and create a neural signal.
   d. Photons of light contact receptors on the lens, changing their electrical potential and creating a neural signal that goes through the retina into the optic nerve.

9. If your lab partner asked you to explain the impacts of the cornea having few blood vessels, you would likely make all of the following points except:
   a. It allows light to pass through the cornea.
   b. It makes it more difficult for the cornea to obtain nutrients.
   c. It makes it more difficult for the cornea to heal following injury.
   ✔ d. It makes it easier for the cornea to heal following injury.

10. Why does the pupil constrict in bright light conditions?
    a. To make the image clearer by allowing in more stray light rays
    ✔ b. To make the image brighter by allowing in more stray light rays
    ✔ c. To make the image clearer by allowing in few stray light rays
    d. To make the image brighter by allowing in few stray light rays

Post-Lab Dissection Quiz: Vision
★ Select the lens.
★ Select the nasolacrimal duct.
★ Select the iris.
★ Select the vitreous body.
★ Select the cornea.
★ Select any part of the retina.

Olfaction and Taste Pre-Lab Quizzes

Pre-Lab Quiz: Olfactory Anatomy
1. All of the following statements accurately describe the septum of the nose except:
   a. It separates the nostrils.
   ✔ b. It allows for triangulation of sources of smell.
   c. It warms and mixes air as it enters the nose.
   d. It allows for continued breathing if one nostril gets blocked.

2. How does the physical connection of the nasopharynx and oropharynx impact olfaction?
   ✔ a. Odorants can flow from the oropharynx through the nasopharynx to the olfactory receptors.
   b. Odorants can go into the oropharynx instead of the nasopharynx and activate the taste buds.
   c. Tastants can flow from the oropharynx through the nasopharynx and activate the olfactory receptors.
   d. Tastants can go into the nasopharynx instead of the oropharynx and activate the olfactory receptors.

3. Which lobe of the cerebral cortex processes olfactory signals?
   ✔ a. The temporal lobe
   b. The frontal lobe
   c. The parietal lobe
   d. The occipital lobe

4. The turbulence created by the movement of air as it flows past the _____ of the nasal cavity makes it more likely that an odorant will reach the receptors on the olfactory _____.
   ✔ a. Nasal conchae, bulbs
   b. Nasal conchae, epithelium
   c. Septum, epithelium
   d. Septum, bulbs

5. The olfactory bulbs are comprised of _____ tissue.
   ✔ a. Muscular
   b. Lymphatic
   c. Neural
   d. Epithelial
6. Olfactory signals pass through the _____ plate of the _____ bone on their way to the cerebral cortex.
   ✔ a. Cribriform, ethmoid
   b. Cribriform, sphenoid
   c. Perpendicular, ethmoid
   d. Perpendicular, sphenoid

Pre-Lab Quiz: Olfaction and the Olfactory Pathway

1. Axons of olfactory receptors form synapses with dendrites and cell bodies of other olfactory pathway neurons, forming olfactory
   a. Bulbs.
   b. Epithelium.
   c. Nerves.
   ✔ d. Tracts.

2. All of the following statements accurately describe the olfactory nerves (I) except
   a. They originate in the superior part of the nasal cavity in the olfactory epithelium.
   b. They terminate in the primary olfactory area of the cerebral cortex.
   c. They pass through the cribriform plate of the ethmoid bone on each side of the nose.
   d. They terminate in paired masses of gray matter called olfactory bulbs.
   ✔

5. Which structure contains the nervous system receptors for olfaction?
   ✔ a. The olfactory epithelium
   b. The olfactory tracts
   c. The olfactory bulbs
   d. The olfactory nerves

Pre-Lab Quiz: Tongue Anatomy

1. The sensory receptors for taste, called _____, cover the _____ surfaces of the tongue.
   a. Taste buds, ventral and medial
   ✔ b. Papillae, ventral and lateral
   c. Taste buds, dorsal and lateral
   d. Papillae, dorsal and medial

2. All of the following statements accurately describe fungiform papillae except
   a. They contain approximately five taste buds.
   ✔ b. They contain 100–300 taste buds.
   c. They are large, round, and red.
   d. They are located mainly on the sides and apex of the tongue.

3. Which of the following statements accurately describes the apex of the tongue?
   a. It is directed backward and connected with the hyoid bone.
   ✔ b. It is directed forward against the lingual surfaces of the lower incisor teeth.
   c. It contains extrinsic and intrinsic muscles.
   d. It divides the tongue into symmetrical, lateral halves.

4. What is the function of the frenulum?
   a. It divides the tongue into lateral halves.
   ✔ b. It restricts the movement of the tongue.
   c. It anchors the tongue in the mouth.
   d. It is the primary site of taste receptors.

5. The root of the tongue is connected to the
   a. Mandible.
   b. Ethmoid bone.
   c. Pharynx.
   ✔ d. Hyoid bone.

Pre-Lab Quiz: Papillae and Taste Buds

1. All of the following statements accurately describe fungiform papillae except
   a. They contain approximately five taste buds.
   ✔ b. They contain 100–300 taste buds.
   c. They are large, round, and red.
   d. They are located mainly on the sides and apex of the tongue.

2. Circumvallate papillae have approximately how many taste buds?
   a. 5–10
   b. 500–1000
   ✔ c. 100–300
d. 0
3. Which of the following statements accurately describes the filiform papillae?
   a. They are easily recognized by their large size, round shape, and deep red color.
   b. They form a V-shaped row on the dorsum of the tongue.
   c. They contain taste buds and tactile receptors.
   ✔ d. They create friction that helps the tongue move food.

4. All of the following statements accurately describe taste buds except:
   a. They are located on the tongue, the undersurface of the soft palate, and the posterior surface of the epiglottis.
   ✔ b. They consist of supporting cells and gustatory cells.
   c. They are found in circumvallate, fungiform, and filiform papillae.
   d. They contain the sensory receptors for taste.

5. All of the following are classified as major tastes except:
   a. Bitter.
   ✔ b. Spicy.
   c. Unami.
   d. Salty.

6. Chemicals that stimulate receptors in the oral cavity are known as:
   a. Odorants.
   b. Taste buds.
   c. Taste pores.
   ✔ d. Tastants.

7. The sense of taste is also known as:
   a. Olfaction.
   ✔ b. Gustation.
   c. Mastication.
   d. Equilibrium.

Pre-Lab Quiz: The Taste Pathway

1. Impulses for taste pass through all of the following cranial nerves except:
   a. The facial nerves (VII).
   ✔ b. The olfactory nerves (I).
   c. The glossopharyngeal nerves (IX).
   d. The vagus nerves (X).

2. The facial nerves (VII) carry sensory signals from the taste buds in the ______ through the ______ on their way to the gustatory cortex.
   a. Posterior part of the tongue, medulla oblongata
   b. Epiglottis and pharynx, medulla oblongata
   ✔ c. Anterior part of the tongue, pons
   d. Posterior part of the tongue, pons

3. Taste buds located on the middle and back of the tongue send nerve signals through the ______ nerves.
   a. Glossopharyngeal
   b. Vagus
   c. Facial
   ✔ d. Olfactory

4. Taste buds located in the epiglottis and pharynx send nerve signals through the ______ nerves.
   a. Vagus
   b. Glossopharyngeal
   ✔ c. Facial
   d. Olfactory

5. All of the following brain structures are part of the taste pathway except:
   a. The thalamus.
   b. The medulla oblongata.
   c. The cerebral cortex.
   ✔ d. The hypothalamus.

Pre-Lab Multiple Choice Quiz: Olfaction and Taste

1. If you were giving an oral presentation on the types of papillae, which of the following would you likely include in your presentation?
   a. Circumvallate papillae are found over the entire surface of the tongue.
   ✔ b. Circumvallate papillae are found on the dorsum of the tongue in an inverted V-shaped row, and each contains 100-300 taste buds.
   c. Fungiform papillae contain tactile receptors, but no taste buds, and are found all over the tongue.
   d. Filiform papillae are mushroom-shaped and found mainly on the sides and apex of the tongue.

2. Which of the following describes how the sense of smell differs from the other special senses?
   a. Smell is the only sensory modality that is processed in the cerebral cortex.
   ✔ b. Smell is the only chemical sense.
   c. Smell is the only sensory modality that does not synapse in the thalamus before connecting to the cerebral cortex.
   d. Smell is always processed in the hypothalamus, whereas the other senses are processed in the cerebral cortex.
3. If you were explaining olfaction to a friend, which of the following details would you not include?
   a. As air enters the nasal cavity, chemicals in the air bind to and activate nervous system receptors on the nasal cilia.
   ✔ b. First-order neurons connected to the epithelial cells carry olfactory signals from the nasal cavity through openings in the ethmoid bone, and then to the olfactory bulbs of the brain.
   c. Signals move from the olfactory area of the cerebral cortex into the olfactory bulbs of the nasal passage.
   d. Olfactory signals move from olfactory bulbs along the olfactory nerves to the olfactory area of the cerebral cortex.

4. Impulses for taste pass from receptors in taste buds through all of the following nerves except
   a. The facial nerve.
   b. The vagus nerve.
   ✔ c. The glossopharyngeal nerve.
   d. The hypoglossal nerve.

5. All of the following are included in the five major tastes except
   a. Umami.
   ✔ b. Spicy.
   c. Sweet.
   d. Salty.

6. Small projections, called _____, many of which contain taste buds, cover the dorsal and lateral surfaces of the tongue.
   a. Sulci
   ✔ b. Papillae
   c. Gyri
   d. Tonsils

7. The process of smelling begins with hairlike cilia that line the nasal cavity. This lining is called the
   a. Gustatory epithelium.
   ✔ b. Olfactory epithelium.
   c. Olfactory bulbs.
   d. Olfactory nerves.

8. All of the following statements accurately describe structures of the tongue except
   a. The frenulum restricts the movement of the tongue.
   b. The median sulcus divides the tongue into two lateral halves.
   c. The apex of the tongue is directed forward against the lingual surfaces of the lower incisor teeth.
   ✔ d. The root of the tongue contains extrinsic and intrinsic muscles.

9. If your lab partner asked you about how the physical connection of the oropharynx and nasopharynx impacts olfaction and taste, which of the following would you most likely say?
   a. Some taste signals get sent to the olfactory cortex of the brain.
   ✔ b. The senses of olfaction and taste are linked.
   c. Some olfactory signals get sent to the gustatory cortex of the brain.
   d. It has no impact; the senses of olfaction and taste remain completely separate.

10. All of the following are functions of the septum except
    a. It mixes, moistens, and warms air as it moves through the nose.
    ✔ b. It separates the nostrils.
    c. It allows for continued breathing when one nostril gets blocked.
    d. It allows for triangulation of sources of smell.
Olfaction and Taste Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Olfaction and Taste

1. Which of the following is a similarity between olfaction and taste?
   a. They send neural signals to the thalamus for processing. ✔
   b. Their receptors convert chemicals into neural signals.
   c. Their receptors are located on the oropharynx.
   d. They send neural signals through the facial nerves (VII).

2. Which of the following statements accurately compares the location of the taste buds that send gustatory signals to the facial (VII) and glossopharyngeal (IX) nerves?
   a. Taste buds on the anterior tongue send signals to the glossopharyngeal nerves, whereas taste buds on the posterior tongue send signals to the facial nerves.
   ✔ b. Taste buds on the anterior tongue send signals to the glossopharyngeal nerves, whereas taste buds on the posterior tongue send signals to the facial nerves.
   c. Taste buds on the anterior tongue send signals to both the facial and glossopharyngeal nerves.
   d. Taste buds on the posterior tongue send signals to both the facial and glossopharyngeal nerves.

3. Which of the following statements accurately compares the types of papillae, in regards to the presence of taste buds?
   a. Fungiform and filiform papillae contain taste buds, whereas circumvallate papillae don't contain any taste buds.
   ✔ b. Circumvallate and filiform papillae contain taste buds, whereas fungiform papillae don't contain any taste buds.
   c. Circumvallate, fungiform, and filiform papillae all contain taste buds.
   d. Circumvallate and fungiform papillae contain taste buds, whereas filiform papillae don't contain any taste buds.

4. Which of the following accurately lists the five major tastes?
   a. Spicy, sweet, sour, salty, and hearty
   b. Salty, sweet, spicy, umami, and sour
   ✔ c. Bitter, salty, sour, sweet, and umami
   d. Bitter, sweet, sour, umami, and hearty

5. Which of the following statements accurately compares the apex and root of the tongue?
   a. The apex of the tongue is directed backward and connects with the hyoid bone, whereas the root of the tongue is directed forward against the lingual surfaces of the lower incisor teeth.
   ✔ b. Both the apex and root of the tongue contain extrinsic and intrinsic muscles.
   c. The apex of the tongue is directed forward against the lingual surfaces of the lower incisor teeth, whereas the root of the tongue is directed backward and connects with the hyoid bone.
   d. Both the apex and the root of the tongue are divided into symmetrical halves by the median sulcus.

6. If your lab partner asked you to explain the palatine tonsils, you would likely say all of the following except
   a. They are larger in children than in adults.
   b. They protect the alimentary canal from pathogens.
   c. They are mucosa-associated lymphoid tissues (MALT).
   ✔ d. They contain taste buds and tactile receptors.

7. All of the following statements accurately explain how nasal cavity structures contribute to olfaction except
   a. The nasal conchae allow for the movement of odorants, making them more likely to contact a receptor.
   ✔ b. The olfactory tracts allow each nostril to process its own information.
   c. The septum allows for triangulation of sources of smell.
   d. The olfactory epithelium contains nervous system receptors that are activated by chemicals in the air.

8. Olfactory impulses pass from receptors in the _____ through the olfactory nerves (I) to the _____ and then through the _____ to the _____ of the cerebral cortex.
   a. Olfactory epithelium, olfactory bulbs, olfactory tracts, temporal lobe
   b. Olfactory bulbs, olfactory epithelium, olfactory tracts, occipital lobe
   ✔ c. Olfactory epithelium, olfactory tracts, olfactory bulbs, temporal lobe
   d. Olfactory tracts, olfactory epithelium, olfactory bulbs, occipital lobe
9. If your lab partner asked you why people have two olfactory bulbs, which of the following would you most likely say?
   a. It allows for the movement of odorants, making them more likely to contact a receptor.
   b. It allows for the processing of odorants from the nasal and oral cavities.
   ✔ c. It allows each olfactory bulb to receive and process its own information.
   d. It allows olfactory nerve signals to be processed by two separate areas of the cerebral cortex.

10. How would you explain the relationship between the senses of taste and olfaction?
   a. They are partially linked, and much of what is perceived as smelling is actually tasting.
   ✔ b. They are completely independent of each other.
   c. They are intimately linked, and odorants and tastants can stimulate either type of receptor.
   d. They are intimately linked, and much of what is perceived as tasting is actually smelling.

Post-Lab Dissection Quiz: Olfaction
   ✔ Select any of the nasal conchae.
   Select any part of the septum.
   ✔ Select the right or left olfactory bulb.
   Select the oropharynx.
   Select the nasal cavity.
   ✔ Select the right or left olfactory tract.
   Select any part of the right or left olfactory nerve (cranial nerve I).
   Select the right or left lobe of the brain that processes olfactory signals.
   ✔ Select the right or left cribiform plate of the ethmoid bone.
   Select the nasopharynx.

Post-Lab Dissection Quiz: Taste
   ✔ Select the fungiform papillae.
   ✔ Select the root of the tongue.
   Select the frenulum.
   Select a taste bud.
   ✔ Select the apex of the tongue.
   Select the palatine tonsils.
   ✔ Select the circumvallate (vallate) papillae.
   Select the body of the tongue.
   Select the filiform papillae.
   ✔ Select the median sulcus.

Heart Pre-Lab Quizzes

Pre-Lab Quiz: Heart Overview
1. What is the function of the heart in relationship to the circulatory system?
   a. It controls the circulation of electrical impulses throughout the body.
   ✔ b. It controls the circulation of lymph throughout the body.
   ✔ c. It controls the circulation of blood throughout the body.
   d. It controls the circulation of hormones throughout the body.

2. An adult heart is approximately the size of a
   a. Foot.
   ✔ b. Skull.
   c. Lung.
   ✔ d. Fist.

3. What are the names of the two chambers found on each side of the heart?
   a. Atrium and ventricle
   ✔ b. Atrium and septum
   c. Apex and ventricle
   d. Sinus and auricula

4. Why do you think the heart is called a “double-pump”?
   a. The right and left sides of the heart work in coordination to pump oxygenated blood to the body and deoxygenated blood to the lungs.
   ✔ b. The right and left sides of the heart work independently of each other to pump oxygenated blood to the body and deoxygenated blood to the lungs.
   c. The right and left sides of the heart work independently of each other to pump blood and electrical impulses to the body.
   d. The right and left sides of the heart work in coordination to pump blood and electrical impulses to the body.

5. “Blue blood” designates _____ blood, which is only seen in the chambers of the _____ side of the heart.
   a. Deoxygenated, left
   ✔ b. Oxygenated, right
   c. Deoxygenated, right
   d. Oxygenated, left

6. “Red blood” designates _____ blood, which is only seen in the chambers on the _____ side of the heart.
   a. Oxygenated, right
   ✔ b. Oxygenated, left
   c. Deoxygenated, left
   d. Deoxygenated, right
7. The thin sac that surrounds the heart is called the _____, and its function is _____.
   a. Endocardium, supporting and protecting the interior structures of the heart
   ✔ b. Myocardium, producing contractions of the heart
   c. Epicardium, attaching the heart to the thoracic cage
   ✔ d. Pericardium, enclosing and protecting the heart

Pre-Lab Quiz: Location of the Heart

1. What is the location of the heart in reference to the diaphragm?
   a. It is inferior to the diaphragm.
   ✔ b. It is superior to the diaphragm.
   c. It is medial to the diaphragm.
   d. It is posterior to the diaphragm.

2. The heart is located _____ to the two lungs, and the _____ lung experiences the greatest displacement due to the heart’s location.
   a. Superior, right
   ✔ b. Inferior, left
   ✔ c. Medial, left
   d. Anterior, right

3. What is the placement of the heart in regard to the trachea?
   ✔ a. It is anterior to the trachea.
   b. It is posterior to the trachea.
   c. It is superior to the trachea.
   d. It is inferior to the trachea.

4. The heart is located _____ to the esophagus, and the_____ separates it from the esophagus.
   ✔ a. Anterior, trachea
   b. Posterior, trachea
   c. Anterior, pharynx
   d. Posterior, pharynx

5. What is the function of the thoracic cage in regard to the heart?
   a. It forms the structural framework inside the heart.
   ✔ b. It supplies blood to the heart.
   c. It surrounds and protects the heart.
   d. It attaches to the heart, holding it in a fixed position.

Pre-Lab Quiz: Heart Anatomy

1. What is the function of the myocardium?
   a. It adheres the heart wall to its protective sac.
   ✔ b. It produces the heart’s strong and continuous pumping action.
   c. It lines and protects the interior heart structures.
   d. It connects the heart to the blood vessels that supply it.

2. The endocardium lines the interior walls of all of the following except
   a. The heart chambers.
   b. The valves.
   c. The papillary muscles.
   ✔ d. The visceral pericardium.

3. The right and left ventricles contain _____ muscles, which contract to pull on the chordae tendineae. The purpose of the chordae tendineae is to _____.
   a. Papillary, invert the heart valves
   ✔ b. Papillary, prevent inversion of the heart valves
   c. Myocardium, prevent inversion of the heart valves
   d. Myocardium, invert the heart valves

4. Which of the following structures separates the right and left ventricles?
   a. The moderator band
   ✔ b. The interventricular septum
   c. The papillary muscles
   d. The interventricular sulcus

5. What is the purpose of the heart valves?
   a. To pump oxygen into the blood
   b. To remove oxygen from the blood
   c. To prevent blood backflow from the atria into the ventricles
   ✔ d. To control the flow of blood through the heart and prevent blood backflow

6. Which of the following statements accurately compares the right and left atrioventricular valves?
   a. The right atrioventricular valve has two cusps, whereas the left atrioventricular valve has three cusps.
   ✔ b. The right and left atrioventricular valves both have three cusps.
   c. The right atrioventricular valve has three cusps, whereas the left atrioventricular valve has two cusps.
   d. The right and left atrioventricular valves both have two cusps.
7. Which of the following statements accurately compares the functions of the right and left ventricles?
   a. The right ventricle pumps oxygenated blood into the pulmonary trunk, whereas the left ventricle pumps deoxygenated blood into the ascending aorta.
   b. The right ventricle pumps deoxygenated blood into the ascending aorta, whereas the left ventricle pumps oxygenated blood into the pulmonary trunk.
   ✔ c. The right ventricle pumps deoxygenated blood into the pulmonary trunk, whereas the left ventricle pumps oxygenated blood into the ascending aorta.
   d. The right ventricle pumps oxygenated blood into the ascending aorta, whereas the left ventricle pumps deoxygenated blood into the pulmonary trunk.

8. The right atrium receives _____ blood from the vena cava and the coronary sinus, and the left atrium receives _____ blood from the pulmonary veins.
   a. Oxygenated, deoxygenated
   b. Deoxygenated, deoxygenated
   ✔ c. Oxygenated, oxygenated
   d. Deoxygenated, oxygenated

9. Which of the following statements accurately compares the right and left atria?
   a. The right atrium is smaller than the left atrium.
   ✔ b. The right atrium is larger than the left atrium.
   c. The right atrium has thinner walls than the left atrium.
   d. The right and left atria are the same size.

10. Which of the following accurately lists the layers of the heart wall, from interior to exterior?
   ✔ a. Endocardium, myocardium, epicardium
   b. Epicardium, myocardium, endocardium
   c. Myocardium, endocardium, epicardium
   d. Endocardium, epicardium, myocardium

Pre-Lab Quiz: The Cardiac Cycle

1. Which of the following statements accurately describes pulmonary circulation?
   ✔ a. Pulmonary circulation delivers oxygenated blood from the heart to the lungs and deoxygenated blood from the lungs to the heart.
   b. Pulmonary circulation delivers oxygenated blood from the left ventricle to the body and deoxygenated blood from the body to the right atrium.
   c. Pulmonary circulation delivers deoxygenated blood from the heart to the lungs and oxygenated blood from the lungs to the heart.
   d. Pulmonary circulation delivers deoxygenated blood from the left ventricle to the body and oxygenated blood from the body to the right atrium.

2. Which of the following occurs during systemic circulation?
   a. Oxygenated blood is delivered from the body tissues to the right atrium.
   b. Deoxygenated blood is delivered from the left ventricle to the body tissues.
   ✔ c. Oxygenated blood is delivered from the left ventricle to the body tissues.
   d. Deoxygenated blood is delivered from the right atrium to the body tissues.

3. All of the following structures deliver deoxygenated blood to the right atrium except
   a. The superior vena cava.
   ✔ b. The pulmonary veins.
   c. The inferior vena cava.
   d. The coronary sinus.

4. _____ branch from the ascending aorta to supply the ventricles and atria, and _____ drain blood into the right atrium.
   a. Coronary arteries, coronary veins
   b. Coronary veins, coronary arteries
   ✔ c. Pulmonary arteries, pulmonary veins
   d. Pulmonary veins, pulmonary arteries

5. Which of the following statements accurately describes how oxygenated blood leaves the heart?
   ✔ a. It flows from the left atrium into the left ventricle, which pumps it through the aortic valve into the ascending aorta.
   b. It flows from the left atrium into the left ventricle, which pumps it through the pulmonary valve into the pulmonary trunk.
   c. It flows from the right atrium into the right ventricle, which pumps it through the pulmonary valve into the pulmonary trunk.
   d. It flows from the right atrium into the right ventricle, which pumps it through the aortic valve into the ascending aorta.
6. Which of the following statements accurately explains how deoxygenated blood leaves the heart?

✔ a. It flows from the right atrium into the right ventricle, which pumps it through the pulmonary valve into the pulmonary trunk.

b. It flows from the left atrium into the left ventricle, which pumps it through the pulmonary valve into the pulmonary trunk.

c. It flows from the right atrium into the right ventricle, which pumps it through the aortic valve into the ascending aorta.

d. It flows from the left atrium into the left ventricle, which pumps it through the aortic valve into the ascending aorta.

**Pre-Lab Quiz: Conduction System**

1. Which of the following accurately lists the structures through which electrical impulses pass, from initiation to culmination?

✔ a. Atrioventricular node, sinoatrial node, bundle branches, bundle of His, Purkinje fibers

b. Sinoatrial node, atrioventricular node, bundle of His, bundle branches, Purkinje fibers

c. Purkinje fibers, bundle branches, bundle of His, atrioventricular node, sinoatrial node

d. Bundle of His, bundle branches, sinoatrial node, Purkinje fibers, atrioventricular node

2. What is the function of the Purkinje fibers?

✔ a. To induce an atrial contraction that moves blood into the ventricles

b. To initiate the electrical impulses that make the heart beat

c. To pause the electrical impulses so the heart can rest

d. To induce a ventricular contraction that ejects blood from the heart

3. Each electrical impulse causes the atria to _____, moving blood _____.

✔ a. Contract, into the atria

b. Relax, into the ventricles

c. Contract, into the ventricles

d. Relax, into the atria

4. Which of the following accurately describes one of the steps of each electrical impulse?

✔ a. During step 4, the signal branches into the bundle branches of each ventricle.

b. During step 1, the electrical impulse initiates in the bundle of His.

c. During step 5, the signal culminates at the atrioventricular node.

d. During step 2, the impulse pauses at the Purkinje fibers.

5. All of the following are structures of the conduction system except

✔ a. The sinoatrial node.

b. The atrioventricular valves.

c. The bundle of His.

d. The Purkinje fibers.

6. The conduction system of the heart is controlled by the _____ nervous system.

✔ a. Central

b. Autonomic

c. Peripheral

d. Sympathetic

**Heart Multiple Choice Quiz 3**

1. The _____ receives oxygen-depleted blood and empties it into the _____, whereas oxygenated blood from the lungs enters the _____ and empties into the _____.

✔ a. Left atrium, left ventricle, right atrium, right ventricle

b. Right atrium, right ventricle, left atrium, left ventricle

c. Right ventricle, right atrium, left ventricle, left atrium

d. Left ventricle, left atrium, right ventricle, right atrium

2. Which of the following statements accurately compares two of the types of chordae tendineae?

✔ a. Primary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas secondary chordae tendineae anchor the leaflets' ventricular surface to the papillary muscle and relieve tension.

b. Secondary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas primary chordae tendineae anchor the leaflets' ventricular surface to the papillary muscle and relieve tension.

c. Tertiary chordae tendineae anchor the leaflets' ventricular surface to the papillary muscle and relieve tension, whereas secondary chordae tendineae attach the annulus and base of the posterior leaflet to the papillary muscle.

d. Tertiary chordae tendineae attach to the leaflet margins and prevent marginal prolapse of the leaflet, whereas primary chordae tendineae attach the annulus and base of the posterior leaflet to the papillary muscle.
3. The heart is located within the thoracic cage, between the _____ and _____ rib.
   ✔ a. Second, fifth  
   b. First, second  
   c. First, sixth  
   d. Second, third  

4. If your instructor asked you to explain why the myocardium is thicker in the left ventricle than it is in the right ventricle, which of the following would you most likely say?
   a. The left ventricle has to pump harder to overcome the high resistance required to pump blood into the long pulmonary circuit, whereas the right ventricle does not need to generate as much pressure since the systemic circuit is shorter and provides less resistance.  
   b. The right ventricle has to pump harder to overcome the high resistance required to pump blood into the long systemic circuit, whereas the left ventricle does not need to generate as much pressure since the pulmonary circuit is shorter and provides less resistance.  
   c. The left ventricle has to pump harder to overcome the high resistance required to pump blood into the long systemic circuit, whereas the right ventricle does not need to generate as much pressure since the pulmonary circuit is shorter and provides less resistance.  
   ✔ d. The right ventricle has to pump harder to overcome the high resistance required to pump blood into the long pulmonary circuit, whereas the left ventricle does not need to generate as much pressure since the systemic circuit is shorter and provides less resistance.  

5. Which of the following explains how you can find the cardiac output volume?
   a. Add the number of heart beats in one minute to the stroke volume.  
   b. Subtract the number of heart beats in one minute from the stroke volume.  
   ✔ c. Multiply the number of heart beats in one minute by the stroke volume.  
   d. Divide the number of heart beats in one minute by the stroke volume.  

6. The conduction system of the heart regulates the electrical impulses that
   a. Circulate blood within the heart.  
   b. Pull blood into the heart.  
   ✔ c. Make the heart rest.  
   d. Make the heart beat.  

7. If your friend asked you to explain an activity that increases cardiac output to the maximum, which of the following would you most likely say?
   a. Cardiac output increases when a person is sleeping and actively dreaming, rising to a maximum that may be four to seven times greater than the resting output.  
   b. Cardiac output increases when a person is taking a test, rising to a maximum that may be four to seven times greater than the resting output.  
   ✔ c. Cardiac output increases with physical activity, rising to a maximum that may be four to seven times greater than the resting output.  
   d. Cardiac output increases with alcohol consumption, rising to a maximum that may be four to seven times greater than the resting output.  

8. All of the following statements accurately compare systole and diastole except
   a. Ventricular contraction and constriction are known as systole, whereas ventricular relaxation and expansion are known as diastole.  
   ✔ b. Ventricular contraction and constriction are known as diastole, whereas ventricular relaxation and expansion are known as systole.  
   c. Systole is longer and takes up two-thirds of the cardiac cycle, whereas diastole is shorter and takes up the other third.  
   d. During systole, the ventricles fill with blood, whereas during diastole, the ventricles pump blood into the vascular system.  

9. Which of the following accurately compares the heart of an adult male and the heart of an adult female?
   a. The heart of an adult male beats slightly slower than that of an adult female.  
   b. The heart of an adult male beats slightly faster than that of an adult female.  
   ✔ c. The heart of an adult male is slightly smaller than that of an adult female.  
   d. The heart of an adult male is slightly larger than that of an adult female.  

10. All of the following are heart valves except
   a. The mitral valve.  
   b. The aortic valve.  
   ✔ c. The tricuspid valve.  
   d. The atrial valve.  

Heart Dissection Quiz
   》 Select the conus arteriosus.  
   》 Select the right or left ventricle.  
   》 Select the right or left atrium.  
   》 Select the aorta (base of).
Heart Post-Lab Quizzes

Post-Lab Quiz: Heart

1. The inferior vena cava returns deoxygenated blood to the _____, whereas the aorta receives oxygenated blood from the _____.
   - Left atrium, right ventricle
   - Left ventricle, right atrium
   - Right ventricle, left atrium
   ✔ - d. Right atrium, left ventricle

2. _____ veins carry oxygen-rich blood, whereas _____ arteries carry oxygen-poor blood.
   - a. Pulmonary, systemic
   - b. Systemic, pulmonary
   ✔ - c. Pulmonary, pulmonary
   ✔ - d. Systemic, systemic

3. During contraction, the _____ pull on the _____.
   - a. Conus arteriosus, papillary muscles
   ✔ - b. Papillary muscles, chordae tendineae
   c. Chordae tendineae, interventricular septum
   d. Right and left ventricles, moderator band

4. All of the following are heart valves except
   - a. The coronary valve.
   - b. The tricuspid valve.
   ✔ - c. The bicuspid valve.
   d. The aortic valve.

5. Which of the following statements accurately describes a difference between the right and left ventricles?
   - a. The walls of the left ventricle are about three times thicker than those of the right ventricle.
   ✔ - b. The right ventricle has trabeculae carneae, whereas the left ventricle does not.
   c. The left ventricle carries deoxygenated blood, whereas the right ventricle carries oxygenated blood.
   d. The right ventricle has a bicuspid valve, whereas the left ventricle has a tricuspid valve.

6. Which of the following is the correct order of the heart wall layers, from outermost to innermost?
   - a. Myocardium, epicardium, endocardium
   ✔ - b. Epicardium, myocardium, endocardium
   c. Epicardium, endocardium, myocardium
   d. Endocardium, myocardium, epicardium

7. Oxygenated blood is carried through all of the following regions except
   - a. The coronary arteries.
   ✔ - b. The aorta.
   c. The coronary sinus.
   d. The left atrium.

8. The heart is _____ to the trachea.
   - a. Superior
   ✔ - b. Anterior
   c. Medial
   d. Posterior

9. Coronary veins carry _____ blood to the _____.
   - a. Deoxygenated, right atrium
   - b. Oxygenated, coronary arteries
   - c. Oxygenated, aortic arch
   - d. Deoxygenated, left ventricle

10. Which of the following best describes the role of the pericardium?
    - a. Providing blood supply to the heart tissue
    ✔ - b. Enclosing and protecting the heart
    c. Pumping blood within the heart
    d. Distributing oxygen within the heart

Respiratory System Pre-Lab Quizzes

Pre-Lab Quiz: Respiratory System Overview

1. Which term describes the exchange of air between the lungs and the outside environment?
   - a. External respiration
   ✔ - b. Ventilation
   c. Internal respiration
   d. Perfusion
2. Which term describes the exchange of gases between the lungs and the blood?
   a. Internal respiration
   b. Ventilation
   ✔ c. External respiration
   d. Perfusion

3. Which term describes the exchange of gases between the blood and the body tissues?
   a. External respiration
   b. Ventilation
   ✔ c. Internal respiration
   d. Perfusion

4. The terminal air sacs in the lungs are called
   a. Bronchi.
   ✔ b. Alveoli.
   c. Bronchioles.
   d. Conchae.

5. In the lungs, which gas diffuses into the bloodstream?
   a. Carbon dioxide
   b. Nitrogen
   c. Carbon monoxide
   ✔ d. Oxygen

6. In the lungs, which gas diffuses from the blood into the alveoli?
   a. Oxygen
   ✔ b. Carbon dioxide
   c. Nitrogen
   d. Carbon monoxide

---

Pre-Lab Quiz: Upper Respiratory Structures

1. All of the following are upper respiratory system structures except
   a. The pharynx.
   b. The larynx.
   ✔ c. The trachea.
   d. The nasal cavity.

2. All of the following statements accurately explain the structures and functions of the nasal cavity except
   a. Three conchae form the passageways through which air flows.
   ✔ b. Nine cartilages form the passageways through which air flows.
   c. Air is inhaled through the nares and warmed as it passes through the nasal cavity.
   d. Mucus and epithelial cilia trap unwanted particles from inhaled air.

3. The larynx is located _____ to the pharynx.
   a. Superior
   b. Posterior
   ✔ c. Inferior
   d. Anterior

4. Which of the following lists the three parts of the pharynx, from superior to inferior?
   a. Nasopharynx, oropharynx, laryngopharynx
   ✔ b. Nasopharynx, laryngopharynx, oropharynx
   c. Oropharynx, nasopharynx, laryngopharynx
   d. Laryngopharynx, oropharynx, nasopharynx

5. The _____ is elastic cartilage that covers the opening to the _____ during swallowing to prevent food from entering the respiratory tract.
   a. Epiglottis, pharynx
   b. Thyroid, trachea
   ✔ c. Thyroid, pharynx
   d. Epiglottis, trachea

6. All of the following are functions of the laryngeal cartilages except
   ✔ a. They form protective rings around the trachea.
   b. They prevent collapse of the respiratory airways.
   c. They act as attachments for the vocal cords and phonation ligaments.
   d. They play a role in the cough reflex.

Pre-Lab Quiz: Lower Respiratory Structures

1. All of the following are lower respiratory system structures except
   a. The trachea.
   ✔ b. The larynx.
   c. The bronchi.
   d. The lungs.

2. All of the following statements accurately describe characteristics of the trachea except
   a. The tracheal rings, composed of hyaline cartilage, prevent the trachea from collapsing.
   ✔ b. The tracheal rings, composed of elastic cartilage, allow the trachea to close when needed to prevent food from entering the respiratory tract.
   c. The trachea extends from the larynx to the upper border of the fifth thoracic vertebra.
   d. The trachea divides into two bronchi, one for each lung.

---

Pre-Lab Quiz: Pre-Lab Quiz: Pre-Lab Quiz: Pre-Lab Quiz: Pre-Lab Quiz:
3. Which of the following statements accurately describes a difference between the primary bronchi and the secondary and tertiary bronchi?
   a. The primary bronchi are narrower in diameter than the secondary and tertiary bronchi.
   b. The primary bronchi have smaller and thinner cartilaginous rings than the secondary and tertiary bronchi.
   ✔ c. The primary bronchi are wider in diameter than the secondary and tertiary bronchi.
   d. There are more primary bronchi than secondary and tertiary bronchi.

4. The tertiary bronchi terminate in _____, which are tiny air sacs where gas exchange occurs.
   a. Bronchioles
   b. Alveoli
   ✔ c. Fissures
   d. Conchae

5. Which of the following statements accurately describes a difference between the left and right lungs?
   ✔ a. The right lung has three lobes, whereas the left lung has two lobes.
   b. The right lung has two lobes, whereas the left lung has three lobes.
   c. The right lung is slightly smaller than the left lung.
   d. The left primary bronchus is shorter and more vertically oriented than the right primary bronchus.

6. The lines on the surface of the lungs, which separate the lobes, are called
   a. Alveoli.
   ✔ b. Fissures.
   c. Bronchi.
   d. Conchae.

7. All of the following structures enter the lungs via the hilum except
   a. The bronchi.
   b. Pulmonary veins.
   ✔ c. Lymphatic vessels.
   d. The bronchioles.

Pre-Lab Quiz: Inhalation Muscles

1. How many apertures (openings) are there in the diaphragm?
   a. 2
   ✔ b. 3
   c. 4
   d. 6

2. All of the following are major structures that pass through the apertures of the diaphragm except
   a. The abdominal aorta.
   b. The esophagus.
   ✔ c. The trachea.
   d. The inferior vena cava.

3. When the diaphragm contracts, it _____ and _____ the thoracic cavity.
   a. Flattens out, expands
   ✔ b. Flattens out, compresses
   c. Rounds out, expands
   d. Rounds out, compresses

4. What effect does diaphragm contraction have on the volume of the thoracic cavity and lungs?
   a. It decreases the volume of the thoracic cavity and lungs.
   b. It maintains the constant volume of the thoracic cavity and lungs.
   ✔ c. It has no effect on the volume of the thoracic cavity and lungs.
   d. It increases the volume of the thoracic cavity and lungs.

5. The impact of diaphragm contraction on the volume of the thoracic cavity and lungs causes pressure to _____ inside the lungs, thus moving air _____ the lungs.
   a. Decrease, out of
   ✔ b. Decrease, into
   c. Increase, into
   d. Increase, out of

Pre-Lab Quiz: Exhalation Muscles

1. The muscles located between the ribs are called the _____ muscles.
   a. Internal intercostal
   b. Scalene
   ✔ c. Serratus posterior
   d. Sternocleidomastoid

2. Contraction of the internal intercostal muscles _____ the rib cage.
   a. Elevates
   ✔ b. Rotates
   c. Depresses
   d. Expands

3. When the diaphragm contracts, it _____ and _____ the thoracic cavity.
   a. Flattens out, expands
   b. Flattens out, compresses
   c. Rounds out, expands
   d. Rounds out, compresses
3. What effect does contraction of the internal intercostal muscles have on the volume of the thoracic cavity and lungs?
   a. It increases the volume of the thoracic cavity and lungs. ✔
   b. It decreases the volume of the thoracic cavity and lungs.
   c. It maintains the constant volume of the thoracic cavity and lungs.
   d. It has no effect on the volume of the thoracic cavity and lungs.

4. When the internal intercostal muscles contract, the effect it has on the volume in the thoracic cavity and lungs causes pressure inside the lungs to _____ and air to move _____ the lungs.
   a. Increase, into
   b. Decrease, up and out of
   c. Decrease, into
   d. Increase, up and out of ✔

5. Which accessory muscles contribute to the depression of the rib cage?
   a. The serratus anterior muscles
   b. The sternocleidomastoid muscles
   c. The serratus posterior inferior muscles ✔
   d. The scalene muscles

6. All of the following statements accurately describe the effects that abdominal muscle contraction has on respiration except
   a. It compresses the abdominal viscera. ✔
   b. It decreases pressure in the abdomen and thoracic cavity.
   c. It aids in exhalation.
   d. It increases pressure in the abdomen and thoracic cavity.

7. If your instructor asked you to explain what can happen to foreign particles that enter the respiratory system, which of the following would not be included in your explanation?
   a. Foreign particles are trapped by mucus in the nasal cavity and lower respiratory system.
   b. Foreign particles are swallowed through the esophagus and destroyed in the stomach.
   c. Foreign particles are expelled through the pharynx and oral cavity. ✔
   d. Foreign particles are trapped by mucus in the oral cavity and expelled via coughing.

Upper Respiratory System Multiple Choice Quiz 3

1. Which of the following is an upper respiratory structure?
   a. Trachea
   b. Diaphragm
   c. Lungs
   d. Pharynx ✔

2. Structures in the nasal mucosa do all of the following to air except
   a. Dry it.
   b. Moisten it.
   c. Filter it.
   d. Warm it. ✔

3. Particles that enter the nostrils and irritate nerve endings in the nasal mucosa trigger impulses that are transmitted via cranial nerve number _____ to the brain's sneezing center in the _____.
   a. III, pons
   b. II, cerebellum
   c. V, medulla
   d. VI, cerebral cortex ✔

4. All of the following are regions of the pharynx except
   a. Oropharynx.
   b. Epiglottis.
   c. Nasopharynx.
   d. Laryngopharynx. ✔

5. The vocal folds and vestibular folds are controlled by the
   a. Pharynx and larynx.
   b. Posterior and lateral cricoarytenoid muscles.
   c. Chest and abdominal muscles.
   d. Medulla and cerebral cortex. ✔

6. If your friend asked you to explain how air flows through the upper respiratory tract, which of the following would you likely say?
   a. Inhaled air passes through the pharynx into the nasal or oral cavity and then through the larynx into the trachea.
   b. Inhaled air passes through the larynx into the nasal or oral cavity and then through the trachea into the pharynx. ✔
   c. Inhaled air passes from the nasal or oral cavity through the pharynx and larynx into the trachea.
   d. Inhaled air passes from the nasal or oral cavity through the trachea and pharynx and into the larynx.

7. If your instructor asked you to explain what can happen to foreign particles that enter the respiratory system, which of the following would not be included in your explanation?
   a. Foreign particles are trapped by mucus in the nasal cavity and lower respiratory system.
   b. Foreign particles are swallowed through the esophagus and destroyed in the stomach.
   c. Foreign particles are expelled through the pharynx and oral cavity. ✔
   d. Foreign particles are trapped by mucus in the oral cavity and expelled via coughing.
8. If you were giving an oral presentation on olfaction, which of the following points would you likely include?
   a. The process of olfaction begins when signals from the olfactory area of the cerebral cortex move along the olfactory nerves to the nasal cavity.
   b. When air enters the nasal cavity, it stimulates mucus production, and this mucus triggers signals in the olfactory area of the cerebral cortex.
   ✔️ c. As air enters the nasal cavity, chemicals in the air activate nervous system receptors on the cilia, sending a signal from the nasal cavity through the ethmoid bone, olfactory bulbs, and olfactory nerves to the olfactory area of the cerebral cortex.
   d. The process of olfaction begins when neurons in the nasal cavity receive signals from the olfactory bulbs of the brain.

9. Which of the following explains why the epiglottis is so important?
   a. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs inhaled particles away from the esophagus and into the trachea.
   ✔️ b. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs food and fluid away from the trachea and into the esophagus.
   c. The epiglottis triggers the cough reflex, which pushes air forcefully up though the larynx, forcing particles up and out of the respiratory system.
   d. The epiglottis swings up and down, directing food into the esophagus and fluid into the trachea.

10. Which of the following accurately explains how one of the cartilages of the larynx differs in males and in females?
   a. The thyroid cartilage consists of two laminae that form the laryngeal prominence, which is larger in males than in females.
   ✔️ b. The cricoid cartilage consists of two laminae that form the laryngeal prominence, which is larger in females than in males.
   c. The arytenoid cartilage consists of two pyramid-shaped projections that are smaller in males than in females.
   d. The epiglottis is a leaf-shaped projection that is larger in males than in females.

Lower Respiratory System Multiple Choice Quiz 3

1. The trachea is a cartilaginous and membranous tube extending from the lower part of the _____ to the upper border of the _____ vertebra.
   ✔️ a. Larynx, T05
   b. Larynx, T12
   c. Pharynx, T05
   d. Pharynx, T12

2. A delicate, double-layered serous membrane, called the _____, covers the surface of each lung.
   a. Alveoli
   ✔️ b. Pleura
   c. Pneumothorax
   d. Peritoneum

3. All of the following structures enter the lung at the hilum except
   a. The bronchus.
   ✔️ b. The pulmonary artery.
   c. The pleura.
   d. The pulmonary veins.

4. How many alveoli exist inside each lung?
   a. Hundreds
   ✔️ b. Hundreds of millions
   c. Millions
   d. Thousands

5. Deoxygenated blood is pumped from the heart’s right ventricle and enters the lungs via pulmonary _____, and oxygenated blood drains through the pulmonary _____ to the left atrium.
   a. Veins, capillaries
   b. Venules, arterioles
   ✔️ c. Arteries, veins
   d. Veins, arteries

6. All of the following are differences between the right and the left primary bronchi except
   a. The left primary bronchus has nine to twelve cartilaginous rings, whereas the right primary bronchus has six to eight.
   ✔️ b. The right primary bronchus is wider, shorter, and oriented more vertically than the left.
   c. The right primary bronchus is narrower, longer, and oriented more horizontally than the left.
   d. The right primary bronchus divides into three major secondary bronchi, whereas the left primary bronchus divides into two secondary bronchi.

7. All of the following are differences between the left and the right lungs except
   a. The left lung is slightly smaller than the right lung.
   ✔️ b. The left lung is divided into three lobes, whereas the right lung is divided into two lobes.
   c. The right lung is slightly shorter than the left lung.
   d. The left lung is divided into two lobes, whereas the right lung is divided into three lobes.
8. Which of the following accurately compares the three major cell types of the alveolar wall?
   a. Most gas exchange occurs through alveolar macrophages, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and type II alveolar cells remove particulate debris from the alveolar surfaces.
   b. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from alveolar macrophages keeps the alveolar surfaces moist, and type I alveolar cells remove particulate debris from the alveolar surfaces.
   c. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.
   d. Most gas exchange occurs through type I alveolar cells, alveolar fluid secreted from type II alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.

9. If your instructor asked you to explain the importance of the circulatory system in lung function, which of the following would you likely say?
   a. The major function of the lungs is to perform gas exchange, and pulmonary capillaries drop off oxygen and pick up carbon dioxide.
   b. The major function of the lungs is for pulmonary arteries to pick up carbonic acid and oxygen from the alveoli and drop off carbon dioxide.
   c. The major function of the lungs is to perform gas exchange, which requires blood from the pulmonary circulation to drop off carbon dioxide and pick up oxygen.
   d. Pulmonary circulation provides an important level of control through constriction of the airway.

10. What distinguishes the pulmonary trunk and its branching arteries from all other arteries in the adult body?
   a. They are the only arteries in the body that carry deoxygenated blood.
   b. They are the only arteries in the body that carry oxygenated blood.
   c. They are the only arteries in the body that do not contain erythrocytes.
   d. They are the only arteries in the body that do not branch into capillaries.

Respiration Multiple Choice Quiz 3
1. What creates the movement that helps inspiration and expiration of air during pulmonary ventilation?
   a. Nervous signals from the cerebral cortex
   b. The pleural fluid that surrounds the lungs
   c. The lungs themselves
   ✔ d. Contraction and relaxation of muscles in the diaphragm and thorax

2. During normal exhalation, the diaphragm and external intercostals
   a. Relax.
   ✔ b. Contract.
   c. Depress the ribs.
   d. Flex the vertebral column.

3. Why does oxygen diffuse from the alveolus into the pulmonary capillary?
   a. Both the alveolus and the surrounding pulmonary capillaries have a low-oxygen partial pressure.
   b. Both the alveolus and the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   ✔ c. The alveolus has a low-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   d. The alveolus has a high-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a low-oxygen partial pressure.

4. The gas-transporting molecules in red blood cells are called
   a. Erythrocytes.
   b. Plasma.
   c. Alveoli.
   d. Hemoglobin.

5. When chemoreceptors in the aortic arch and common carotid arteries detect changes in carbon dioxide and oxygen levels in the blood, they send signals up to which two cranial nerves?
   a. Vagus and glossopharyngeal
   ✔ b. Hypoglossal and glossopharyngeal
   c. Vagus and hypoglossal
   d. Accessory and trigeminal

6. If you were explaining Boyle's law to a friend who does not understand it, you would likely make all of the following points except
   a. An increase in the volume of a container lowers the pressure of the air inside.
   b. A decrease in the volume of a container raises the pressure in the reduced space.
   ✔ c. An increase in the volume of a container raises the pressure of the air inside.
   d. Pressure and volume are inversely related.
7. Which of the following is a similarity between inspiration and expiration during forced breathing?
   a. Both involve accessory muscles of the neck.
   b. Both are passive processes.
   c. Both occur due to muscles relaxing.
   ✔ d. Both occur due to muscle contractions.

8. Which of the following accurately explains external respiration?
   ✔ a. Oxygen from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream, while carbon dioxide from oxygen-depleted blood diffuses from the capillaries into the alveoli and is expelled through exhalation.
   b. Oxygen from the blood diffuses from the capillaries into the alveoli and is expelled through exhalation, while carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   c. Oxygen and carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   d. Oxygen moves from the alveoli to the pulmonary arteries and carbon dioxide leaves the pulmonary veins to enter the alveoli.

9. If you were giving an oral presentation on internal respiration, you would likely make all of the following points except
   a. In the lungs, oxygen is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.
   b. At the narrow capillaries within body tissues, red blood cells release oxygen, which diffuses through the capillary walls into tissues.
   ✔ c. At the narrow capillaries within body tissues, the waste product carbon dioxide diffuses into the bloodstream, where it is carried inside red blood cells and in plasma back to the lungs.
   d. In the lungs, carbon dioxide is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.

10. If your instructor asked you how breathing patterns can be altered, which of the following would you not want to say?
    a. The body adjusts the rate and depth of normal breathing in response to metabolic needs.
    b. Talking, sneezing, and coughing can alter breathing patterns for short periods of time.
    ✔ c. Breathing patterns can only be altered by acute diseases and injuries.
    d. The medulla oblongata adjusts the breathing rate as needed, in response to changes in carbon dioxide and oxygen levels in the blood.

**Upper Respiratory System Dissection Quiz**
- Select the nasal cavity.
- Select the septal cartilage.
- Select any part of the pharynx.
- Select the cricoid cartilage.
- Select the hyoid bone.
- Select the thyroid cartilage.
- Select the epiglottis.

**Lower Respiratory System Dissection Quiz**
- Select any part of the trachea.
- Select the right or left primary cartilaginous rings.
- Select the right or left superior secondary bronchi.
- Select any of the right or left tertiary bronchi.
- Select any of the vessels that return oxygenated blood from the lungs to the left atrium of the heart.
- Select any of the vessels that convey deoxygenated blood from the right ventricle to the lungs.
- Select any part of the pulmonary trunk.
- Select the oblique fissure of the right or left lung.
- Select the middle lobe of the right lung.
- Select the right or left hilum.

**Respiration Dissection Quiz**
- Select the diaphragm.
- Select any of the right or left scalene muscles.
- Select the right or left external intercostals.
- Select the right or left internal intercostals.
- Select the right or left transversus abdominis muscle.
- Select the right or left common carotid artery.
- Select the brachiocephalic trunk (innominate artery).
- Select any part of the right or left vagus nerve (CN X).
Respiratory System Post-Lab Quizzes

Post-Lab Quiz: Respiratory System

1. Which of the following statements is true regarding the fissures of the lungs?
   a. The left lung has two fissures, whereas the right lung has one fissure.
   ✔ b. The right and left lungs both have an oblique fissure.
   c. The horizontal fissure separates the superior and inferior lobes of the left lung.
   d. The oblique fissure separates the superior and middle lobes of the right lung.

2. Which of the following statements accurately compares external and internal respiration?
   a. External respiration takes place between the alveoli and the pulmonary blood vessels, whereas internal respiration takes place between the systemic blood vessels and the body's tissue cells.
   ✔ b. External respiration takes place between the alveoli and the systemic blood vessels, whereas internal respiration takes place between the pulmonary blood vessels and the body's tissue cells.
   c. External respiration takes place between the systemic blood vessels and the body's tissue cells, whereas internal respiration takes place between the alveoli and the pulmonary blood vessels.
   d. External respiration takes place between the pulmonary and systemic blood vessels, whereas internal respiration takes place between the alveoli and the body's tissue cells.

3. If you were explaining the structures of the upper respiratory system to your lab partner, you would say all of the following except
   a. The pharynx is divided into three parts: the nasopharynx, oropharynx, and laryngopharynx.
   ✔ b. The pharynx is composed of hyaline cartilage that covers the opening of the trachea to prevent food from entering the respiratory tract.
   c. The larynx consists of the epiglottis, thyroid cartilage, cricoid cartilage, arytenoid cartilages, and corniculate cartilages that protect the respiratory airways and the vocal folds and cords.
   d. The nasal cavity is lined with hairs and mucous glands that warm inhaled air and remove dust and particles.

4. Which of the following statements accurately compares the primary and secondary bronchi?
   a. There are two secondary bronchi, a right and a left, whereas there are five primary bronchi, three for the left lung and two for the right lung.
   b. The primary bronchi have smaller and thinner cartilaginous rings than the secondary bronchi.
   ✔ c. There are two primary bronchi, a right and a left, whereas there are five secondary bronchi, three for the right lung and two for the left lung.
   d. The secondary bronchi have a larger diameter than the primary bronchi.

5. All of the following are cell types of the alveoli except
   a. Alveolar red blood cells.
   ✔ b. Type I alveolar cells.
   c. Type II alveolar cells.
   d. Alveolar macrophages.

6. All of the following are differences between the left and right lungs except
   a. The right lung is slightly larger than the left lung.
   b. The right lung has three lobes, whereas the left lung has two lobes.
   ✔ c. The right primary bronchus is shorter than the left primary bronchus.
   d. The left lung only receives air from the nasal cavity.

7. The larynx and trachea are located directly ______ to the esophagus.
   a. Posterior
   ✔ b. Anterior
   c. Medial
   d. Superior

8. Which of the following lists the correct order of the structures through which oxygen travels as it enters the lungs from the trachea?
   a. Primary bronchi, respiratory bronchiole, secondary bronchi, terminal bronchiole, tertiary bronchi, alveolar sac, alveolus, alveolar duct
   b. Respiratory bronchiole, alveolar duct, alveolar sac, alveolus, primary bronchi, secondary bronchi, tertiary bronchi, terminal bronchiole
   ✔ c. Tertiary bronchi, secondary bronchi, primary bronchi, alveolus, alveolar sac, alveolar duct, respiratory bronchiole, terminal bronchiole
   d. Primary bronchi, secondary bronchi, tertiary bronchi, respiratory bronchiole, terminal bronchiole, alveolar duct, alveolar sac, alveolus
9. What is the main function of the tracheal rings?
   a. Covering the epiglottis to block food from entering the trachea
   ✔ c. Preventing the collapse of the respiratory airway
   d. Catching dust that enters the airway

10. The air sacs in the lungs, called _____, take in _____, which is diffused from the blood.
    a. Alveoli, oxygen
    ✔ b. Alveoli, carbon dioxide
c. Bronchi, carbon dioxide
d. Bronchi, oxygen

**Upper Respiratory System Dissection Quiz**
- Select the nasal cavity.
- Select the septal cartilage.
- Select any part of the pharynx.
- Select the cricoid cartilage.
- Select the hyoid bone.
- Select the thyroid cartilage.
- Select the epiglottis.
- Select one of the arytenoid cartilages.
- Select the right or left vocal cord.
- Select the cricothyroid membrane.

**Lower Respiratory System Dissection Quiz**
- Select any part of the trachea.
- Select the right or left primary cartilaginous rings.
- Select the right or left superior secondary bronchi.
- Select any of the right or left tertiary bronchi.

**Respiration Dissection Quiz**
- Select any of the vessels that return oxygenated blood from the lungs to the left atrium of the heart.
- Select any of the vessels that convey deoxygenated blood from the right ventricle to the lungs.
- Select any part of the pulmonary trunk.
- Select the oblique fissure of the right or left lung.
- Select the middle lobe of the right lung.
- Select the right or left hilum.

**Digestive System Pre-Lab Quizzes**

**Pre-Lab Quiz: Digestive Overview**

1. Where does mechanical and chemical digestion begin?
   a. In the stomach
   ✔ b. In the small intestine
c. In the mouth
d. In the esophagus

2. What is a bolus?
   a. A mixture of food and digestive secretions that is created in the stomach
   ✔ b. A small mass of food, formed by chewing, that is swallowed
c. A mixture of food and digestive secretions that is created in the intestines
d. An indigestible waste product that is expelled through the rectum

3. All of the following statements are true regarding peristalsis except
   a. It involves waves of involuntary smooth muscle contractions.
   ✔ b. It moves food through the digestive system.
c. It involves waves of voluntary smooth muscle contractions.
d. It is controlled by the autonomic nervous system.

4. What is chyme and where is it created?
   a. Chyme is a mixture of food and digestive secretions that is created in the intestines.
   ✔ b. Chyme is a mixture of food and saliva that is created in the mouth.
c. Chyme is a mixture of food and enzymes that is created in the esophagus.
d. Chyme is the mixture of food and digestive secretions that is created in the stomach.
5. Where does most nutrient absorption occur?
   a. In the stomach  ✔
   b. In the small intestine
   c. In the large intestine
   d. In the esophagus

6. Nutrients absorbed from chyme are passed into the wall of the
   a. Stomach.  ✔
   b. Duodenum.
   c. Esophagus.
   d. Liver.

7. Where is indigestible waste compacted?
   a. In the small intestine  ✔
   b. In the stomach
   c. In the large intestine
   d. In the pancreas

**Pre-Lab Quiz: Alimentary Canal Anatomy**

1. Where is the boundary between the upper and lower digestive tracts?
   ✔ a. The junction of the stomach and small intestine
   b. The junction of the esophagus and stomach
   c. The junction of the pharynx and esophagus
   d. The junction of the small and large intestines

2. All of the following are accessory organs of the digestive system except ✔
   a. The liver.
   b. The appendix.
   c. The gall bladder.
   d. The pancreas.

3. Which of the following accurately lists the order of the structures through which food passes as it moves through the digestive system, starting with the entry of food into the mouth through to elimination?
   a. Oral cavity, esophagus, pharynx, stomach, large intestine, small intestine, rectum, anal canal  ✔
   b. Oral cavity, pharynx, stomach, esophagus, large intestine, small intestine, rectum, anal canal
   c. Oral cavity, pharynx, esophagus, stomach, small intestine, large intestine, rectum, anal canal
   d. Oral cavity, esophagus, stomach, pharynx, small intestine, large intestine, anal canal, rectum

4. Where is most of the water absorbed during digestion?
   a. In the stomach
   b. In the esophagus
   ✔ c. In the small intestine
   d. In the large intestine

5. Which of the following accurately lists the four tissue layers of the alimentary canal, from innermost to outermost?
   a. Muscularis, mucosa, submucosa, serosa  ✔
   b. Mucosa, submucosa, muscularis, serosa
   c. Submucosa, mucosa, serosa, muscularis
   d. Serosa, muscularis, submucosa, mucosa

**Pre-Lab Quiz: Digestive Secretions**

1. All of the following digestive structures produce secretions that aid in chemical digestion except ✔
   a. The esophagus.
   b. The stomach.
   c. The gall bladder.
   d. The intestines.

2. All of the following are types of salivary glands except ✔
   a. Parotid.
   b. Sublingual.
   c. Submandibular.
   d. Circumvallate.

3. Which of the following statements accurately describes saliva?
   ✔ a. Saliva contains enzymes and proteins that initiate chemical digestion of food.
   b. Saliva contains hydrochloric acid and enzymes that digest food into chyme.
   c. Saliva contains enzymes that break down chyme.
   d. Saliva contains bile salts that emulsify fats.

4. Bile is produced in the _____ and stored in the _____.
   a. Gall bladder, liver  ✔
   b. Liver, gall bladder
   c. Pancreas, intestines
   d. Intestines, pancreas

5. All of the following statements accurately describe how digestive secretions aid in digestion in the small intestine except ✔
   a. Bile contains bile salts that emulsify fats in the small intestine.
   b. Pancreatic juice contains enzymes and ions that contribute to chemical digestion in the small intestine.
   c. Gastric juice contains hydrochloric acid and enzymes that digest food into chyme in the small intestine.
   d. Intestinal juice contains enzymes that break down chyme in the small intestine.
6. All of the following statements accurately describe gastric juice except
   a. It is produced in the stomach.
   ✔️ b. It initiates chemical digestion of food.
   c. It digests food into chyme.
   d. It contains hydrochloric acid and enzymes.

Pre-Lab Quiz: Chewing, Swallowing, and Peristalsis

1. If you were describing the process of mechanical digestion to your lab partner, which of the following statements would you most likely make?
   a. Gastric juice, secreted by the stomach, breaks down food into chyme.
   ✔️ b. The teeth break down food into small pieces and the tongue manipulates it into a bolus.
   c. Saliva breaks down carbohydrates in food.
   d. Intestinal secretions break down the nutrients in chyme.

2. What involuntary movement prevents the bolus from entering the trachea?
   ✔️ a. The epiglottis folds down and covers the trachea.
   b. Peristaltic waves close the trachea and move the bolus past it.
   c. The pharynx folds down and covers the trachea.
   d. The tongue guides the bolus away from the trachea.

3. Which division of the nervous system controls peristalsis?
   ✔️ a. The autonomic nervous system
   b. The central nervous system
   c. The peripheral nervous system
   d. The somatic nervous system

4. Which of the four layers of the alimentary canal produces the contractions of peristalsis?
   ✔️ a. The muscularis
   b. The mucosa
   c. The serosa
   d. The submucosa

Pre-Lab Quiz: Upper Digestive System Muscles

1. Which of the following statements accurately describes the origin points of the masseter muscle?
   ✔️ a. The superficial portion originates from the zygomatic arch, whereas the deep portion originates from the maxillary process of the zygomatic bone and the inferior border of the zygomatic arch.
   b. The superficial portion originates from the ramus of the mandible, whereas the deep portion originates from the mandible.
   c. The superficial portion originates from the maxillary process of the zygomatic bone and the inferior border of the zygomatic arch, whereas the deep portion originates from the ramus of the mandible.
   d. The superficial portion originates from the mandible, whereas the deep portion originates from the ramus of the mandible.

2. Where is the insertion point of the masseter muscle?
   ✔️ a. On the maxilla
   b. On the mandible
   c. On the zygomatic arch
   d. On the condyloid process

3. The temporalis muscle originates from the
   a. Zygomatic arch.
   ✔️ b. Temporal fossa and temporal fascia.
   c. Coronoid process of the mandible.
   d. Pyramidal process of the palatine.

4. Where is the insertion point of the temporalis muscle?
   a. On the condyloid process of the mandible
   ✔️ b. On the angle of the mandible
   c. On the coronoid process of the mandible
   d. On the body of the mandible

5. Which of the following accurately describes the action of the masseter muscle?
   ✔️ a. It elevates and retracts the mandible.
   b. It depresses and retracts the mandible.
   c. It elevates and protracts the mandible.
   d. It depresses and protracts the mandible.

6. Which of the following accurately describes the action of the temporalis muscle?
   ✔️ a. It depresses and protracts the mandible.
   b. It elevates and retracts the mandible.
   c. It elevates and protracts the mandible.
   d. It depresses and retracts the mandible.

Oral Cavity Multiple Choice Quiz 3

1. What does saliva do to food in the oral cavity?
   ✔️ a. It partially digests it.
   b. It completely digests it.
   c. It mechanically digests it.
   d. It prevents it from going into the trachea.
2. What is the role of the tongue in chewing and swallowing?
   a. The tongue secretes saliva and moves food into the oropharynx.
   b. The tongue chemically digests the food and moves it into the oropharynx.
   c. The tongue manipulates the chewed food into a small mass and moves it into the larynx.
   ✔ d. The tongue manipulates the chewed food into a small mass and moves it into the oropharynx.

3. All of these types of teeth cut and tear food except
   a. Canines.
   ✔ b. Premolars.
   c. Lateral incisors.
   d. Central incisors.

4. Taste buds are found in the _____ and _____.
   a. Circumvallate papillae, filiform papillae
   ✔ b. Circumvallate papillae, fungiform papillae
   c. Fungiform papillae, filiform papillae
   d. Fungiform papillae, fauces

5. During swallowing, the epiglottis prevents choking by folding down to close off the _____ and _____.
   a. Larynx, esophagus
   ✔ b. Larynx, trachea
   c. Esophagus, trachea
   d. Larynx, pharynx

6. Which of the following best describes how the structures of the oral cavity work?
   a. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.
   b. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the trachea by the epiglottis, which folds down to block the esophagus.
   c. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the trachea by the epiglottis, which folds down to block the esophagus.
   ✔ d. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.

7. If you were showing a friend a cross-section of a tooth, you could use all of the following to explain it except
   a. Enamel is the hardest tissue in the body.
   b. The root canal is where blood vessels and nerves that supply and innervate the tooth pass into the pulp cavity.
   ✔ c. The neck of the tooth sits in the alveolar process of the jaw bone.
   d. The crown of the tooth Lies above the gingiva.

8. Which of the following distinguishes the different types of salivary glands?
   a. The parotid ducts pass saliva from the parotid glands into the oral cavity. The sublingual ducts pass saliva from the submandibular and sublingual glands.
   ✔ b. The submandibular ducts pass saliva from the parotid and submandibular glands into the oral cavity. The parotid ducts pass saliva from the sublingual glands.
   c. The parotid ducts pass saliva from the parotid glands into the oral cavity. The submandibular ducts pass saliva from the submandibular and sublingual glands.
   d. The submandibular ducts pass saliva from the parotid glands into the oral cavity. The parotid ducts pass saliva from the submandibular and sublingual glands.

9. If you wanted to explain the mastication muscles to someone who did not understand them, you would say all of the following except
   a. The masseter elevates the mandible to close the mouth.
   b. The masseter is assisted by the temporalis, which retracts the mandible.
   c. You can feel the temporalis move by touching your temple while you chew.
   ✔ d. There are both superficial and deep temporalis muscles.
10. If you wanted to explain the extrinsic tongue muscles to someone who did not understand them, you would say all of the following except ✔
a. Extrinsic muscles allow the tongue to change its shape, such as by curling into a loop or flattening.
b. Extrinsic muscles anchor the tongue to the skeleton.
c. Extrinsic muscles move the whole tongue in different directions.
d. Extrinsic muscles insert into the tongue from outside origins.

Esophagus and Stomach Multiple Choice Quiz 3

1. On its way to the stomach, the esophagus passes through an opening in the diaphragm called the a. Epiglottis. b. Cardiac sphincter. c. Pyloric sphincter. ✔ d. Esophageal hiatus.

2. Two types of arteries supply blood to the stomach. The _____ supply/supplies the greater curvature of the stomach, whereas the _____ supply/supplies the lesser curvature. ✔
a. Gastroepiploic artery, gastric arteries b. Gastric arteries, gastroepiploic artery c. Gastroepiploic arteries, gastric artery d. Gastric artery, gastroepiploic artery

3. Where does food enter the stomach? a. In the duodenum b. In the fundus c. In the pyloric sphincter ✔ d. In the cardiac sphincter

4. What are rugae? ✔
a. Folds in the stomach wall b. Longitudinal muscle layers in the stomach wall c. Circular muscle layers in the stomach wall d. Sphincters in the stomach

5. The esophagus extends from the _____ to the cardiac sphincter, where it joins the stomach. a. Oral cavity b. Oropharynx c. Diaphragm ✔ d. Laryngopharynx

6. How does peristalsis differ in different parts of the alimentary canal? a. In some parts of the alimentary canal, peristalsis involves only contraction. b. In some parts of the alimentary canal, peristalsis involves only relaxation. c. Peristalsis can involve smaller waves in the esophagus and bigger waves in the intestines. d. Peristalsis can involve bigger waves in the esophagus and smaller waves in the intestines. ✔

7. Which of the following is a good description of the function of the stomach sphincters? a. The anal sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum. b. The cardiac sphincter is where chyme enters the stomach from the esophagus. The pyloric sphincter is where a bolus exits the stomach into the duodenum. c. The pyloric sphincter is where a bolus enters the stomach from the esophagus. The cardiac sphincter is where chyme exits the stomach into the duodenum. d. The cardiac sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum. ✔

8. Which of the following describes the longest portion of the alimentary canal? ✔
a. The small intestine is where absorption of nutrients occurs. b. The large intestine is where water is absorbed. c. The rectum and anal canal are where waste is eliminated. d. The stomach is where food is broken down into chyme.

9. Chyme can be described as any of the following except ✔
a. The substance that exits the stomach into the duodenum via the pyloric sphincter. b. Food broken down into a small mass by structures in the oral cavity. c. Food mixed with digestive enzymes. d. Food mixed with acids secreted by the stomach.

10. Which of the following describes the greater curvature of the stomach? a. It is the funnel-shaped stomach structure that connects to the duodenum. b. It is the concave, medial surface of the stomach. c. It is supplied by the gastric arteries. ✔ d. It is supplied by the gastroepiploic artery.

Accessory Organs of Digestion Multiple Choice Quiz 3

1. The falciform ligament separates the _____ and _____ lobes of the liver. a. Right, left ✔ b. Right, quadrate c. Left, quadrate d. Left, caudate

visiblebody.com
2. The hepatic portal system drains nutrient-rich blood from
   a. The liver.
   b. The gall bladder.
   c. The pancreas.
   ✔ d. The alimentary canal.

3. The pancreas produces pancreatic juice that flows into a smaller accessory duct and a larger pancreatic duct. What is the name of the smaller duct?
   a. Duct of Wirsung
   ✔ b. Duct of Santorini
   c. Common bile duct
   d. Cystic duct

4. Which of the following supplies the gall bladder with oxygenated blood?
   a. Branches of the cystic artery
   ✔ b. Branches of the proper hepatic artery
   c. Branches of the gastroduodenal arteries
   d. Branches of the splenic arteries

5. Which structures unite at the hepatopancreatic ampulla, or ampulla of Vater?
   a. The pancreatic duct and the common bile duct
   ✔ b. The duct of Wirsung and the duct of Santorini
   c. The common bile duct and the cystic duct
   d. The pancreatic duct and the common hepatic duct

6. If you were telling a friend how the liver works, you might say all of the following except
   a. The liver's primary digestive function is to secrete bile, which emulsifies fats.
   ✔ b. The liver's primary digestive function is to store bile, which emulsifies fats.
   c. The liver has eight surgical segments.
   d. The liver is the largest gland in the body.

7. Which of the following describes how bile enters the duodenum?
   a. Hepatocytes in the gall bladder secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the liver.
   ✔ b. Hepatocytes in the liver secrete bile, which flows into the common hepatic duct and then into the right and left hepatic ducts. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.
   c. Hepatocytes in the pancreas secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.
   d. Hepatocytes in the liver secrete bile, which flows into the right and left hepatic ducts and then into the common hepatic duct. If the bile is not yet needed for digestion, it flows up the cystic duct and is stored in the gall bladder.

8. Which of the following distinguishes the different pancreatic ducts?
   a. One of them transports bile, while the other transports pancreatic juice.
   b. They transport different types of pancreatic juice.
   ✔ c. The larger pancreatic duct is also known as the duct of Wirsung, while the smaller accessory duct is also known as the duct of Santorini.
   d. The larger pancreatic duct is also known as the duct of Santorini, while the smaller accessory duct is also known as the duct of Wirsung.

9. Why is the hepatic portal system important?
   a. It ensures that blood is oxygenated before entering the circulation.
   ✔ b. It allows nutrients and wastes to be processed in the gall bladder instead of entering the circulation directly.
   c. It allows nutrients and wastes to be processed in the liver instead of entering the circulation directly.
   d. It allows nutrients and wastes to be processed in the pancreas instead of entering the circulation directly.

10. How does the pathway of bile to the duodenum differ from the pathway of pancreatic juice?
    a. Pancreatic juice flows out of the pancreas via only one duct, whereas bile may flow out of the liver via two ducts.
    b. Bile flows out of the liver via only one duct, whereas pancreatic juice only flows out of the pancreas via one duct.
    ✔ c. If bile is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Pancreatic juice flows only to the duodenum.
    d. If pancreatic juice is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Bile flows only to the duodenum.

Small and Large Intestines Multiple Choice Quiz 3

1. All of these are true of villi except
   a. They line the interior wall of the small intestine.
   ✔ b. They propel chyme through the pyloric sphincter.
   c. They help absorb nutrients from ingested food.
   d. They contain lacteals of the lymphatic system.
2. Where does absorption of nutrients begin?
   a. In the ileum
   b. In the large intestine
   c. In the stomach
   ✔ d. In the duodenum

3. The taenia coli are bands of _____ running along the outside of the colon.
   a. Lymphatic tissue
   b. Endocrine tissue
   c. Muscle
   ✔ d. Membrane

4. Which of these structures relaxes voluntarily as part of defecation?
   ✔ a. External anal sphincter
   b. Internal anal sphincter
   c. Rectum
   d. Anal canal

5. From the cecum to the rectum, the regions of the colon are the
   a. Descending colon, sigmoid colon, transverse colon, ascending colon.
   b. Descending colon, transverse colon, sigmoid colon, ascending colon.
   c. Ascending colon, descending colon, transverse colon, sigmoid colon.
   d. Ascending colon, transverse colon, descending colon, sigmoid colon.

6. How would you summarize the last few steps of the digestive process?
   a. Water is absorbed in the small intestine.
      Nutrients are absorbed in the large intestine. Waste is eliminated through the rectum and anal canal.
   b. Water is absorbed in the small intestine.
      Nutrients are absorbed in the large intestine and rectum. Waste is eliminated through the anal canal.
   ✔ c. Nutrients are absorbed in the small intestine.
      Water is absorbed in the large intestine and rectum. Waste is eliminated through the anal canal.
   d. Nutrients are absorbed in the small intestine.
      Water is absorbed in the large intestine. Waste is eliminated through the rectum and anal canal.

7. If you were explaining the absorption structures to someone who did not understand them, you might include all of the following except...
   a. Circular folds increase the surface area available for absorption.
   b. All absorption of nutrients takes place in the small intestine.
   ✔ c. Villi increase the surface area available for absorption.
   d. Absorption of nutrients begins in the duodenum.

8. Which of the following best describes what happens to nutrients in the chyme as it travels through the small intestine?
   a. The nutrients are further broken down by secretions from organs. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.
   b. The nutrients are further broken down by bacteria. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.
   c. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by secretions from organs.
   d. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by bacteria.

9. If you wanted to explain the function of bacteria in the large intestine to someone who did not understand it, you might include all of the following except...
   a. Bacteria absorb water in the colon.
   b. Bacteria break down carbohydrates and other substances in chyme.
   ✔ c. Bacteria release vitamin B, which the colon absorbs.
   d. Bacteria release vitamin K, which the colon absorbs.

10. Which of the following is a similarity between peristalsis and haustral churning?
    a. They both eliminate feces from the rectum.
    b. They both compact undigested material into stool.
    ✔ c. They both move chyme through the colon.
    d. They both break down carbohydrates and other substances in chyme.
**Oral Cavity Dissection Quiz**
- Select the right or left hyoglossus.
- Select the gingiva.
- Select any of the right or left salivary glands.
- Select the right or left palatine tonsil.
- Select any molar.
- Select the epiglottis.
- Select any of the muscles of mastication.
- Select any of the salivary ducts.
- Select the tongue.
- Select any incisor.

**Esophagus and Stomach Dissection Quiz**
- Select the esophagus.
- Select the mucosa layer of the stomach.
- Select the oblique muscle layer of the stomach.
- Select the round muscle layer of the stomach.
- Select the longitudinal muscle layer of the stomach.
- Select the cardiac sphincter.
- Select the pyloric sphincter.
- Select any part of the duodenum.
- Select the right or left gastric artery.
- Select the right or left gastroepiploic artery.

**Accessory Organs of Digestion Dissection Quiz**
- Select any segment of the right part of the liver.
- Select any segment of the left part of the liver.
- Select the part of the liver that includes the quadrate lobe.

**Small and Large Intestines Dissection Quiz**
- Select any part of the duodenum.
- Select the jejunum.
- Select the ileum.
- Select the sigmoid colon.
- Select the ascending colon.
- Select the cecum.
- Select the superior or inferior mesenteric artery.
- Select the taenia coli of the transverse colon.
- Select the rectum.
- Select the appendix.

**Digestive System Post-Lab Quizzes**

### Post-Lab Quiz: Digestive System
1. All of the following digestive processes occur in the colon except
   - a. Bacteria secrete vitamins, which are absorbed.
   - b. Water is absorbed and stools are formed.
   - c. Bacteria secrete bile, which is absorbed.
   - d. Contractions move chyme.

2. If you were explaining the alimentary canal to your lab partner, which of the following points would you likely make?
   - a. The alimentary canal has two tissue layers, the mucosa and serosa.
   - b. The alimentary canal is a continuous tube that extends from the mouth to the anus.
   - c. The serosa layer of the alimentary canal produces the contractions of peristalsis.
   - d. Most of the alimentary canal's length is made up of the large intestine.

3. Which of the following statements is true regarding one of the secretions that contribute to digestion?
   - a. Gastric juice contains enzymes that break down chyme.
   - b. Saliva contains hydrochloric acid and enzymes that digest food into chyme.
   - c. Pancreatic juice contains enzymes and ions that aid digestion in the small intestine.
   - d. Intestinal juice contains enzymes that emulsify fats.

4. If you were explaining the flow of bile from the liver to the gall bladder and small intestine, you might say all of the following except
   - a. The common bile duct carries bile from the common hepatic duct to the duodenum.
   - b. The cystic duct carries bile from the common hepatic duct to the gall bladder.
   - c. The common hepatic duct carries bile from the liver to the cystic duct and common bile duct.
   - d. The common bile duct carries bile from the liver to the cystic duct and common hepatic duct.
5. Which of the following statements accurately distinguishes a bolus from chyme?
✔ a. A bolus is food that has been chewed and swallowed, whereas chyme is the mixture of food and digestive secretions created in the stomach.

b. A bolus is the mixture of food and digestive secretions created in the stomach, whereas chyme is food that has been chewed and swallowed.

c. A bolus is the mixture of food and digestive secretions created in the esophagus, whereas chyme is food that has been chewed and swallowed.

d. A bolus is food that has been chewed and swallowed, whereas chyme is the mixture of food and digestive secretions created in the esophagus.

6. Which of the following statements accurately compares the small and large intestines?

a. Most nutrient absorption takes place in the large intestine, whereas most water reabsorption takes place in the small intestine.
✔ b. Most nutrient absorption takes place in the small intestine, whereas most water reabsorption takes place in the large intestine.

c. Both the small and large intestines contain taenia coli, which contract to move chyme.

d. The small and large intestines contain equal amounts of bacteria.

7. All of the following are layers of the stomach wall except
a. The outermost serosa.
✔ b. The innermost serosa.

b. The longitudinal muscle layer.

c. The oblique muscle layer.

8. What is the function of rugae?
   a. They contract to help the stomach churn food.
   b. They secrete mucus that protects the stomach.
   ✔ c. They secrete enzymes that initiate chemical digestion.
   d. They help the stomach expand when necessary.

9. Which of the following is a type of salivary gland?
   a. Circumvallate
   ✔ b. Parotid
   c. Palatine
   d. Filiform

10. Peristaltic waves are _____ that move the bolus down the esophagus and into the stomach.
    a. Involuntary muscle contractions
    ✔ b. Oral cavity structures
    c. Digestive enzymes
    d. Voluntary muscle contractions

**Oral Cavity Dissection Quiz**
- Select the right or left hyoglossus.
- Select the gingiva.
- Select any of the right or left salivary glands.
- Select the right or left palatine tonsil.
- Select any molar.
- Select the epiglottis.
- Select any of the muscles of mastication.
- Select any of the salivary ducts.
- Select the tongue.
- Select any incisor.

**Esophagus and Stomach Dissection Quiz**
- Select the esophagus.
- Select the mucosa layer of the stomach.

**Accessory Organs of Digestion Dissection Quiz**
- Select any segment of the right part of the liver.
- Select any segment of the left part of the liver.
- Select the part of the liver that includes the quadrate lobe.
- Select the caudate lobe of the liver.
- Select the falciform ligament.
- Select the gall bladder.
- Select any part of the pancreas.
- Select the duct of Wirsung.
- Select the common bile duct.
- Select the coronary ligament.

**Small and Large Intestines Dissection Quiz**
- Select any part of the duodenum.
- Select the jejunum.
- Select the ileum.
- Select the sigmoid colon.
- Select the ascending colon.
- Select the cecum.
Select the superior or inferior mesenteric artery.  
Select the taenia coli of the transverse colon.  
Select the rectum.  
Select the appendix.

Urinary System Pre-Lab Quizzes

Pre-Lab Quiz: Urinary System Overview

1. All of the following are main components of urine except  
   a. Water.  
   b. Salts.  
   ✓ c. Proteins.  
   d. Nitrogenous compounds.

2. The male urethra is _____ cm long and the female urethra is _____ cm long.  
   a. 4, 17.5–20  
   b. 25–30, 10  
   c. 10, 25–30  
   d. 17.5–20, 4

3. Which of the following lists the correct order of the structures urine passes through on its way from the kidneys to the outside of the body?  
   a. Urethra, bladder, ureters  
   ✓ b. Ureters, bladder, urethra  
   c. Bladder, ureters, urethra  
   d. Bladder, urethra, ureters

4. Blood enters the kidneys through the _____ and exits the kidneys through the _____.  
   ✓ a. Renal arteries, renal veins  
   b. Renal veins, renal arteries  
   c. Renal capillaries, renal arteries  
   d. Renal veins, renal capillaries

5. The _____ are the blood-filtering structures of the urinary system.  
   a. Ureters  
   b. Urethral sphincters  
   ✓ c. Kidneys  
   d. Renal arteries

6. All of the following are steps in the process of urine formation except  
   a. Some substances are filtered from the blood.  
   ✓ b. Some substances are filtered from the urine.  
   c. Some substances are reabsorbed back into the blood.  
   d. Some substances are secreted as waste into the urine.

Pre-Lab Quiz: The Kidneys

1. Which of the following statements accurately describes the renal arteries?  
   a. They drain blood from the kidneys into the inferior vena cava.  
   b. The left renal artery is longer than the right renal artery.  
   c. The left renal artery is slightly higher than the right renal artery.  
   ✓ d. They branch from the aorta and supply blood to the kidneys.

2. All of the following statements accurately describe the renal corpuscle except  
   a. It is the primary site of blood filtration.  
   ✓ b. It is a fatty tissue layer that surrounds the kidneys.  
   c. It contains a spherical capillary network known as the glomerulus.  
   d. It is surrounded by the glomerular, or Bowman's, capsule.

3. Which of the following statements accurately describes the function of the renal pelvices?  
   a. The renal pelvices are the main site of urine production.  
   b. The renal pelvices are the main site of blood filtration.  
   ✓ c. The renal pelvices funnel urine from the kidneys into the ureters.  
   d. The renal pelvices funnel blood into the kidneys for filtration.

4. All of the following statements accurately describe the renal pyramids except  
   a. They are located in the renal cortex.  
   b. Most of their mass is composed of nephrons.  
   c. They narrow into apices that converge toward the renal pelvis.  
   ✓ d. They are located in the renal medulla.

5. What are the basic functional units of the kidney?  
   a. Pyramids  
   b. Columns  
   ✓ c. Nephrons  
   d. Glomeruli

6. All of the following are main regions of the kidney except  
   a. The renal corpuscle.  
   b. The renal cortex.  
   c. The renal medulla.  
   ✓ d. The renal pelvis.

7. The kidneys are located between the _____ and _____ vertebrae.  
   a. L01, L05  
   ✓ b. T12, L03  
   c. T09, T12  
   d. T09, L01

Graded Quiz Bank: Instructor's Manual

visiblebody.com
8. The _____ kidney is slightly lower than the other kidney to accommodate the _____.
   a. Left, liver
   ✓ b. Right, liver
   c. Right, peritoneum
   d. Left, peritoneum

Pre-Lab Quiz: Nephrons

1. What component of blood is filtered from the glomerulus into the renal capsule?
   a. Platelets
   b. Red blood cells
   ✓ c. White blood cells
   d. Plasma

2. The glomerular capsules are located in the _____ of the kidneys.
   a. Medulla
   ✓ b. Cortex
   c. Pyramids
   d. Pelvises

3. Which processes of urine formation occur in the renal tubules?
   a. Filtration and secretion
   ✓ b. Filtration and absorption
   c. Absorption and secretion
   d. Absorption and micturition

4. All of the following are sections of the renal tubule except
   ✓ a. The glomerulus.
   b. The proximal convoluted tubule.
   c. The distal convoluted tubule.
   d. The nephron loop.

5. Which of the following statements accurately describes the glomerulus?
   ✓ a. It is a spherical capillary bed where blood is filtered.
   b. It is a network of arteries that supplies blood to the nephron.
   c. It is a network of veins that drains the nephron.
   d. It is a spherical arteriole bed where wastes from blood are secreted.

6. Which of the following lists the correct order of the branches of the renal artery that bring blood to the nephron for filtering?
   ✓ a. Segmental, interlobular, arcuate, interlobar
   b. Interlobular, arcuate, interlobar, segmental
   c. Segmental, interlobar, arcuate, interlobular
   d. Arcuate, interlobar, segmental, interlobar

Pre-Lab Quiz: Urine Production

1. The processes of reabsorption and secretion create _____, which passes out of the kidneys through the _____.
   a. Urine, renal columns
   ✓ b. Filtrate, renal pelvises
   c. Urine, renal pelvises
   d. Filtrate, renal columns

2. What is it called when waste ions and hydrogen ions pass from the blood in the capillaries into the renal tubules?
   a. Filtration
   ✓ b. Secretion
   c. Reabsorption
   d. Micturition

3. As filtrate passes out of the glomerular capsule through the renal tubule, all of the following substances are reabsorbed into the body except
   a. Water.
   b. Glucose.
   c. Amino acids.
   ✓ d. Hydrogen ions.

4. All of the following are components of the filtration membrane except
   a. The tubule cells.
   ✓ b. The capsule epithelium.
   c. The capillary endothelium.
   d. The basement membrane.

5. Which of the following statements explains how blood plasma moves through the filtration membrane?
   ✓ a. Blood pressure is lower inside the glomerulus than in the surrounding capsular space, pulling blood plasma through the filtration membrane.
   b. Blood pressure is low inside the glomerulus and in the surrounding capsular space, allowing blood plasma to flow through the filtration membrane.
   c. Blood pressure is high inside the glomerulus and in the surrounding capsular space, forcing blood plasma through the filtration membrane.
   d. Blood pressure is higher inside the glomerulus than in the surrounding capsular space, pushing blood plasma through the filtration membrane.

6. The first step in urine formation is called
   a. Absorption.
   ✓ b. Reabsorption.
   c. Filtration.
   d. Secretion.
7. How many nephrons are there in each kidney?
   a. Approximately one thousand ✓
   b. Over one million
   c. Approximately half a million
   d. Under one hundred

8. All of the following statements accurately describe the process of filtration except ✓
   a. Blood cells and proteins pass through the glomerulus into the glomerular capsule.
   b. Nephrons in the renal pyramids filter blood from the renal artery.
   c. Water and waste pass through the glomerulus into the glomerular capsule.
   d. Blood cells and proteins remain in the bloodstream.

Pre-Lab Quiz: Urine Composition and ADH

1. Which gland releases antidiuretic hormone (ADH)?
   a. The adrenal gland
   b. The pineal gland
   c. The posterior pituitary gland ✓
   d. The hypothalamus

2. Which part of the brain detects blood water levels?
   a. The thalamus ✓
   b. The hypothalamus
   c. The cerebral cortex
   d. The medulla oblongata

3. What is the main function of antidiuretic hormone (ADH)?
   a. It increases water reabsorption by the kidneys. ✓
   b. It increases water secretion by the kidneys.
   c. It decreases water filtration by the kidneys.
   d. It decreases water reabsorption by the kidneys.

4. Adults usually produce about _____ liters of urine per day.
   a. 2.8 ✓
   b. 1.4
   c. 3.2
   d. 4.6

5. All of the following are nitrogenous wastes that are secreted in urine except ✓
   a. Ammonia.
   b. Creatinine.
   c. Uric acid.
   d. Hydrogen.

6. What percentage of urine is normally water?
   a. 95% ✓
   b. 5%
   c. 25%
   d. 75%

Pre-Lab Quiz: Pathway of Urine

1. All of the following are regions of the male urethra except ✓
   a. The prostatic urethra.
   b. The vestibular urethra.
   c. The membranous urethra.
   d. The spongy urethra.

2. The female urethra is _____ than the male urethra, extending from the _____ of the bladder to the external urethral orifice in the vestibule.
   a. Shorter, trigone ✓
   b. Longer, neck
   c. Shorter, neck
   d. Longer, trigone

3. All of the following statements accurately describe the bladder except ✓
   a. The bladder’s internal voluntary sphincter and external involuntary sphincter control the flow of urine.
   b. The mucosa of the bladder is composed of transitional epithelium, which is folded into rugae.
   c. The bladder is surrounded by an underlying smooth muscle known as the detrusor muscle.
   d. The openings of the ureters and the internal urethral orifice form a funnel-shaped region of the bladder floor called the trigone.

4. Where is the male bladder located?
   a. Behind the rectum and below the prostate gland ✓
   b. In front of the rectum and below the prostate gland
   c. In front of the rectum and above the prostate gland
   d. Behind the rectum and above the prostate gland

5. The female bladder is located _____ the vagina and _____ the uterus.
   a. In front of, above ✓
   b. In front of, below
   c. Behind, below
   d. Behind, above

6. Urine is propelled along the ureters by _____ in the ureter walls.
   a. Capillary blood pressure ✓
   b. Nerve impulses
   c. Voluntary muscle contractions
   d. Smooth muscle contractions
7. Which of the following lists the correct order of the structures urine passes through as it leaves the kidneys on its way out of the body?  
   a. Renal pelvises, renal pyramids, ureters, bladder, urethra  
   b. Renal pyramids, renal pelvises, ureters, bladder, urethra  
   c. Renal pelvises, renal pyramids, urethra, bladder, ureters  
   d. Renal pyramids, renal pelvises, urethra, bladder, ureters  

✔

4. What are the involuntary muscle actions of micturition?  
   a. The detrusor muscle and internal urethral sphincter contract.  
   b. The detrusor muscle contracts and the external urethral sphincter relaxes.  
   c. The detrusor muscle and external urethral sphincter relax.  
   d. The detrusor muscle contracts and the internal urethral sphincter relaxes.  

✔

3. Where does urine production take place?  
   a. In the renal pyramids  
   b. In the renal cortex  
   c. In the renal pelvices  
   d. In the renal columns  

✔

5. Voluntary control of micturition is provided by the  
   a. Internal urethral sphincter.  
   b. External urethral sphincter.  
   c. Detrusor muscle.  
   d. Stretch receptors.  

✔

Kidney Anatomy and Physiology Multiple Choice Quiz 3

1. Which of the following is a shared characteristic of the right and left renal veins?  
   a. They are both the same length.  
   b. They both open into the inferior vena cava at the same level.  
   c. They both pass in front of the aorta just below the origin of the superior mesenteric artery.  
   d. They both split into an anterior and posterior branch upon entering the kidneys.  

✔

2. If your friend asked you to explain the renal pyramids, your explanation would likely include all of the following points except  
   a. They are conical masses located within the cortex of the kidneys.  
   b. They are conical masses located within the medulla of the kidneys.  
   c. Most of their mass is nephrons.  
   d. They narrow into apices as they converge toward the renal pelvis.  

✔

6. The anterior surface of the left kidney is in contact with portions of all of the following structures except  
   a. The stomach.  
   b. The liver.  
   c. The small intestine.  
   d. The spleen.  

✔

Pre-Lab Quiz: The Micturition Reflex

1. What triggers the micturition reflex?  
   a. Stretch receptors in the bladder wall  
   b. Detrusor muscle contractions in the bladder  
   c. Relaxation of the internal urethral sphincter  
   d. Relaxation of the external urethral sphincter  

✔

2. All of the following nervous system structures are involved in the micturition reflex except  
   a. The sacral spinal nerves.  
   b. The thalamus.  
   c. The hypothalamus.  
   d. The cerebral cortex.  

✔

3. All of the following statements accurately describe the internal and external urethral sphincters except  
   a. The internal urethral sphincter is voluntary and the external urethral sphincter is involuntary.  
   b. They provide for muscle control of urine flow outside the body.  
   c. They maintain urinary continence.  
   d. The internal urethral sphincter is involuntary and the external urethral sphincter is voluntary.  

✔

4. If your instructor asked you to do an oral report on the functions of the kidney’s structures, which of the following would you most likely say?  
   a. The renal pyramid functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.  
   b. The renal pelvis functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.  
   c. The renal pelvis contains nephrons that filter blood and create urine.  
   d. The renal cortex contains nephrons that filter blood and create urine.  

✔

5. What is the primary function of nephrons?  
   a. They break down urine into nutrients and waste.  
   b. They process blood plasma to form urine.  
   c. They supply the kidney with blood.  
   d. They drain blood from the kidney.  

✔

6. The anterior surface of the left kidney is in contact with portions of all of the following structures except  
   a. The stomach.  
   b. The liver.  
   c. The small intestine.  
   d. The spleen.  

✔
7. If your instructor asked you to indicate the path urine takes through the urinary system before it is excreted, which of the following lists the structures in the correct order?
   a. Kidneys, urethra, bladder, ureters
   b. Urethra, ureters, kidneys, bladder
   ✔️ c. Kidneys, ureters, bladder, urethra
   d. Bladder, ureters, kidneys, urethra

8. Which of the following distinguishes the right renal artery from the left?
   a. The right renal artery is shorter than the left.
   b. The right renal artery is longer than the left.
   ✔️ c. The right renal artery is higher than the left.
   d. The right renal artery lies behind the pancreas and the splenic vein, whereas the left renal artery lies behind the inferior vena cava, the head of the pancreas, and the duodenum.

9. All of the following are sections of the renal tubule except
   a. The proximal convoluted tubule.
   b. The distal convoluted tubule.
   ✔️ c. The glomerular capsule.
   d. The nephron loop.

10. The _____ supplies the kidney with blood, whereas the _____ drains blood from the kidney.
    a. Suprarenal vein, superior mesenteric artery
    b. Inferior vena cava, inferior adrenal artery
    ✔️ c. Renal artery, renal vein
    d. Renal vein, renal artery

Urine Production Multiple Choice Quiz 3

1. Which of the following accurately describes how the processes of reabsorption and secretion are related to each other?
   a. Before the body can secrete wastes, it must reabsorb water and nutrients.
   ✔️ b. The process of reabsorbing water and nutrients and secreting additional wastes creates urine.
   c. After the body secretes wastes, it must reabsorb water and nutrients.
   d. The body reabsorbs water and nutrients and then secretes any additional water and nutrients it does not need.

2. What is the impetus for glomerular filtration?
   a. Blood pressure inside the capillaries in the glomerulus is controlled by the surrounding capsular space.
   b. Blood pressure inside the capillaries in the glomerulus is equal to that of the surrounding capsular space.
   ✔️ c. Blood pressure inside the capillaries in the glomerulus is higher than that of the surrounding capsular space.
   d. Blood pressure inside the capillaries in the glomerulus is lower than that of the surrounding capsular space.

3. If your friend was concerned that his or her urine was darker than normal, you might ease your friend's mind by explaining all of the following except
   a. Excessive sweating can result in darker urine.
   ✔️ b. Excess hydration can result in darker urine.
   c. Dehydration can result in darker urine.
   d. Certain foods can result in darker urine.

4. What is the average urine volume per day for an adult?
   ✔️ a. 1.4 liters
   b. 0.5 liters
   c. 5 liters
   d. 10 liters

5. The process of secretion occurs when
   a. The filtrate passes out of the glomerular capsule and through the renal tubule.
   b. Waste ions and hydrogen ions are reabsorbed into the body through cells along the renal tubule wall.
   c. Urine passes out of the kidney, through the renal pelvis and ureters, and into the bladder.
   ✔️ d. Waste ions and hydrogen ions still in the blood pass from capillaries into the renal tubule.

6. If your instructor asked you to explain what prevents proteins and blood cells from going through the filtration membrane, which of the following would you most likely say?
   ✔️ a. Proteins and blood cells are too large to fit through the pores in the filtration membrane.
   b. The filtration membrane contains chemicals that repel proteins and blood cells.
   c. Blood pressure binds the proteins and blood cells to the glomerulus.
   d. The filtration membrane has a sticky surface that catches proteins and blood cells.
7. Which of the following accurately compares the conditions related to urine volume?
   a. Oliguria refers to excessive urine production, anuria refers to the virtual absence of urine production, and polyuria refers to urine output below 500 ml per day.
   b. Oliguria refers to excessive urine production, anuria refers to urine output below 500 ml per day, and polyuria refers to the virtual absence of urine production.
   c. Oliguria refers to the virtual absence of urine production, anuria refers to excessive urine production, and polyuria refers to urine output below 500 ml per day.
   ✔ d. Oliguria refers to urine output below 500 ml per day, anuria refers to the virtual absence of urine production, and polyuria refers to excessive urine production.

8. If your friend asked you to explain how the structures of the kidneys are involved in the processes of filtration, reabsorption, and secretion, which of the following would you most likely say?
   a. Filtration occurs in the renal pyramids, whereas reabsorption and secretion occur in the renal pelvises.
   b. Filtration and secretion occur in the renal pelvises, whereas reabsorption occurs in the renal pyramids.
   c. Filtration, reabsorption, and secretion all occur in the renal pyramids.
   ✔ d. Filtration, reabsorption, and secretion all occur in the renal pelvises.

9. The first step in urine formation is
   a. Micturition.
   b. Secretion.
   c. Reabsorption.
   ✔ d. Glomerular filtration.

10. If the hypothalamus detects decreased water concentration in the blood, it stimulates the pituitary gland to release more
    a. Angiotensinogen.
    b. Natriuretic hormones.
    ✔ c. Antidiuretic hormone.
    d. Aldosterone.

Urine Storage and Elimination Multiple Choice Quiz 3

1. Which structures maintain urinary continence?
   a. Ureters
   b. Kidneys
   c. Renal pelvises
   ✔ d. Internal and external urethral sphincters

2. If your friend asked you to explain the difference between the internal and external urethral sphincters, which of the following would you likely say?
   a. The internal urethral sphincter pushes urine from the urethra into the bladder, whereas the external urethral sphincter determines how much urine is expelled at a time.
   b. The internal urethral sphincter determines how much urine is expelled at a time, whereas the external urethral sphincter controls the intensity of urination.
   c. The internal urethral sphincter is voluntary, whereas the external urethral sphincter is involuntary.
   ✔ d. The internal urethral sphincter is involuntary, whereas the external urethral sphincter is voluntary.

3. Which of the following is a shared characteristic of the ureters, bladder, and urethra?
   ✔ a. They all have smooth muscle, which contracts to move urine through the urinary system.
   b. They are all tube-shaped to accommodate the flow of urine through the urinary system.
   c. They all change shape and size according to the amount of fluid they contain.
   d. They all have sphincters that control how quickly and how much urine moves through the urinary system.

4. Nerves in which region of the spinal cord stimulate the micturition reflex?
   a. Cervical
   b. Thoracic
   ✔ c. Sacral
   d. Lumbar

5. Which of the following does not accurately describe a difference between the female and male urethra?
   ✔ a. The female urethra is significantly longer than the male urethra.
   b. The female urethra is significantly shorter than the male urethra.
   c. The male urethra transports urine and semen, whereas the female urethra is a channel solely for urine.
   d. The male urethra is divided into regions, whereas the female urethra is not.

6. Ureters are tubes of smooth muscle that move urine from the renal pelvises to the bladder through
   a. Anastalsis.
   b. Reflux.
   c. Passive drainage.
   ✔ d. Peristalsis.
7. Which of the following describes how the bladder differs in shape when it is empty versus when it is moderately full?
   a. The empty bladder assumes an ovoid form, whereas the moderately full bladder is roughly pyramidal in shape.
   b. The empty bladder assumes a flattened form, whereas the moderately full bladder is perfectly circular in shape.
   ✔ c. The empty bladder is roughly pyramidal in shape, whereas the moderately full bladder assumes an ovoid form.
   d. The empty bladder is roughly ovoid in shape, whereas the moderately full bladder assumes a perfectly round form.

8. When the bladder reaches an approximate volume of 200–250 ml, the _____ muscle begins to contract and the _____ muscle begins to relax, creating the urge to micturate.
   a. Detrusor, internal urethral
   b. Internal urethral, detrusor
   c. Internal urethral, external urethral
   d. External urethral, detrusor
   ✔

9. All of the following are regions of the male urethra except
   a. Vestibular urethra.
   b. Spongy urethra.
   c. Prostatic urethra.
   d. Membranous urethra.
   ✔

10. Which of the following characteristics distinguishes the urethra from the other urologic organs?
   a. It is the only urologic organ that is lined with transitional epithelium.
   b. It is the only urologic organ that is structurally suited for large volume fluctuations.
   ✔ c. It is the only urologic organ that shows any significant anatomic difference between males and females.
   d. It is the only urologic organ that is identical in males and females.

Kidney Anatomy and Physiology Dissection Quiz
   - Select any part of the right or left kidney.
   - Select the right or left renal pelvis.
   - Select any of the renal pyramids.
   - Select the right or left ureter.
   - Select the right or left renal artery.
   - Select the right or left renal vein.

Urine Storage and Elimination Dissection Quiz
   - Select the right or left ureter.
   - Select any part of the right or left kidney.
   - Select any of the renal pyramids.
   - Select the right or left trigone of the bladder.
   - Select the detrusor muscle.
   - Select the urethra.
   - Select the right or left ureteral orifice.
   - Select the external urethral sphincter.
   - Select the internal urethral sphincter.

Urinary System Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Urinary System

1. All of the following statements accurately describe the functions of kidney structures except
   ✔ a. Nephrons in the renal columns produce urine.
   b. Nephrons in the renal pyramids produce urine.
   c. The renal pelvises funnel urine from the kidneys into the ureters.
   d. The collecting ducts deliver urine to the renal pelvises.

2. If your lab partner asked you to explain what triggers the process of micturition, which of the following would you most likely say?
   ✔ a. Voluntary relaxation of the detrusor muscle triggers the micturition reflex.
   b. Voluntary contraction of the internal and external urethral sphincters triggers the micturition reflex.
   c. Stretch receptors in the bladder wall trigger the micturition reflex.
   d. Involuntary relaxation of the internal and external urethral sphincters triggers the micturition reflex.

3. The urinary system of the average adult filters about _____ quarts of blood per day and produces about _____ liters of urine per day.
   a. 1000, 1.4
   ✔ b. 200, 1.4
   c. 200, 10.4
   d. 1000, 10.4

4. What is the source of the nitrogenous compounds in urine?
   a. Antibiotic absorption
   ✔ b. Protein metabolism
   c. Hormonal adjustments
   d. Lipid metabolism
5. Based on the position of the female bladder in relation to the vagina and uterus, what do you think happens to the bladder during the last month of pregnancy?
   a. The bladder is displaced and the urge to urinate is less frequent.
   b. The bladder is expanded and the urge to urinate is more frequent.
   c. The bladder is unaffected and the urge to urinate remains the same.
   ✔ d. The bladder is compressed and the urge to urinate is more frequent.

6. Blood passes through all of the following blood vessels on its way to be filtered in the nephron except
   a. The afferent arteriole.
   b. The glomerulus.
   ✔ c. The arcuate vein.
   d. The interlobar artery.

7. If your lab partner asked you what diuretic means, which of the following would you most likely say?
   ✔ a. A diuretic is something that increases urine volume by increasing the amount of water in urine.
   b. A diuretic is something that decreases urine volume by decreasing the amount of water in urine.
   c. A diuretic is something that prevents the kidneys from producing urine.
   d. A diuretic is something that increases water reabsorption in the renal tubules.

8. Which of the following statements accurately compares the steps in urine production?
   a. Filtration and reabsorption produce filtrate, whereas secretion converts filtrate into urine.
   b. Secretion is the first step in urine production, and then filtration and reabsorption occur simultaneously.
   ✔ c. Filtration, reabsorption, and secretion all occur in the renal tubules.
   d. Filtration occurs in the renal corpuscles, whereas reabsorption and secretion occur in the renal tubules.

9. All of the following statements accurately describe the position of the kidneys except
   a. The right kidney is lower than the left kidney to accommodate the liver.
   ✔ b. The kidneys are enclosed within the thoracic cage.
   c. The kidneys are located behind the peritoneum.
   d. The kidneys are located between the T12 and L03 vertebrae.

10. All of the following statements accurately distinguish the male urethra from the female urethra except
    a. The male urethra is much longer than the female urethra.
    ✔ b. The male urethra is much shorter than the female urethra.
    c. The male urethra is divided into prostatic, membranous, and spongy regions, whereas the female urethra is not broken into regions.
    d. Urine and semen pass through the male urethra, whereas only urine passes through the female urethra.

Reproductive System Overview Quizzes

Pre-Lab Quiz: Reproductive System Overview

1. What is the purpose of the reproductive system?
   a. To produce sex cells that carry genetic information from a male and a female
   ✔ b. To produce offspring that carries genetic information from a male and a female
   c. To produce offspring that carries genetic information from a male
   d. To produce offspring that carries genetic information from a male
2. All of the following statements accurately describe one of the categories of reproductive system organs except
   a. Organs that produce sex cells.
   b. Organs that store or transport sex cells.
   c. Organs that produce fertilized eggs.
   d. Organs that support reproduction.

3. When the male and female sex cells unite, they form
   a. A zygote.
   b. An embryo.
   c. A fetus.
   d. A blastocyst.

4. The events that occur after an embryo implants in the uterus are called
   a. Fertilization.
   b. Pregnancy.
   c. Sexual reproduction.
   d. Zygote development.

Pre-Lab Quiz: Sex Cells and Sexual Reproduction

1. As soon as the genetic information on the chromosomes from the two parents merges into one nucleus in the zygote, it divides and becomes
   a. A fetus.
   b. A blastocyst.
   c. An embryo.
   d. A secondary oocyte.

2. Which of the following statements is true regarding the sex chromosomes carried by oocytes and sperm cells?
   a. Sperm can only carry Y chromosomes.
   b. Oocytes can only carry Y chromosomes.
   c. Oocytes can carry X or Y chromosomes.
   d. Oocytes can only carry X chromosomes.

3. Which of the following is one of the outer layers that surrounds the oocyte and the zygote?
   a. The acrosome
   b. The zona pellucida
   c. The mitochondria
   d. The nucleus

4. Which part of the sperm cell contains its genetic information, or chromosomes?
   a. The tail
   b. The midpiece
   c. The head
   d. The corona radiata

5. All of the following are parts of sperm cells except
   a. The tail.
   b. The head.
   c. The corona radiata.
   d. The midpiece.

6. Sperm and eggs have ____ chromosomes, and zygotes have ____ chromosomes.
   a. 46, 23
   b. 23, 46
   c. 23, 23
   d. 46, 46

7. What is the site of implantation for the blastocyst?
   a. The uterine tube
   b. The ovary
   c. The cervix
   d. The endometrium

8. It takes about ____ days for the fertilized egg to reach the uterus and by that time, it has become a collection of hundreds of cells, called a ____.
   a. 5, blastocyst
   b. 10, morula
   c. 5, secondary oocyte
   d. 10, blastocyst

9. All of the following statements accurately describe the process of conception except
   a. The sperm and oocyte meet inside the upper uterine tube.
   b. Many sperm fertilize the oocyte.
   c. Only one sperm fertilizes the oocyte.
   d. The nuclei of the sperm and oocyte fuse inside the fertilized egg.

10. Which of the following accurately traces the path sperm take on their way to the unfertilized oocyte?
    a. Vagina, uterine tube, uterus, cervix
    b. Cervix, vagina, uterus, uterine tube
    c. Vagina, cervix, uterus, uterine tube
    d. Cervix, vagina, uterine tube, uterus

Pre-Lab Quiz: Pregnancy and Fetal Development

1. How many days does it take the blastocyst to divide into two groups of cells?
   a. 5
   b. 10
   c. 15
   d. 20

2. All of the following statements are true regarding the blastocyst cells except
   a. One group of cells will become the embryo.
   b. Some of the embryonic cells will develop into part of the placenta.
   c. One group of cells will protect and nourish the embryo.
   d. Some of the non-embryonic cells will develop into part of the placenta.
3. Which of the following statements describes the role of the amnion?
✔ a. It fills with fluid and cushions the developing embryo.
   b. It becomes part of the digestive tract.
   c. It enables the embryo to take in nutrition.
   d. It enables the embryo to eliminate waste.

4. All of the following hormones play a role in pregnancy except
   a. Human chorionic gonadotropin (hCG).
   b. Prolactin.
   c. Progesterone.
   ✔ d. Human growth hormone (hGH).

5. Which of the following statements accurately describes human chorionic gonadotropin (hCG)?
   a. It spikes after the first three months of pregnancy, and it keeps the placenta functioning properly.
   b. Its levels remain constant throughout pregnancy, and it helps the uterus grow.
   c. Its levels rise throughout pregnancy, and it is responsible for milk production.
   ✔ d. It spikes at the beginning of the pregnancy, and it is the basis for most pregnancy tests.

6. All of the following statements accurately describe neurulation except
   a. It occurs at week 5 of the pregnancy.
   ✔ b. It occurs at week 9 of the pregnancy.
   c. A neural plate forms and develops folds that fuse to form a neural tube.
   d. The neural tube develops into the brain and spinal cord.

7. An early embryo’s internal and external genitalia are ______. If the embryo has an X and a Y chromosome, ______ is produced, triggering ______ development.
   ✔ a. Undifferentiated, testosterone, male
   b. Undifferentiated, estrogen, female
   c. Male, estrogen, female
   d. Female, testosterone, male

8. At how many weeks of pregnancy does the embryo become a fetus?
   a. 4
   b. 15
   ✔ c. 9
   d. 20

9. How does the fetus receive the nutrients needed for growth and development?
   ✔ a. The fetus receives nutrients from the yolk sac.
   b. The fetus receives nutrients that diffuse from maternal blood into fetal blood vessels in the placenta.
   c. The fetus receives nutrients that diffuse from the mother’s digestive system into the placenta.
   d. The fetus receives nutrients from maternal blood that flows into the embryo.

**Pre-Lab Quiz: Birth**

1. What signals the beginning of labor?
   a. Dilation of the cervix
   b. Delivery of the placenta
   c. Expulsion of the amniotic fluid
   ✔ d. Smooth muscle contractions of the uterus

2. Which hormone regulates the contractions that push the baby out of the mother’s body?
   a. Progesterone
   b. Oxytocin
   ✔ c. Estrogen
   d. Prolactin

3. As the baby moves toward the birth canal, the ______ dilates.
   ✔ a. Cervix
   b. Uterus
   c. Vagina
   d. Uterine tube

4. During birth, smooth muscle contractions do all of the following except
   a. Move the head of the fetus to the cervix.
   b. Push the fetus through the cervix and out of the body.
   c. Dissolve the placenta into the uterus.
   ✔ d. Detach the placenta from the uterus and expel it.

**Female Reproductive System Pre-Lab Quizzes**

**Pre-Lab Quiz: Female Reproductive Anatomy Overview**

1. All of the following structures are female external genitalia except
   a. The vestibule.
   b. The mons pubis.
   ✔ c. The vagina.
   d. The labia majora.
2. All of the following are core functions of the vagina except
   a. Serving as the birth canal.
   b. Carrying menstrual flow outside the body.
   ✔  c. Carrying urine outside the body.
   d. Receiving the penis during intercourse.

3. Which structure connects the uterus to the vagina?
   ✔  a. The cervix
   b. The fundus
   c. The uterine tube
   d. The vestibule

4. All of the following are layers of the uterine body except
   a. The infundibulum.
   ✔  b. The endometrium.
   c. The myometrium.
   d. The perimetrium.

5. Which of the following statements accurately describes the ampulla of the uterine tube?
   a. It connects with the uterus.
   ✔  b. It curves over the ovary.
   c. It is surrounded by fimbriae.
   d. It is open to the abdomen.

6. Which of the following accurately lists the three coats of the uterine tubes, from exterior to interior?
   a. Mucous, muscular, serous
   b. Serous, mucous, muscular
   ✔  c. Mucous, serous, muscular
   d. Serous, muscular, mucous

7. After leaving the ovary, an unfertilized egg enters the
   a. Cervix.
   b. Uterus.
   ✔  c. Uterine tube.
   d. Vagina.

8. The ovaries produce all of the following except
   a. Oocytes.
   b. Progesterone.
   c. Estrogen.
   ✔  d. Oxytocin.

Pre-Lab Quiz: The Ovaries and Oogenesis

1. What structure connects the ovaries to the uterus?
   a. The uterine ligament
   ✔  b. The ovarian ligament
   c. The suspensory ligament
   d. The peritoneal ligament

2. All of the following statements accurately describe ovarian follicles except
   ✔  a. Each ovary has one central follicle.
   b. Each ovary has numerous follicles that are embedded in the cortex, immediately beneath the ovary’s surface.
   c. Oocytes develop within the follicles.
   d. During ovulation, a follicle gradually approaches the surface of the ovary and bursts.

3. The cortex of the embryonic ovary contains numerous stem cells called _____ that divide by _____.
   a. Oogonia, meiosis
   ✔  b. Oogonia, mitosis
   c. Oocytes, mitosis
   d. Oocytes, meiosis

4. At the onset of female puberty, tens of thousands of _____ each form part of a _____ follicle in the ovaries.
   ✔  a. Primary oocytes, primordial
   b. Primary oocytes, mature
   c. Secondary oocytes, primordial
   d. Secondary oocytes, mature

5. Many primary oocytes complete _____ to become secondary oocytes, each containing _____ chromosomes.
   a. Meiosis II, 23
   b. Meiosis I, 46
   c. Meiosis II, 46
   ✗  d. Meiosis I, 23

6. Between menarche and menopause, one _____ is released into the uterine tube. If it is fertilized, it will complete _____.
   ✗  a. Secondary oocyte, meiosis I
   b. Primary oocyte, meiosis II
   ✔  c. Secondary oocyte, meiosis II
   d. Primary oocyte, meiosis I

7. All of the following statements accurately describe meiosis except
   a. It involves two cell divisions.
   ✔  b. It produces two diploid cells that are identical clones of the parent.
   c. It only happens during the formation of sex cells.
   d. It produces four haploid cells that are genetically unique.
Pre-Lab Quiz: Ovulation, Fertilization, and Implantation

1. What carries ovulated oocytes from the ovaries into the uterine tubes?
   a. Smooth muscle contractions of the uterine tubes
   ✔ b. Currents set up by the movements of cilia covering the fimbriae
   c. Smooth muscle contractions of the ovaries
   d. Currents set up by the movements of cilia in the follicles

2. The uterine tubes are supported by part of the broad ligament called the
   a. Mesometrium.
   b. Mesovarium.
   ✔ c. Mesosalpinx.
   d. Peritoneum.

3. Which of the following accurately lists the three divisions of the uterine tube, from the ovary to the uterus?
   a. Isthmus, ampulla, infundibulum
   b. Infundibulum, isthmus, ampulla
   c. Ampulla, infundibulum, isthmus
   ✔ d. Infundibulum, ampulla, isthmus

4. Where does fertilization of the oocyte occur?
   ✔ a. In the ampulla of the uterine tube
   b. In the ovaries
   c. In the uterus
   d. In the infundibulum of the uterine tube

5. What propels an oocyte down the length of the uterine tube to the uterus?
   a. Movements of cilia in the fimbriae
   ✔ b. Smooth muscle contractions in the uterine tube
   c. Smooth muscle contractions in the uterus
   d. Movements of cilia in the uterine wall

6. Once a fertilized oocyte reaches the uterus, where does it embed?
   a. In the fundus
   ✔ b. In the uterine wall
   c. In the ampulla
   d. In the cervix

Pre-Lab Quiz: The Vagina and External Genitalia

1. All of the following statements accurately describe the clitoris except
   a. When the female is sexually aroused, it engorges with blood and swells around the vaginal opening.
   ✔ b. It consists of two corpora cavernosa, composed of erectile tissue enclosed in a dense fibrous membrane.
   c. Much of its body is covered by a hoodlike prepuce, and the exposed region is the glans.
   d. It has a high concentration of nerve endings and functions in female sexual arousal.

2. Which of the following statements accurately compares the labia majora and labia minora?
   a. The labia majora enclose the vestibule, whereas the labia minora form the posterior boundary of the pudendum.
   ✔ b. Both the labia majora and labia minora have an outer pigmented surface covered with pubic hair.
   c. The labia majora are covered with pubic hair, whereas the labia minora lack pubic hair.
   d. Both the labia majora and labia minora have an inner surface with numerous oil and sweat glands.

3. The female external genitalia is also known as the
   a. Vagina.
   ✔ b. Vulva.
   c. Mons pubis.
   d. Vestibule.

4. The vestibule encompasses all of the following except
   a. The vaginal orifice.
   b. The external urethral orifice.
   c. The hymen.
   ✔ d. The clitoris.

5. Which of the following statements is true regarding the cervix?
   a. It secretes a clear, viscous alkaline mucus that changes at different times during the menstrual cycle.
   ✔ b. It is part of the external genitalia of the female reproductive system.
   c. Its mucous membrane lining has transverse ridges called rugae.
   d. It consists of serous, muscular, and mucous layers.

6. All of the following statements accurately describe the structure of the vagina except
   a. It is a duct that contains smooth muscle.
   ✔ b. It consists of numerous follicles that are embedded in its cortex.
   c. It has an internal mucous membrane lining that is continuous with the lining of the uterus.
   d. Its lining has transverse ridges called rugae.

7. The vagina extends from the _____ of the uterus to the _____.
   a. Vestibule, cervix
   b. Fundus, prepuce
   ✔ c. Cervix, vestibule
   d. Cervix, prepuce
Pre-Lab Quiz: Female Sex Hormones

1. The mammary glands are modified _____ glands that secrete milk.
   a. Oil
   ✔ b. Sweat
   c. Tear
d. Mucous

2. All of the following hormones control the process of lactation except
   ✔ a. Estrogen.
   b. Prolactin.
c. Progesterone.
d. Oxytocin.

3. Estrogen and progesterone are produced by the
   a. Anterior pituitary gland.
   b. Ovaries.
   ✔ c. Posterior pituitary gland.
d. Hypothalamus.

4. All of the following hormones are produced by the anterior pituitary gland except
   a. Prolactin.
   b. Luteinizing hormone.
   ✔ c. Oxytocin.
d. Follicle-stimulating hormone.

5. Which of the following statements accurately describes what happens during the ovarian cycle?
   a. An ovarian follicle develops and releases LH, which causes thickening of the uterine lining.
   b. An ovarian follicle develops and progesterone stimulates the follicle to release a secondary oocyte.
   c. An ovarian follicle develops and releases progesterone, which causes thickening of the uterine lining.
   ✔ d. An ovarian follicle develops and LH stimulates the follicle to release a secondary oocyte.

6. All of the following are phases of the uterine cycle except
   ✔ a. The luteal phase.
   b. The menstrual phase.
c. The proliferative phase.
d. The secretory phase.

7. What day of the female reproductive cycle does ovulation normally occur?
   a. 28
   b. 35
   ✔ c. 14
d. 5

8. Women of childbearing age go through a cycle about every _____ days that makes it possible to become pregnant.
   a. 15
   b. 20
   ✔ c. 40
d. 28

Female Reproductive System Multiple Choice Quiz 3

1. Which of the following secrete estrogen and progesterone, as well as produce oocytes?
   a. Fimbriae
   b. Pelvic ligaments
   c. Uterine tubes
   ✔ d. Ovaries

2. The _____ arteries branch from the _____ arteries and supply the uterus.
   a. Ovarian, internal iliac
   b. Ovarian, external iliac
   ✔ c. Uterine, internal iliac
d. Uterine, external iliac

3. Which hormone stimulates the follicle in the ovary to release an oocyte while the uterine lining is thickening?
   a. Estrogen
   b. Progesterone
   ✔ c. Follicle-stimulating hormone (FSH)
d. Luteinizing hormone (LH)

4. Which gland or lobe of a gland stimulates the ovaries to produce estrogen and progesterone?
   a. Hypothalamus
   b. Mammary gland
   ✔ c. Anterior pituitary
d. Posterior pituitary

5. The mammary glands contain _____ that secrete milk into _____ that terminate in the nipples.
   a. Areolae, ducts
   b. Lobules, areolae
   ✔ c. Lobules, ducts
d. Ducts, lobules

6. Which of the following best describes the relationship between the pelvic ligaments and the female reproductive organs?
   a. The pelvic ligaments support the uterus, ovaries, and external genitalia.
   b. The pelvic ligaments connect the uterus, ovaries, and external genitalia.
   ✔ c. The pelvic ligaments support the uterus, ovaries, and vagina.
d. The pelvic ligaments connect the uterus, ovaries, and vagina.
7. If you were explaining the function of oogonia in oogenesis to a classmate, which of the following would you say?
   a. Oogonia are stem cells that go through mitosis during fetal development. Some of them develop into 23-chromosome secondary oocytes.
   b. Oogonia are stem cells that go through mitosis during female puberty. Some of them develop into 23-chromosome secondary oocytes.
   c. Oogonia are stem cells that go through mitosis during female puberty. Some of them develop into 46-chromosome primary oocytes.
   d. Oogonia are stem cells that go through mitosis during fetal development. Some of them develop into 46-chromosome primary oocytes.

8. What is the importance of the uterine tube in ovulation?
   a. The uterine tube transports an ovulated oocyte out of the ovary and into the uterus, where it may be fertilized and then implanted.
   b. The uterine tube transports an ovulated oocyte out of the ovary. If the oocyte is fertilized, it implants in the uterus.
   c. The uterine tube transports an ovulated and fertilized oocyte out of the ovary. The oocyte then implants in the uterus.
   d. The uterine tube is not involved in ovulation.

9. How does the pituitary gland relate to the female sex hormones?
   a. The anterior pituitary releases estrogen.
   b. The posterior pituitary releases estrogen.
   c. The anterior pituitary stimulates the ovaries to produce estrogen.
   d. The posterior pituitary stimulates the ovaries to produce estrogen.

10. Which of the following accurately compares the function of the lactation hormones?
    a. The anterior pituitary releases prolactin, which stimulates milk production. The posterior pituitary releases progesterone, which stimulates milk release.
    b. The anterior pituitary releases oxytocin, which stimulates milk production. The posterior pituitary releases progesterone, which stimulates milk release.
    c. The anterior pituitary releases oxytocin, which stimulates milk production. The posterior pituitary releases prolactin, which stimulates milk release.
    d. The anterior pituitary releases prolactin, which stimulates milk production. The posterior pituitary releases oxytocin, which stimulates milk release.

Female Reproductive System Dissection Quiz

1. Which of the following statements accurately describes one of the female external genitalia structures?
   a. The labia minora are two prominent longitudinal cutaneous folds that form the boundaries of the cleft into which the urethra and vagina open.
   b. The greater vestibular glands are two small rounded bodies, located on either side of the vaginal orifice, that produce mucus.
   c. The prepuce is a rounded eminence of fatty tissue, located in front of the pubic symphysis.
   d. The mons pubis is an erectile structure that is partially hidden within the anterior end of the labia minora.

2. If you were discussing the structure and functions of mammary glands with your lab partner, which of the following would you not want to say?
   a. Mammary glands are only present in women.
   b. Mammary glands are accessory glands.
   c. Mammary glands contain a large amount of adipose tissue.
   d. Mammary glands are modified sweat glands that produce milk.

3. All of the following structures are considered to be internal genitalia except
   a. The vagina.
   b. The uterus.
   c. The vestibule.
   d. The ovaries.
4. What marks the beginning of each female reproductive cycle?
   ✔ a. Menstruation
   b. Ovulation
   c. Oogenesis
   ✔ d. Menarche

5. Which of the following describes how the uterus supports the fetus as it develops?
   a. The uterus produces progesterone, which supports fetal growth.
   b. The uterus produces estrogen, which supports fetal growth.
   c. The uterus produces contractions that stimulate fetal growth.
   ✔ d. The uterus grows to support the fetus and provides a blood supply.

6. If you were explaining the path of an oocyte, from oogenesis to implantation, you would include all of the following steps except
   ✔ a. The secondary oocyte passes from the uterine tube into the uterus, where it is fertilized before implanting in the uterine wall.
   b. The ovaries produce oocytes and release one secondary oocyte per cycle in a process called ovulation.
   c. The secondary oocyte passes from the ovary into a uterine tube, where it is fertilized in the ampulla.
   d. The fertilized oocyte develops into a blastocyst as it passes from the uterine tube into the uterus, where the blastocyst implants in the uterine wall.

7. If you were explaining the functions of the female sex hormones to your lab partner, you would likely say all of the following except
   a. Estrogen stimulates follicle growth.
   b. Prolactin stimulates milk production.
   c. Oxytocin stimulates uterine contractions and milk letdown.
   d. Luteinizing hormone stimulates ovulation.

8. What allows the uterus to expand during pregnancy?
   a. Its thin and flexible uterine wall
   b. Its middle layer of smooth muscle
   c. Its ability to dilate the cervix
   ✔ d. Its free-standing position in the pelvic cavity

9. If your lab partner asked you to explain how an ectopic pregnancy occurs, which of the following would you say?
   a. An ectopic pregnancy occurs when a fertilized oocyte moves through the uterine tube and implants in the uterine wall.
   ✔ b. An ectopic pregnancy occurs when a fertilized oocyte accidentally moves from the infundibulum into the abdominal cavity and implants there.
   c. An ectopic pregnancy occurs when a fertilized oocyte passes through the reproductive system without implanting.
   d. An ectopic pregnancy occurs when a non-fertilized oocyte moves through the uterine tube and implants in the uterine wall.

10. _____ chromosomes are present in oocytes after the first meiotic division and _____ chromosomes are present after the second meiotic division.
   a. 23, 46
   ✔ b. 46, 23
   c. 46, 46
   ✔ d. 23, 23

---

Female Reproductive System Dissection Quiz
- Select any part of the uterus.
- Select any part of the right or left ovary.
- Select the right or left ovarian ligament.
- Select the right or left fimbriae.
- Select the right or left uterine tube.
- Select the vestibule.
- Select the clitoris.
- Select the prepuce.
- Select the labia minora.
- Select the vagina.

---

Male Reproductive System Pre-Lab Quizzes

Pre-Lab Quiz: Male Reproductive Anatomy

1. The penis contains spongy, erectile tissue that fills with _____, causing it to stiffen during sexual arousal.
   a. Semen
   ✔ b. Blood
   c. Edema
   d. Mucus

2. All of the following are parts of the male urethra except
   a. Seminiferous.
   ✔ b. Prostatic.
   c. Membranous.
   d. Cavernous (spongy).
3. All of the following statements accurately describe the ejaculatory ducts except
   ✔ a. They consist of numerous lobules and seminiferous tubules.
   b. They are formed by the union of the seminal vesicle ducts and the vas deferens ducts.
   ✔ c. There are two ejaculatory ducts, one for each testis.
   d. They carry semen to the prostatic urethra.

4. The vas deferens carries semen from the _____ to the _____.
   a. Testes, epididymis
   ✔ b. Epididymis, ejaculatory duct
   c. Ejaculatory duct, prostatic urethra
   d. Testes, ejaculatory duct

5. Where do sperm cells mature?
   a. In the testes
   ✔ b. In the vas deferens
   c. In the epididymis
   d. In the ejaculatory duct

6. All of the following statements accurately describe the testes except
   a. They produce sperm.
   ✔ b. They are accessory glands.
   c. They produce testosterone.
   d. They are the male gonads.

---

Pre-Lab Quiz: The Testes and Spermatogenesis

1. All of the following statements accurately describe the external anatomy of the testes except
   ✔ a. Numerous lobules and seminiferous tubules form the fibrous covering of the testes.
   b. The tunica albuginea is a dense membrane that forms the fibrous covering of the testes.
   c. The tunica vaginalis is a pouch of serous membrane that covers the testes.
   d. The testes are suspended in the scrotum by spermatic cords.

2. Sperm develop in the _____ of the testes.
   a. Tunica vaginalis
   b. Tunica albuginea
   ✔ c. Spermatic cords
   d. Seminiferous tubules

3. All of the following structures pass through the spermatic cords except
   a. The vas deferens.
   ✔ b. Seminiferous tubules.
   c. Blood vessels.
   d. Nerves.

4. Sperm production begins with stem cells called
   a. Spermatids.
   b. Primary spermatocytes.
   ✔ c. Spermatogonia.
   d. Secondary spermatocytes.

5. Spermatogonia divide by _____ to produce _____.
   a. Mitosis, secondary spermatocytes
   b. Meiosis, primary spermatocytes
   ✔ c. Mitosis, primary spermatocytes
   d. Meiosis, secondary spermatocytes

6. Primary spermatocytes divide by _____ to produce _____ that have _____ chromosomes.
   a. Meiosis, spermatids, 46
   b. Mitosis, secondary spermatocytes, 46
   ✔ c. Mitosis, spermatids, 23
   d. Meiosis, secondary spermatocytes, 23

7. _____ mature into sperm cells in the _____.
   a. Spermatids, epididymis
   b. Secondary spermatocytes, epididymis
   ✔ c. Spermatids, testes
   d. Secondary spermatocytes, testes

---

Pre-Lab Quiz: The Reproductive Ducts and the Urethra

1. Which of the following lists the correct order of the male reproductive ducts sperm passes through on its way from the testes to the urethra?
   a. Ejaculatory ducts, vas deferens, epididymis
   ✔ b. Epididymis, vas deferens, ejaculatory ducts
   c. Vas deferens, epididymis, ejaculatory ducts
   d. Vas deferens, ejaculatory ducts, epididymis

2. All of the following statements accurately describe the epididymis except
   a. It consists of a head, body, and tail.
   b. It stores sperm for two to three weeks or longer, while they mature.
   ✔ c. When it is unraveled, it is more than 6 m long.
   d. It attaches to the prostatic urethra.

3. Which of the following statements accurately describes the vas deferens?
   a. They attach directly to the testes.
   ✔ b. They are located between the peritoneal membrane and the lateral wall of the pelvis.
   c. They open into the prostatic urethra.
   d. They are highly coiled ducts.
4. At the base of the prostate, the vas deferens narrow and join the base of the ______ to form the ______.
   ✔ a. Seminal vesicles, ejaculatory ducts
   b. Epididymis, ejaculatory ducts
   c. Seminal vesicles, epididymis
   d. Ejaculatory ducts, seminal vesicles

5. All of the following are layers of the ejaculatory duct wall except
   a. A fibrous layer.
   b. A smooth muscle layer.
   c. A mucous membrane.
   ✔ d. A fibromuscular coat.

6. What is the shortest part of the urethra?
   a. The prostatic urethra
   ✔ b. The membranous urethra
   c. The spongy urethra
   d. The cavernous urethra

7. All of the following statements accurately describe the spongy urethra except
   a. It is the longest part of the urethra.
   b. It has bulbous and pendulous portions.
   ✔ c. It contains the verumontanum.
   d. It receives ducts from the bulbourethral glands.

Pre-Lab Quiz: The Accessory Glands and Semen Production

1. All of the following are accessory glands of the male reproductive system except
   a. The seminal vesicles.
   b. The prostate.
   ✔ c. The testes.
   d. The bulbourethral glands.

2. Which of the following statements accurately describes the secretions produced by the seminal vesicles?
   ✔ a. They secrete fluid that contains sugars, prostaglandins, and other substances.
   b. They secrete alkaline mucus.
   c. They secrete fluid that contains enzymes and other substances.
   d. They secrete sperm cells.

3. The secretions produced by the seminal vesicles make up about _____ of the semen.
   a. Two-thirds
   b. One-third
   c. Half
   ✔ d. One-fourth

4. What is the main function of the secretions produced by the prostate?
   a. To nourish and supply the sperm cells
   b. To counteract acidity from urine
   c. To trigger sperm cell production
   ✔ d. To help the sperm survive in the female reproductive tract

5. All of the following statements accurately describe the bulbourethral glands and their secretions except
   a. They consist of lobules that produce alkaline mucus.
   ✔ b. They are chestnut-sized glands located immediately below and around the internal opening of the urethra.
   c. Their secretions counteract any acidity from urine that can interfere with sperm motility.
   d. They are pea-sized, rounded, yellowish glands located behind and lateral to the upper urethra.

6. The accessory glands produce
   a. Semen.
   ✔ b. Seminal fluid.
   c. Sperm.
   d. Spermatocytes.

7. Semen is a mixture of
   a. Seminal fluid and sperm.
   b. Enzymes and mucus.
   c. Sperm and urine.
   d. Sugars and prostaglandins.

Pre-Lab Quiz: The Penis and the Male Sexual Response

1. What is the function of the sponge-like tissue that makes up the corpora cavernosa?
   a. It cushions and protects the inner structures of the penis.
   ✔ b. It fills with blood during sexual arousal and causes the penis to become erect.
   c. It secretes seminal fluid, which mixes with sperm to form semen.
   d. It stores semen and releases it during sexual intercourse.

2. All of the following statements accurately describe the corpus spongiosum except
   a. It consists of sponge-like erectile tissue.
   b. It is located in the groove between the corpora cavernosa.
   ✔ c. It ends abruptly some distance behind the glans penis.
   d. Its anterior end is expanded to form the glans penis.
3. Which portion of the urethra is located entirely inside the penis?
   a. The prostatic urethra
   ✔ b. The spongy urethra
   c. The membranous urethra
   d. The preprostatic urethra

4. During sexual arousal _____ in the penis dilate and _____ constrict, which cause the erectile tissue to swell and produce an erection.
   a. Arteries, veins
   ✔ b. Veins, arteries
   c. Capillaries, veins
   d. Arteries, capillaries

5. All of the following statements accurately describe the internal pudendal artery except
   a. Its course is the same in both sexes.
   ✔ b. It is larger in the female than in the male.
   c. It is larger in the male than in the female.
   d. It gives rise to the dorsal and deep arteries of the penis.

6. During sexual response, peristalsis pushes _____ up through the vas deferens, and it mixes with secretions from the accessory glands to form _____, which is ejaculated through the urethra.
   a. Seminal fluid, semen
   b. Sperm, seminal fluid
   ✔ c. Sperm, semen
   d. Semen, sperm

---

Pre-Lab Quiz: Male Sex Hormones

1. What is the anterior pituitary’s role in the production of male sex hormones?
   a. It produces testosterone.
   ✔ b. It stimulates the epididymis to produce androgens.
   c. It stimulates the vas deferens to produce androgens.
   d. It stimulates the testes to produce androgens.

2. Which of the following is a male sex hormone?
   a. Progesterone
   ✔ b. Testosterone
   c. Estrogen
   d. Luteinizing hormone

3. Which of the following accurately describes the functions of testosterone?
   a. It governs the production of the male sex hormones.
   b. It stimulates the production of sperm and seminal fluid.
   ✔ c. It governs the early development of the male reproductive system and development of the male secondary sexual features.
   d. It contributes half the genetic instructions necessary for the development of the embryo.

4. In addition to being the primary male reproductive organs, the testes are also _____ glands.
   a. Exocrine
   ✔ b. Endocrine
   c. Accessory
   d. Mammary

5. Which gland or lobe of a gland stimulates the testes to produce androgens?
   a. Hypothalamus
   b. Prostate
   ✔ c. Anterior pituitary
   d. Posterior pituitary

---

Male Reproductive System Multiple Choice Quiz 3

1. The vessels and nerves that supply the testes pass through tubes of _____ called the spermatic cords.
   a. Muscle
   b. Lymphatic tissue
   ✔ c. Fascia
   d. Membrane

2. How many chromosomes do immature sperm cells have once spermatogenesis concludes?
   a. 23
   b. 46
   ✔ c. 18
   d. 36

3. Which of the following accurately lists the accessory glands of the male reproductive system?
   a. The epididymis, prostate, and bulbourethral glands
   b. The seminal vesicles, prostate, and bulbourethral glands
   ✔ c. The seminal vesicles, epididymis, and bulbourethral glands
   d. The seminal vesicles, testes, and prostate

4. The spongy urethra passes through the _____ to the tip of the glans penis.
   a. Tunica vaginalis
   b. Tunica albuginea
   ✔ c. Corpus spongiosum
   d. Corpora cavernosa

5. Which gland or lobe of a gland stimulates the testes to produce androgens?
   a. Hypothalamus
   b. Prostate
   ✔ c. Anterior pituitary
   d. Posterior pituitary
6. If you were explaining the function of spermatogonia to a classmate, which of these would you say?
   a. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce secondary spermatocytes.
   b. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce primary spermatocytes.
   ✔ c. Spermatogonia are stem cells that develop into immature sperm in the seminiferous tubules. They divide by meiosis to produce primary spermatocytes.
   d. Spermatogonia are stem cells that develop into immature sperm in the seminiferous tubules. They divide by meiosis to produce secondary spermatocytes.

7. How would you describe the duct system that delivers sperm?
   a. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
   b. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.
   ✔ c. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
   d. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.

8. Which of the following accurately compares the corpora cavernosa and the corpus spongiosum?
   a. The corpora cavernosa and corpus spongiosum both consist of erectile tissue. The corpora cavernosa include the glans, and the urethra runs through them.
   b. The corpora cavernosa and corpus spongiosum both consist of erectile tissue. The corpus spongiosum includes the glans, and the urethra runs through it.
   ✔ c. The corpora cavernosa consist of erectile tissue, while the corpus spongiosum does not. The corpus spongiosum includes the glans, and the urethra runs through it.
   d. The corpora cavernosa consist of erectile tissue, while the corpus spongiosum does not. The corpora cavernosa include the glans, and the urethra runs through them.

9. If you were explaining the blood supply to the male genitalia to someone who does not understand it, you might say any of the following except
   a. The constriction of veins and dilation of arteries in the penis cause the erectile tissue to swell, producing an erection.
   b. Branches of the internal pudendal artery supply the male genitalia.
   ✔ c. During sexual arousal, arteries in the penis dilate and veins constrict.
   d. The dilation of veins and constriction of arteries in the penis causes the erectile tissue to swell, producing an erection.

10. Which of the following best explains how the male sexual response works?
    a. Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the vas deferens.
    b. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the urethra.
    c. Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the vas deferens.
    ✔ d. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the urethra.

Male Reproductive System Dissection Quiz
- Select the corpus spongiosum.
- Select either of the corpora cavernosa.
- Select any part of the prostate.
- Select the right or left seminal vesicle.
- Select either of the testes.
- Select the right or left epididymis.
- Select the right or left spermatic cord.
- Select any part of the prostatic urethra.
- Select the right or left ejaculatory duct.
- Select the glans penis.
Male Reproductive System Post-Lab Quizzes

Post-Lab Multiple Choice Quiz: Male Reproductive System

1. Which structures are part of the male reproductive duct system?
   ✔ a. The vas deferens
   b. The seminal vesicles
   c. The spermatic cords
   d. The seminiferous tubules

2. The secretions produced by the male accessory glands include all of the following except
   a. Alkaline mucus.
   ✔ b. Sperm.
   c. Prostaglandins.
   d. Sugars.

3. Since the urethra passes directly through the prostate, what physiological problems do you think might be caused by an enlarged prostate?
   a. An enlarged prostate can impede blood flow to the male genitalia.
   ✔ b. An enlarged prostate can impede urination and sexual function.
   c. An enlarged prostate can impede spermatogenesis.
   d. An enlarged prostate can impede testosterone production.

4. Which of the following statements accurately compares the corpora cavernosa and corpus spongiosum of the penis?
   a. At their anterior end, both structures expand and merge to form the glans penis.
   b. The corpus spongiosum is composed of sponge-like erectile tissue, whereas the corpora cavernosa are composed of smooth muscle tissue.
   c. At their anterior end, the corpora cavernosa expand and merge to form the glans penis, whereas the corpus spongiosum ends abruptly some distance behind the glans penis.
   ✔ d. They are both composed of sponge-like erectile tissue that fills with blood during sexual arousal.

5. The male accessory glands include the
   ✔ a. Prostate.
   b. Testes.
   c. Epididymis.
   d. Vas deferens.

6. Which of the following statements accurately compares sperm, seminal fluid, and semen?
   a. Sperm are the male gametes produced by the testes, seminal fluid comprises the secretions of the accessory glands, and semen is a mixture of seminal fluid and sperm.
   ✔ b. Semen comprises the male gametes produced by the testes, sperm are the secretions of the accessory glands, and semen is a mixture of semen and sperm.
   c. Seminal fluid comprises the male gametes produced by the testes, semen comprises the secretions of the accessory glands, and seminal fluid is a mixture of semen and sperm.
   d. Sperm are the male gametes produced by the testes, semen comprises the secretions of the accessory glands, and seminal fluid is a mixture of semen and sperm.

7. Which of the following accurately lists the structures semen passes through on its way from the vas deferens to the external urethral orifice?
   a. Ejaculatory duct, spongy urethra, membranous urethra, prostatic urethra
   ✔ b. Ejaculatory duct, prostatic urethra, membranous urethra, spongy urethra
   c. Prostatic urethra, membranous urethra, spongy urethra, ejaculatory duct
   d. Membranous urethra, prostatic urethra, spongy urethra, ejaculatory duct

8. If you were explaining the process of spermatogenesis to your lab partner, you would likely include all of the following steps except
   a. Spermatogonia divide through mitosis to produce primary spermatocytes.
   b. Primary spermatocytes divide by meiosis to become secondary spermatocytes.
   c. Secondary spermatocytes develop into spermatids.
   ✔ d. Immature sperm cells mature in the testes.

9. Which part of the urethra carries only urine, and never sperm, at least for part of the way?
   a. The membranous urethra
   b. The spongy urethra
   ✔ c. The prostatic urethra
   d. The cavernous urethra

10. If you were explaining the anatomy and functions of the testes to your lab partner, you would likely say all of the following except
    ✔ a. They are male accessory glands that produce semen.
    b. They are the primary male reproductive organs that produce sperm.
    c. They are endocrine glands that produce testosterone.
    d. They consist of numerous lobules that contain convoluted seminiferous tubules.
Male Reproductive System Dissection Quiz

» Select the corpus spongiosum.
» Select either of the corpora cavernosa.
» Select any part of the prostate.
» Select the right or left seminal vesicle.
» Select either of the testes.
» Select the right or left epididymis.
» Select the right or left spermatic cord.
» Select any part of the prostatic urethra.
» Select the right or left ejaculatory duct.
» Select the glans penis.
Sample A&P Course Quizzes
01 Cells - An Introduction:
What are cells?

Cells Multiple Choice Quiz
1. Inside the cytoplasm are structures called _____, which perform essential cellular functions.
   a. Amino acids
   b. Cytosol
   ✔ c. Organelles
   d. Plasma membranes
2. In a hypertonic solution, there is a greater concentration of water inside the cell than outside it. As a result, the cell
   a. Swells and may even burst.
   b. Functions correctly.
   ✔ c. Maintains homeostasis.
   d. Shrinks as water flows out.
3. Which of the following is true regarding a mature red blood cell?
   ✔ a. It does not have a nucleus at all.
   b. It has multiple nuclei.
   c. It has a single nucleus.
   d. It shares a nucleus with other cells.
4. Diffusion of water across a cell’s plasma membrane is called
   a. Mitosis.
   b. Meiosis.
   ✔ c. Osmosis.
   d. Cytokinesis.
5. The assembly of the protein’s amino acid chain occurs in the _____ and is facilitated by _____.
   a. Nucleus, cytoplasm
   ✔ b. Cytoplasm, ribosomes
   c. Ribosomes, cytoplasm
   d. Nucleus, ribosomes
6. Within the plasma membrane, the lipid tails are
   a. Attracted to water.
   ✔ b. Not dissolved by water.
   c. So full of water that they remain stagnant.
   d. Composed of water.
7. When the cell needs to move molecules from an area of low concentration to one of high concentration, it uses specialized channels or carriers in the cell membrane. This process expends energy and is called
   b. Mitosis.
   ✔ c. Active transport.
   d. Replication.
8. All of the following are functions proteins have in the body except
   ✔ a. Contracting muscles.
   b. Preventing all substances from crossing cell membranes.
   c. Acting as hormones.
   d. Transporting substances across cell membranes.
9. All protein building occurs through two principal steps, which are
   ✔ a. Transcription and translation.
   b. Mitosis and meiosis.
   c. Osmosis and diffusion.
   d. Active transport and passive transport.
10. All of the following are true of ribosomes except
    ✔ a. They are primarily involved in the process of diffusion.
    b. They are small organelles contained in cells.
    c. They can float freely in the cytosol.
    d. They contain more than 50 proteins.

02 Cell Membrane:
Insane in the membrane

Diffusion, Osmosis, Tonicity, and the Plasma Membrane Multiple Choice Quiz
1. If a cell membrane is impermeable to substance X, which is high on the outside, what will occur?
   ✔ a. Substance X will enter the cell.
   b. Water will exit the inside of the cell, moving to the outside.
   c. Substance X will leave the cell.
   d. Water will enter the cell from the outside.
2. Which of the following is an accurate comparison of passive transport and active transport?
   ✔ d. In passive transport, certain molecules move through the cell’s selectively permeable membrane without the cell using any energy, whereas in active transport, cells use specialized channels or carriers to move molecules across the membrane.
3. Which of the following explains why the phospholipid molecules of the plasma membrane arrange themselves with the heads facing outward toward the cytosol and extracellular fluid and the tails facing inward toward each other?
   a. The head is hydrophobic, and the tails are hydrophilic.
   b. This arrangement creates a fully permeable barrier to let various materials pass in and out of the cell.
   c. This arrangement blocks all materials from passing in and out of the cell.
   ✔ d. The head is hydrophilic, and the tails are hydrophobic.

4. Diffusion of water across a cell’s plasma membrane is called
   a. Mitosis.
   ✔ b. Osmosis.
   c. Meiosis.
   d. Cytokinesis.

5. When the cell needs to move molecules from an area of low concentration to one of high concentration, it uses specialized channels or carriers in the cell membrane. This process expends energy and is called
   ✔ b. Active transport.
   c. Mitosis.
   d. Replication.

6. Within the plasma membrane, the lipid tails are
   a. Attracted to water.
   ✔ b. Not dissolved by water.
   c. So full of water that they remain stagnant.
   d. Composed of water.

7. Which of the following explains how the direction of osmosis depends on the concentration of the solution around the cell?
   a. In an isotonic solution, the cell swells and may burst; in a hypotonic solution, water intake and output is balanced; and in a hypertonic solution, water flows out and the cell shrinks.
   ✔ b. In an isotonic solution, water input and output is balanced; in a hypotonic solution, the cell swells and may burst; and in a hypertonic solution, water flows out and the cell shrinks.
   c. In an isotonic solution, water input and output is balanced; in a hypotonic solution, water flows out and the cell shrinks; and in a hypertonic solution, the cell swells and may burst.
   d. In an isotonic solution, water flows out and the cell shrinks; in a hypotonic solution, the cell swells and may burst; and in a hypertonic solution, water input and output is balanced.

8. In a hypertonic solution, there is a greater concentration of water inside the cell than outside it. As a result, the cell
   a. Swells and may even burst.
   b. Functions correctly.
   ✔ c. Maintains homeostasis.
   d. Shrinks as water flows out.

03 Cell Organelles:
Journey to the center of the cell

Cell Structure Dissection Quiz

Select a transport vesicle.
Select any part of the nucleus.
Select any part of the rough endoplasmic reticulum.
Select any part of the smooth endoplasmic reticulum.

Select any part of the Golgi complex.
Select a chromosome.

Organelles Multiple Choice Quiz

1. How would you describe cellular respiration to someone who doesn’t understand the concept?
   a. Cellular respiration is the process of moving substances across the plasma membrane.
   b. Cellular respiration uses osmosis, diffusion, and filtration to conduct various cellular activities.
   ✔ c. Cellular respiration is a series of processes that take place within a cell to break down glucose to make ATP.
   d. Cellular respiration is the process of breaking down damaged cells and building new cells to replace them.

2. How would you describe a key difference in the functions of lysosomes and peroxisomes?
   ✔ a. Lysosomes break down and digest unneeded cellular components, while peroxisomes process and neutralize toxins.
   b. Lysosomes process and neutralize toxins, while peroxisomes break down and digest unneeded cellular components.
   c. In the case of unhealthy or damaged cells, peroxisomes can kill a cell by releasing its enzymes into the cell’s cytoplasm, while lysosomes don’t have this self-destruct mechanism.
   d. Peroxisomes contain acid hydrolase enzymes that break down and recycle cell structures, while lysosomes contain catalase, which breaks down hydrogen peroxide.
3. Which of the following is a similarity between the rough endoplasmic reticulum and the smooth endoplasmic reticulum?
   a. Both are found in the same amounts, regardless of the cell type.
   ✔ b. Both transport materials for cellular growth.
   c. Both primarily synthesize lipids.
   d. Both contain protein-synthesizing ribosomes.

4. All of the following are functions proteins have in the body except
   a. Contracting muscles.
   ✔ b. Acting as hormones.
   c. Preventing all substances from crossing cell membranes.
   d. Transporting substances across cell membranes.

5. All of the following are true of ribosomes except
   a. They are small organelles contained in cells.
   ✔ b. They are primarily involved in the process of diffusion.
   c. They can float freely in the cytosol.
   d. They contain more than 50 proteins.

04 Cell Functions: What do cells do?

Transcription and Translation Multiple Choice Quiz

1. Which of the following is a similarity among DNA replication, transcription, and translation?
   a. They all result in the creation of new DNA molecules.
   b. They all build polypeptide chains.
   c. They all use codons to directly encode amino acids.
   ✔ d. They all consist of three stages: initiation, elongation, and termination.

2. Which of the following describes the main functions of transcription and translation?
   a. Transcription synthesizes a protein within the ribosome, while translation synthesizes a strand of mRNA that is complementary to the gene of interest.
   ✔ b. Transcription synthesizes a strand of mRNA that is complementary to the gene of interest, while translation synthesizes a protein within the ribosome.
   c. Transcription is the process of creating proteins from the template of a cell's genetic code, while translation is the process of creating lipids.
   d. Transcription forms a linear chain of amino acids, while translation unzips a DNA molecule and uses its template to create a rRNA molecule.

3. The assembly of the protein's amino acid chain occurs in the _____ and is facilitated by _____.
   a. Cytoplasm, ribosomes
   b. Nucleus, cytoplasm
   c. Ribosomes, cytoplasm
   d. Nucleus, ribosomes

4. All protein building occurs through two principal steps, which are
   a. Mitosis and meiosis.
   b. Osmosis and diffusion.
   ✔ c. Transcription and translation.
   d. Active transport and passive transport.

05 Cell Division: How do we make more cells?

Mitosis and Meiosis Multiple Choice Quiz

1. Which of the following is a major difference between mitosis and meiosis?
   ✔ a. Meiosis produces four genetically unique cells, while mitosis produces two identical clones of the parent.
   b. Meiosis involves one cell division, while mitosis involves two.
   c. Meiosis produces somatic cells, while mitosis produces sex cells.
   d. Meiosis produces diploid cells, while mitosis produces haploid cells.

2. Which of the following are the major stages that make up mitosis, in the correct order?
   ✔ a. Prophase, metaphase, anaphase, telophase
   b. Metaphase, telophase, anaphase, prophase
   c. Telophase, anaphase, metaphase, prophase
   d. Prophase, metaphase, telophase, anaphase

3. During mitosis, pairs of sister chromatids are separated from one another, forming individual chromosomes that are pulled to opposite ends of the cell. This phase is called
   a. Telophase.
   ✔ b. Anaphase.
   c. Metaphase.
   d. Prophase.

Mitosis and Meiosis Short Answer Quiz

» Compare mitosis and meiosis, explaining their similarities and differences, as well as where each occurs.

» Describe what occurs during each phase of mitosis.
06 The Integument: What is under our skin?

Integumentary System Multiple Choice Quiz 3

1. Which of the following is a shared characteristic of hair and nails?
   a. Both consist of roots, follicles, and shafts.✔
   b. Both are made of dead epidermal cells that have been converted to keratin.
   c. Both have sensory functions due to sensory innervation in their follicles.
   d. Both originate deep in the hypodermis.

2. A _____ is a region of skin that sends sensory information through a single pair of spinal nerves.
   a. Dendrite
   b. Corpuscle
   c. Papilla
   d. Dermatome✔

3. All of the following are functions of the dermis except
   a. Storing fat.✔
   b. Storing water.
   c. Regulating body temperature.
   d. Producing Vitamin D.

4. Perspiration from _____ sweat glands aids in thermoregulation by releasing heat from the body, whereas _____ sweat glands are active during emotional sweating and sexual activities.
   a. Acinar, sebaceous
   b. Sebaceous, acinar
   c. Apocrine, eccrine
   d. Eccrine, apocrine

5. All of the following are cell types included in the epidermis except
   a. Keratinocytes.✔
   b. Fibroblasts.
   c. Melanocytes.
   d. Merkel cells.

6. All of the following statements accurately compare two types of skin cells except
   a. Both fibroblast cells and keratinocytes produce fibrous proteins.
   b. Langerhans cells assist in immune responses, whereas Merkel cells detect touch stimuli.✔
   c. Both melanocytes and Langerhans cells detect touch stimuli.
   d. Melanocytes produce a pigment that determines skin color, whereas keratinocytes produce a fibrous protein that protects skin and tissue.

7. During the proliferative phase of wound-healing, _____ build new tissue by secreting _____ that takes the shape of the original tissue.
   a. Neutrophils, keratin
   b. Fibroblasts, collagen
   c. Mast cells, histamine
   d. Platelets, collagen

8. If your instructor asked you to explain what causes goosebumps, which of the following would you likely say?
   a. In the follicle, new hair cells develop and push existing cells upward, producing goosebumps.✔
   b. Sebaceous glands release sebum onto the hair, and when this sebum touches the skin, it produces goosebumps.
   c. Smooth muscle called the arrector pili is attached to the hair and can contract to pull the hair upright, producing goosebumps.
   d. When an object makes direct and forceful contact with the hairs, the nervous reaction that occurs produces goosebumps.

9. Which of the following accurately compares the tissue repair process for deep and superficial wounds?
   a. Both superficial and deep wounds result in the formation of scar tissue.
   b. Both superficial and deep wounds are repaired by cells of the wounded tissue, and the tissue loses its normal function.✔
   c. Deep wounds result in the formation of scar tissue, whereas superficial wounds do not.
   d. Blood vessels carry white blood cells and platelets to the site of deep wounds to form a fibrous clot, whereas superficial wounds do not require clots.

10. Which of the following distinguishes the epidermis from the dermis?
    a. The epidermis is connective tissue, whereas the dermis is fatty tissue.
    b. The epidermis is fatty tissue, whereas the dermis is epithelial tissue.
    c. The epidermis is connective tissue, whereas the dermis is epithelial tissue.✔
    d. The epidermis is epithelial tissue, whereas the dermis is connective tissue.
07 Bone Tissue Introduction: Why do we have bones?

Bone Tissue Dissection Quiz
- Select any part of the cortical (compact) bone.
- Select any part of the cancellous (spongy) bone.
- Select the medullary cavity.
- Select the yellow bone marrow.
- Select any part of the articular cartilage.

Bone Types Dissection Quiz
- Select a sesamoid bone.
- Select an irregular bone.
- Select a short bone.
- Select a long bone.
- Select a flat bone.

08 Axial Skeleton - Skull: What does your skull say about you?

Skull Bones Multiple Choice Quiz
1. Which skull bone is this?
   a. Temporal  ✔
   b. Occipital
   c. Parietal
   d. Frontal

2. Which skull bone is this?
   a. Ethmoid
   b. Palatine
   c. Temporal
   ✔ d. Sphenoid

09 Axial Skeleton - Vertebrae and Ribs: What bones are in the thorax?

Axial Skeleton Dissection Quiz
- Select the right or left parietal bone.
- Select the occipital bone.
- Select any part of the sphenoid.
- Select any part of the mandible.
- Select the hyoid.
- Select any part of the sternum.
- Select the coccyx.
- Select the axis.
- Select a false rib.
- Select a thoracic vertebrae.
10 Appendicular Skeleton:
The leg bone's connected to the…

Appendicular Skeleton Dissection Quiz
  » Select the right or left humerus.
  » Select a metacarpal bone.
  » Select one of the tarsal bones.
  » Select the right or left femur.
  » Select the right or left ilium.
  » Select the right or left first distal phalanx of the foot.
  » Select the right or left fibula.
  » Select the right or left radius.
  » Select the right or left scapula.
  » Select the right or left talus.

Axial Skeleton Dissection Quiz
  » Select the right or left parietal bone.
  » Select the occipital bone.
  » Select any part of the sphenoid.
  » Select any part of the mandible.
  » Select the hyoid.
  » Select any part of the sternum.
  » Select the coccyx.
  » Select the axis.
  » Select a false rib.
  » Select a thoracic vertebrae.

11 Joints:
How do bones interact with one another?

Joints Multiple Choice Quiz 3
1. A _____ is a joint where a ligament connects two bones, allowing for a little movement.
   a. Synovial
tick
   b. Synarthrosis
c. Syndesmosis
d. Symphysis
2. Which of the following most accurately distinguishes ball-and-socket joints from other types of synovial joints?
   a. Ball-and-socket joints have the greatest range of motion.
tick
   b. Ball-and-socket joints are the least likely to develop arthritis.
   c. Ball-and-socket joints have the least range of motion.
   d. Ball-and-socket joints are the only ones that allow for rotation motions.
tick
3. If your instructor asked you to list the ligaments that stabilize the knee joint, you should include all of the following except
   a. The collateral ligaments.
   b. The anterior cruciate ligament.
tick
   c. The annular ligament.
   d. The posterior cruciate ligament.
4. If your instructor asked you to explain why thumbs are opposable, which of the following might you say?
   a. The thumb's hinge joint lets it cross over the palm, making it opposable.
tick
   b. The thumb's saddle joint lets it cross over the palm, making it opposable.
   c. The thumb's ball-and-socket joint lets it rotate 360 degrees, making it opposable.
   d. The thumb's gliding joint lets it move side to side, making it opposable.
5. Which of the following motions are associated with hinge joints?
   a. Side-to-side movements
   b. Rotational movements
tick
   c. Anterior–posterior and medial–lateral movements
tick
   d. Flexion and extension
6. Which of the following is a way that joints can be classified?
   a. The number of bones connected
tick
   b. The location in the body
   c. The shape of the bones connected
   d. The range of movement provided
7. If you were explaining sutures to a friend who is unfamiliar with this type of joint, you should include all of the following points except
   a. The most prominent suture is the joint connecting the mandible to the temporal bone.
   b. Sutures are nonmoving joints.
   c. Sutures have serrated edges that lock together with fibers of connective tissue.
   d. Sutures are strong and fracture-resistant.
8. As people age, degeneration of the articular cartilage is most common in all of the following joints except
   a. The shoulder joint.
   b. The elbow joint.
   ✔ c. The intervertebral joints.
   d. The knee joint.

9. If a friend asked you to explain the different types of synarthroses, which of the following might be included in your explanation?
   a. Sutures are immovable fibrous joints between the teeth and the mandible or maxilla.
   b. Synchondroses are immovable cartilaginous joints that only occur in the skull.
   c. Gomphoses are immovable cartilaginous joints between the ribs and sternum.
   ✔ d. Gomphoses are immovable fibrous joints between the teeth and the mandible or maxilla.

10. All of the following are synovial joints except
    a. The distal joint between the tibia and fibula.
    b. The elbow joint.
    ✔ c. The atlanto-axial joints.
    d. The hip joint.

12 Muscles - Tissue and Contraction: How do muscles work?

**Muscle Function Multiple Choice Quiz**

1. Which of the following describes how messages travel from the brain to muscles?
   a. A signal begins in the brain and travels through the veins until it reaches a muscle.
   b. A signal begins in the brain and is transmitted directly into muscle tissue.
   c. A signal begins in the brain and travels in transport vesicles to a muscle.
   ✔ d. A signal begins in the brain and travels down the spinal cord to peripheral nerves until it reaches a muscle.

2. Which of the following describes the motion myosin heads must complete for muscles to contract?
   a. Myosin heads must pull the actin at the binding sites, detach, re-cock, attach to more binding sites, pull, detach, re-cock, etc.
   b. Myosin heads must continually remain activated for muscles to contract.
   c. Myosin heads must stay bound to actin for muscles to continue to contract.
   ✔ d. Myosin heads must be pulled by actin at the binding sites and stay attached to the actin for muscles to contract.

3. Which of the following describes the relationship between myosin and actin?
   a. When actin binds to a protein complex, it shifts and exposes myosin-binding sites.
   b. When the myosin heads bind to actin, the cross bridges are established.
   ✔ c. When the energy powers of myosin and actin combine, it is called the power stroke.
   d. Myosin and actin do not interact at all in the muscle contraction process.

4. Which of the following describes the relationship between acetylcholine and sodium ions?
   a. There is no relationship between acetylcholine and sodium ions.
   ✔ b. When acetylcholine binds to its receptors, they open, allowing an influx of sodium ions into the muscle fiber.
   c. The presence of sodium ions is necessary for acetylcholine to bind to its receptors.
   d. Sodium ions at the neuromuscular junction enable the release of acetylcholine.

5. All of the following are common properties among skeletal, cardiac, and smooth muscle except
   a. They all exhibit the quality of excitability.
   b. They all begin the process of contracting when actin is pulled by myosin.
   ✔ c. They all have the qualities of elasticity, extensibility, and contractility.
   d. They all look the same because actin and myosin always have the same microscopic organization.

6. Sarcomeres contain thick filaments, which consist of _____, and thin filaments, which consist of _____.
   a. Calcium, sodium
   b. Sodium, calcium
   ✔ c. Myosin, actin
   d. Actin, myosin

7. Surrounding the myofibrils are membranous sacs called the
   a. Sarcoplasmic reticulum.
   b. Endoplasmic reticulum.
   c. Neuromuscular reticulum.
   d. Sarcolemma reticulum.
8. Which of the following accurately describes how muscles function as agonists versus antagonists?
   a. A muscle that performs the paired and opposing action is called an agonist, whereas a muscle that contracts to generate the main force of an action is called an antagonist.
   b. A muscle that performs a normal, routine movement is called an agonist, whereas a muscle that performs an abnormal, risky movement is called an antagonist.
   c. A muscle that performs a passive movement is called an agonist, whereas a muscle that performs an active movement is called an antagonist.
   d. A muscle that contracts to generate the main force of an action is called an agonist, whereas a muscle that performs the paired and opposing action is called an antagonist.

9. Which of the following are paired and opposing muscle actions?
   a. Elevation, supination
   ✔ b. Elevation, depression
   c. Pronation, flexion
   d. Depression, extension

Muscle Function Short Answer Quiz

- Explain how the length tension curve influences muscle contraction and how it relates to the Frank-Starling effect.
- Compare the different types of muscle fibers, giving examples of when each would be used.
- Describe the process of muscle contraction in the proper order, using the terms acetylcholine, myosin, ADP, calcium, troponin, actin, tropomyosin, and ATP.

13 Muscle Anatomy: How do we move?

Facial Muscles Dissection Quiz
- Select a masseter muscle.
- Select the right or left mentalis.
- Select the right or left depressor labii inferioris.
- Select the occipitofrontalis.
- Select the right or left platysma.
- Select a circular muscle of the head.
- Select a muscle that is involved in mastication.
- Select any muscle that helps the eye to look down.
- Select a zygomaticus muscle.

Abdominal and Back Muscles Dissection Quiz
- Select a serratus muscle.
- Select the right or left latissimus dorsi.
- Select a rhomboideus muscle.
- Select a longissimus muscle.
- Select the transversus abdominis.
- Select one of the rotatores muscles.
- Select one of the obliques.
- Select the right or left rectus abdominis.

Arm Muscles Dissection Quiz
- Select the right or left extensor digiti minimi.
- Select the right or left extensor digitorium.
- Select a pronator muscle.
- Select the right or left biceps brachii.
- Select the right or left brachialis.
- Select the right or left coracobrachialis.
- Select any part of the right or left deltoid.

Skeletal Muscle Tissue Dissection Quiz
- Select the right or left pectoralis major.
- Select the right or left pectoralis major.
- Select the right or left serratus anterior.
- Select the right or left triceps brachii.
- Select the right or left adductor magnus.
- Select the right or left vastus lateralis.
- Select the right or left extensor digitorum.
- Select the right or left trapezius.
- Select any part of the right or left deltoid.
- Select the right or left gluteus maximus.
- Select the right or left external oblique.

Appendicular Skeleton Dissection Quiz
- Select the right or left humerus.
- Select a metacarpal bone.
- Select one of the tarsal bones.
- Select the right or left femur.
- Select the right or left ilium.
- Select the right or left first distal phalanx of the foot.
- Select the right or left fibula.
- Select the right or left radius.
- Select the right or left scapula.
- Select any part of the right or left deltoid.
- Select the right or left talus.
14 Nervous System:
How does your nervous system control your body?

Action Potentials Short Answer Quiz
toHaveBeenCalledWith
» Describe the role of feedback loops in the action potential.
• Discuss what you would see when a neuron is stimulated during a relative refractory period and how that differs from its normal activity (both mechanistically and qualitatively).
» Explain how an action potential is created and used to release a neurotransmitter.

Spinal Cord and Spinal Nerves Multiple Choice Quiz 3
1. The first spinal nerve, which supplies muscles of the neck, is called the _____ nerve.
   a. Phrenic ✔
   b. Suboccipital
   c. Long thoracic
   d. Supraclavicular

2. Ascending tracts of nervous system fibers in the white matter columns carry _____ up to the brain, whereas descending tracts carry _____ from the brain.
   a. Motor commands, sensory information ✔
   b. Sensory information, motor commands
   c. Action potentials, reflex responses
   d. Neurotransmitters, sensory responses

3. When motor commands pass from the spinal cord through the ventral root of each spinal nerve and out to the body to trigger an action, which of the following are the two types of such action?
   a. Cardiac muscle contraction and hormone production
   ✔ b. Skeletal muscle contraction and gland secretion
   c. Smooth muscle contraction and circulatory system activity
   d. Skeletal muscle contraction and digestive system activity

4. All of the following nerves innervate the shoulder and upper back except
   a. The sciatic nerve.
   b. The thoracodorsal nerve. ✔
   c. The axillary nerve.
   d. The subscapular nerve.

5. Somatic reflexes are
   a. Voluntary responses to stimuli that allow for fast reactions, based on responses in the brain.
   b. Voluntary responses to stimuli that create slow, deliberate reactions without the need for processing in the brain. ✔
   c. Automatic responses to stimuli that allow for fast reactions, before messages reach the brain.
   d. Automatic responses to stimuli that create slow, deliberate reactions, after messages reach the brain.

6. How would you describe the spinal cord, in relation to the brain?
   ✔ a. The top of the spinal cord is continuous with the brain, and it transmits signals between the brain and the rest of the body.
   b. Unlike the brain, the spinal cord doesn't have any surrounding membranes.
   c. The spinal cord is part of the peripheral nervous system, whereas the brain is part of the central nervous system.
   d. The brain controls reflexes and sends them down the spinal cord.

7. Which of the following lists the layers of the meninges in the correct order from innermost to outermost?
   a. Dura mater, pia mater, arachnoid mater
   b. Arachnoid mater, dura mater, pia mater ✔
   c. Pia mater, arachnoid mater, dura mater
   d. Pia mater, dura mater, arachnoid mater

8. If one of your peers asked you to explain the functions of the different types of gray matter horns, which of the following would you include in your explanation?
   a. The posterior horn is the central component of the sympathetic division of the autonomic nervous system.
   b. The lateral horn sends out motor signals to the skeletal muscles. ✔
   c. The lateral horn is the central component of the sympathetic division of the autonomic nervous system.
   d. The anterior horn is responsible for sensory processing.
9. Which of the following lists the spinal nerve plexuses in the correct order from lower body to upper body?
   a. Cervical, brachial, lumbar, sacral
   b. Cervical, sacral, lumbar, brachial
   ![Correct Answer]
   c. Brachial, lumbar, cervical, sacral
   d. Sacral, lumbar, brachial, cervical

10. If one of your friends was confused about the brachial plexus and the body parts it innervates, all of the following could be part of your discussion except
   ![Correct Answer]
   a. The dorsal scapular, suprascapular, subscapular, thoracodorsal, and axillary nerves innervate the shoulder and upper back.
   b. The median pectoral, lateral pectoral, musculocutaneous, and subclavius nerves innervate the chest and arm.
   c. The median, radial, ulnar, and medial antebrachial cutaneous nerves innervate the forearm and hand.
   d. The iliohypogastric, ilioinguinal, genitofemoral, femoral, obturator, and lateral femoral cutaneous nerves innervate the skin and muscles of the abdomen, hip, and pelvis.

**Brain Functions Multiple Choice Quiz**

1. The occipital lobe is known for
   ![Correct Answer]
   a. Processing auditory information.
   b. Processing higher thought and decision making.
   c. Processing visual information.
   d. Releasing hormones involved in maintaining homeostasis.

2. The basal ganglia is involved in
   ![Correct Answer]
   a. Regulating vital functions such as breathing.
   b. Coordinating learned movement.
   c. Processing sensory information.
   d. Regulating circadian rhythms.

3. The prefrontal cortex is most known for
   ![Correct Answer]
   a. Planning and higher order thought.
   b. Processing visual information.
   c. Processing emotions such as fear.
   d. Coordinating motor output.

4. Which of the following distinguishes the right and left cerebral hemispheres from each other?
   ![Correct Answer]
   a. The right hemisphere controls the right side of the body, whereas the left hemisphere controls the left side of the body.
   b. The right hemisphere is responsible for language and calculation, whereas the left hemisphere is responsible for visual, emotional, and artistic awareness.
   c. The right hemisphere is responsible for visual, emotional, and artistic awareness, whereas the left hemisphere is responsible for language and calculation.
   d. The right hemisphere controls motor functions, whereas the left hemisphere controls sensory processing.

5. Which of the following describes a difference between the external and internal regions of the cerebrum?
   ![Correct Answer]
   a. The external region of the cerebrum consists of gray matter, whereas the internal region consists of white matter.
   b. The external region of the cerebrum consists of white matter, whereas the internal region consists of gray matter.
   c. The external region of the cerebrum is composed of neuronal processes, whereas the internal region consists of cell bodies.
   d. The external region of the cerebrum is called the cerebral medulla, whereas the internal region is called the cerebral cortex.

6. The cerebellum is located ______ to the brain stem and ______ to the occipital lobe of the cerebrum.
   ![Correct Answer]
   a. Anterior, superior
   b. Posterior, inferior
   c. Anterior, inferior
   d. Posterior, superior

7. Which of the following is true of the medulla oblongata?
   ![Correct Answer]
   a. It controls involuntary functions of the respiratory, digestive, and circulatory systems.
   b. It is part of the midbrain.
   c. It acts as a barrier between the brain and the spinal cord.
   d. It is divided into four symmetrical parts.

8. Which of the following is a function of cerebrospinal fluid?
   ![Correct Answer]
   a. It supports the brain and protects it from trauma.
   b. It provides immunity.
   c. It regulates body temperature.
   d. It surrounds and supports the body’s major organs.

9. Which part of the brain manages balance and posture?
   ![Correct Answer]
   a. Cerebrum
   b. Pons
   c. Medulla oblongata
   d. Cerebellum

10. All of the following are functions of the brain except
    ![Correct Answer]
    a. Integrating information to form perception and thought.
    b. Controlling reflexes.
    c. Maintaining homeostasis.
    d. Controlling activities such as speech and movement.
Brain and Cranial Nerves Dissection Quiz

- Select the main nerve whose branches release acetylcholine to slow the heart.
- Select the central nervous system structure that produces dopamine.
- Select the right or left amygdala.
- Select any part of the medulla oblongata.
- Select the right or left hypothalamus.
- Select the right or left corpus callosum.
- Select the right or left posterior lobe of the cerebellum.
- Select a dorsal root ganglion of a thoracic nerve.
- Select the right or left trochlear (IV) nerve.
- Select any part of the right or left hypoglossal (XII) nerve.
- Select any part of the right or left vagus (X) nerve.

Tongue and Papillae Dissection Quiz

- Select any papillae that contain tactile receptors, but no taste buds.
- Select a taste bud.
- Select any papillae that contain taste buds.
- Select the filiform papillae.
- Select the fungiform papillae.
- Select the circumvallate (vallate) papillae.
- Select the frenulum.
- Select the circumvallate papillae.

Eye Structures Dissection Quiz

- Select the lens.
- Select the iris.
- Select any part of the retina.
- Select the ciliary muscles.
- Select the cornea.

Ear Dissection Quiz

- Select the temporalis.
- Select any part of the cochlea.
- Select any part of the auricular cartilage.
- Select the concha.
- Select the tympanic cavity.
- Select the vestibule.
- Select any part of the incus.
- Select any part of the malleus.
- Select the Eustachian tube.
- Select the external acoustic meatus.

15 Special Senses: How do we sense the environment around us?

Smell and Taste Short Answer Quiz

- Explain how you can smell and taste multiple different compounds.
- Explain why your sense of taste is decreased when you have a cold.
- Pregnant women often develop a super strong sense of smell. Give plausible explanations for this phenomenon.

Special Senses Multiple Choice Quiz 2

1. If you were explaining olfaction to a friend, which of the following details would you not include?
   - As air enters the nasal cavity, chemicals in the air bind to and activate nervous system receptors on the nasal cilia.
   - Signals move from the olfactory area of the cerebral cortex into the olfactory bulbs of the nasal passage.
   - First-order neurons connected to the epithelial cells carry olfactory signals from the nasal cavity through openings in the ethmoid bone, and then to the olfactory bulbs of the brain.
   - Olfactory signals move from olfactory bulbs along the olfactory nerves to the olfactory area of the cerebral cortex.
   - ✔

2. Which of the following describes how the sense of smell differs from the other special senses?
   - a. Smell is the only sensory modality that does not synapse in the thalamus before connecting to the cerebral cortex.
   - b. Smell is the only sensory modality that is processed in the cerebral cortex.
   - c. Smell is the only chemical sense.
   - d. Smell is always processed in the hypothalamus, whereas the other senses are processed in the cerebral cortex.
   - ✔

Graded Quiz Bank: Instructor's Manual 270
3. If you were giving an oral presentation on the types of papillae, which of the following would you likely include in your presentation?
   a. Circumvallate papillae are found over the entire surface of the tongue.
   b. Fungiform papillae contain tactile receptors, but no taste buds, and are found all over the tongue.
   ✔ c. Circumvallate papillae are found on the dorsum of the tongue in an inverted V-shaped row, and each contains 100–300 taste buds.
   d. Filiform papillae are mushroom-shaped and found mainly on the sides and apex of the tongue.

4. If your friend asked you how the process of vision works, which of the following statements might you use to explain it to him or her?
   a. The process of seeing begins when the cones interpret the intensity of light and the rods interpret the color of light.
   ✔ b. The process of seeing begins when light enters the front of the eye through the pupil.
   c. Inside the eye, light is refracted by the retina and focused onto the lens.
   d. The optic nerve carries nerve signals from the occipital lobe of the brain to the retina, where signals are interpreted to represent an image.

5. Which of the following accurately compares nearsightedness and farsightedness?
   a. Nearsightedness results when the image is focused on an area beyond the retina, whereas farsightedness occurs when the point of focus does not reach the retina.
   b. Nearsightedness results when the eye is too shallow, whereas farsightedness results in a blurry image.
   ✔ c. Nearsightedness occurs when the lens focuses light onto the retina, whereas farsightedness results when the image is focused beyond the retina.
   d. Nearsightedness occurs when the point of focus does not reach the retina, whereas farsightedness results when the image is focused on an area beyond the retina.

6. If you were explaining the structure of the ear to a friend, all of the following would be part of your explanation except
   a. The outer ear consists of the auricle and the external acoustic meatus.
   ✔ b. The middle ear consists of the malleus, incus, and stapes.
   c. The inner ear consists of the auricle and auditory ossicles.
   d. The inner ear contains canals filled with fluid.

7. Which of the following would likely be included in a discussion of the auditory pathway?
   a. Impulses for hearing pass through the trigeminal nerves to the medulla oblongata and then on to the cerebellum.
   ✔ b. Impulses for hearing pass through the vestibulocochlear nerves to the medulla oblongata and then on to the midbrain, thalamus, and cerebral cortex.
   c. Impulses for hearing pass from the medulla oblongata through the vestibulocochlear nerves to the midbrain, thalamus, and cerebral cortex.
   d. Impulses for hearing pass through the vagus nerves to the pons and then on to the thalamus and cerebellum.

8. Which of the following explains how the frequency of sound waves determines the movement of the basilar membrane?
   ✔ a. Higher-frequency waves move the region of the basilar membrane that is close to the base of the cochlea, whereas lower-frequency waves move the region that is near the tip of the cochlea.
   b. Higher-frequency waves move the region of the basilar membrane that is near the tip of the cochlea, whereas lower-frequency waves move the region that is close to the base of the cochlea.
   c. Higher-frequency waves move the region of the basilar membrane that is near the middle of the cochlea, whereas lower-frequency waves move the region near the base of the cochlea.
   d. Higher-frequency waves move the region of the basilar membrane that is closer to the scala tympani, whereas lower-frequency waves move the region that is closer to the scala vestibuli.
9. Which of the following is a similarity between the sense of hearing and equilibrium?
   a. They both pass impulses to the midbrain.
   b. They both involve sound waves.
   c. They both pass impulses through the trigeminal nerves.
   ✔ d. They both occur in the inner ear.

10. If you were explaining equilibrium to a classmate, which of the following statements might you make?
   a. Commands to maintain equilibrium are sent to the cerebral cortex, whereas information about equilibrium is sent directly out to the body.
   ✔ b. Commands to maintain equilibrium are sent directly out to the body, whereas information about equilibrium is sent to the cerebral cortex for conscious perception.
   c. When there is an equilibrium change, signals to maintain balance are sent to the cerebellum and thalamus.
   d. When there is an equilibrium change, signals to maintain balance are sent from the medulla oblongata to the vestibulocochlear nerves.

16 Endocrine System:
How do we maintain homeostasis?

Endocrine Hormone Action Multiple Choice Quiz

1. If your instructor asked you to identify the main target organs for the hypothalamus and pituitary hormones, you could include all of the following except
   a. Antidiuretic hormone (ADH) targets the kidneys.
   b. Luteinizing hormone (LH) targets the gonads.
   ✔ c. Thyroid-stimulating hormone (TSH) targets the respiratory system.
   d. Adrenocorticotropic hormone (ACTH) targets the adrenal glands.

2. If you were explaining the hypophyseal portal system to a friend who doesn't understand it, which of the following would you say?
   a. The hypophyseal portal system is the system of vasculature that connects the hypothalamus and the nervous system.
   ✔ b. The hypophyseal portal system is the system of vasculature that connects the hypothalamus and the anterior pituitary.
   c. The hypophyseal portal system is the system of vasculature that connects the hypothalamus and the anterior pituitary.
   d. The hypophyseal portal system is the system of vasculature that connects the hypothalamus and the posterior pituitary.

3. If your friend asked you to explain the functions of the hypothalamus, you would likely say all of the following except
   ✔ a. The hypothalamus stores hormones produced by the pituitary gland.
   b. The hypothalamus connects information from the nervous system to the hormone releases of the endocrine system.
   c. The hypothalamus generally controls the endocrine system via the pituitary gland.
   d. Neurosecretory cells in the hypothalamus produce antidiuretic hormone (ADH) and oxytocin (OXT).

4. Which of the following accurately compares the anterior and posterior lobes of the pituitary gland?
   a. The posterior lobe produces hormones, whereas the anterior lobe stores hormones produced by the hypothalamus.
   b. Both lobes are outgrowths of the brain.
   c. Both lobes are equal in size.
   ✔ d. The anterior lobe produces hormones, whereas the posterior lobe stores hormones produced by the hypothalamus.

Endocrine Hormone Action Short Answer Quiz

In your own words, what is homeostasis?

Explain how a single hormone can have seemingly different effects on different cells.

What kind of feedback loop, positive or negative, is involved in maintaining homeostasis? Explain your answer.

What differentiates positive feedback loops from negative feedback loops?
5. Which of the following hormones are synergists?
✔  a. Antidiuretic hormone (ADH) and aldosterone (ALD)
   b. Calcitonin (CT) and parathyroid hormone (PTH)
   c. Insulin (INS) and glucagon (GLU)
   d. Antidiuretic hormone (ADH) and atrial natriuretic peptide (ANP)

6. Human growth hormone (hGH) causes target cells to release insulin-like growth factors (IGFs), which are hormones that promote
✔  a. Metabolism and nervous and skeletal system growth.
   b. Cell growth and division, glucose release, and protein synthesis.
   c. Metabolism of glucose, lipids, and proteins.
   d. Production and maturation of ova in women and sperm in men.

7. All of the following are hormones produced by the anterior pituitary gland except
✔  a. Human growth hormone (hGH).
   b. Antidiuretic hormone (ADH).
   c. Prolactin (PRL).
   d. Adrenocorticotropic hormone (ACTH).

8. The _____ is the master endocrine gland; it secretes hormones that regulate the _____ gland(s).
✔  a. Thalamus, pineal
   b. Thymus, adrenal
   c. Hypothalamus, pituitary
   d. Thyroid, parathyroid

9. All of the following are endocrine glands except
✔  a. Adrenal glands.
   b. The pineal gland.
   c. The thyroid gland.
   d. Sebaceous glands.

10. Each type of hormone affects the behavior of
✔  a. Specific targeted cells only.
    b. All cells it encounters.
    c. All cells that are receptive to hormones.
    d. Any cell within the endocrine system.

Endocrine Organs and Function Dissection Quiz
- Select the right or left adrenal gland.
- Select the thyroid gland.
- Select any part of the pineal gland.
- Select the right or left pars distalis.
- Select the right or left neurohypophysis (posterior pituitary).
- Select the hypothalamus.
- Select any part of the parathyroid glands.
- Select any part of the pancreas.
- Select any part of the right or left kidney.
- Select any part of the right or left ovary.

Endocrine Organs and Functions Multiple Choice Quiz 3

2. The adrenal cortex produces _____ whereas the adrenal medulla produces _____ and _____.
  a. Mineralocorticoids, glucocorticoids, gonadocorticoids
  b. Norepinephrine, gonadocorticoids, mineralocorticoids
  ✔  c. Corticosteroid hormones, epinephrine, norepinephrine
  d. Epinephrine, mineralocorticoids, glucocorticoids

3. If you were doing an oral presentation on the pineal gland, you would likely make all of the following points except
   a. The pineal gland is a small reddish-gray body, about 1 cm in diameter, that is attached to the infundibulum of the hypothalamus.
   b. The pineal gland secretes melatonin at varying levels throughout the day and night, contributing to the circadian cycle.
   c. The pineal gland is attached to the roof of the third ventricle near its junction with the midbrain, and is located in the depression between the superior colliculi.
   d. The pineal gland consists of follicles lined by epithelium and enveloped by connective tissue.

4. In addition to the endocrine glands, hormone-secreting cells occur in all of the following except
✔  a. Lymphatic vessels.
   b. Gastric and intestinal mucous membranes.
   c. Adipose tissue.
   d. The heart atria.
5. If you were doing an oral presentation on organs that have endocrine functions as well as other bodily functions, you would likely make all of the following points except
   a. In addition to its digestive functions, the pancreas secretes hormones necessary to regulate blood glucose levels.
   ✔
   b. In addition to its urinary functions, the kidneys secrete hormones that increase calcium reabsorption in the body, stimulate red blood cell production, and increase blood pressure.
   c. In addition to its lymphatic functions, the thymus secretes hormones that increase metabolism, glucose use, protein synthesis, and nervous system development.
   d. In addition to its cardiovascular functions, the heart produces hormones that promote water loss to decrease blood volume and pressure.

6. Which of the following is a similarity between calcitonin (CT) and parathyroid hormone (PTH)?
   a. Both are released in response to low blood calcium levels.
   ✔
   b. Both are produced by parafollicular cells.
   c. Both are produced by the parathyroid gland.
   d. Both help regulate blood calcium levels.

7. The thyroid consists mainly of spherical sacs known as thyroid follicles, which are lined by epithelial cells that make and secrete ______ and ______, and cells within or between follicles make and secrete ______.
   a. Triiodothyronine (T3), thyroxine (T4), glucocorticoids
   ✔
   b. Calcitonin (CT), thyroxine (T4), triiodothyronine (T4)
   c. Calcitonin (CT), triiodothyronine (T3), thyroxine (T4)
   d. Triiodothyronine (T3), thyroxine (T4), calcitonin (CT)

8. Parathyroid cells known as ____ cells are thought to produce most or all of the parathyroids’ endocrine secretion.
   a. Oxyphil
   ✔
   b. Chief
   c. Colloid
   d. Follicle

9. Which of the following accurately compares the role of glucagon and insulin in regulating blood glucose levels?
   a. Glucagon stimulates organs and tissues to release glucose, whereas insulin stimulates organs and tissues to increase their uptake of glucose.
   ✔
   b. Glucagon stimulates organs and tissues to increase their uptake of glucose, whereas insulin stimulates organs and tissues to release glucose.
   c. Glucagon reduces blood glucose levels via glycolysis, whereas insulin increases blood glucose levels via glycogenolysis and gluconeogenesis.
   d. The primary function of both glucagon and insulin is to facilitate the uptake of glucose into body cells.

10. All of the following hormones are released by the kidneys except
    a. Glucagon.
    ✔
    b. Calcitriol.
    c. Renin.
    d. Erythropoietin.

17 Circulatory System: How do we move things around our systems?

Blood Structure and Function Multiple Choice Quiz

1. If your instructor asked you to list the components of blood, from highest percentage of blood volume to lowest, which of the following would you most likely say?
   a. White blood cells, red blood cells, plasma, platelets
   ✔
   b. Platelets, plasma, white blood cells, red blood cells
   c. Plasma, red blood cells, platelets, white blood cells
   d. Red blood cells, white blood cells, platelets, plasma

2. Which of the following statements accurately compares two types of white blood cells?
   a. B cells target viruses, fungi, cancer cells, and transplanted cells, whereas T cells produce antibodies.
   ❌
   b. Neutrophils consume bacteria through phagocytosis, whereas basophils are involved in controlling allergic reactions.
   ✔
   c. Eosinophils consume bacteria through phagocytosis, whereas basophils destroy parasites and combat the effects of histamine.
   ❌
   d. Monocytes are involved in controlling allergic reactions, whereas neutrophils develop into macrophages and remove debris after an infection.
   ❌
3. Which of the following accurately compares the functions of red blood cells and white blood cells?
   a. Red blood cells defend the body against disease, whereas white blood cells transport oxygen to body tissues.
   ✔ b. Red blood cells transport oxygen to body tissues, whereas white blood cells defend the body against disease.
   c. Red blood cells make up 1% of circulating blood, whereas white blood cells make up 40–45% of blood volume.
   d. Red blood cells increase in number during inflammation, whereas white blood cells decrease.

4. Which of the following accurately compares the blood traveling from the lungs and the blood traveling to the lungs?
   a. The blood traveling from the lungs carries carbon dioxide, whereas the blood traveling to the lungs carries nitrogen.
   ✔ b. The blood traveling from the lungs is high pressure, whereas the blood traveling to the lungs is low pressure.
   c. The blood traveling from the lungs is oxygenated, whereas the blood traveling to the lungs is deoxygenated.
   d. The blood traveling from the lungs is deoxygenated, whereas the blood traveling to the lungs is oxygenated.

5. If your instructor asked you to explain the benefit of red blood cells ejecting their nuclei, which of the following would you most likely say?
   a. This allows the cells to change their shape to squeeze through capillaries.
   b. This allows the cells to synthesize proteins.
   ✔ c. This allows the cells to carry more oxygen to the tissues.
   d. This allows the cells to conduct aerobic respiration.

6. When a blood vessel tears, _____ at the site adhere to the vessel's wall to close the tear.
   a. Lymphocytes
   b. Erythrocytes
   ✔ c. Platelets
   d. Leukocytes

7. All of the following are types of white blood cells except
   a. Erythrocytes.
   b. Neutrophils.
   c. Monocytes.
   d. Lymphocytes.

8. Red blood cells contain gas-transporting molecules called
   a. Erythrocytes.
   ✔ b. Hemoglobin.
   c. Plasma.
   d. Erythropoietin.

Heart Function Multiple Choice Quiz

1. All of the following statements accurately compare systole and diastole except
   a. Ventricular contraction and constriction are known as systole, whereas ventricular relaxation and expansion are known as diastole.
   ✔ b. Ventricular contraction and constriction are known as diastole, whereas ventricular relaxation and expansion are known as systole.

2. If you were giving an oral presentation on the conduction system, you would most likely include all of the following steps in your discussion except
   a. The electrical impulse is initiated at the sinoatrial node.
   b. The electrical impulse pauses at the atrioventricular node.
   ✔ c. The electrical impulse initiates at the Purkinje fibers.
   d. The electrical signal branches into the bundle branches of each ventricle.

3. Which of the following explains how you can find the cardiac output volume?
   ✔ a. Multiply the number of heart beats in one minute by the stroke volume.
   b. Add the number of heart beats in one minute to the stroke volume.
   c. Subtract the number of heart beats in one minute from the stroke volume.
   d. Divide the number of heart beats in one minute by the stroke volume.

4. _____ is the amount of blood a ventricle pumps out during one contraction.
   ✔ a. Stroke volume
   b. Cardiac output
   c. Blood pressure
   d. Cardiac reserve

5. The conduction system of the heart regulates the electrical impulses that
   a. Circulate blood within the heart.
   ✔ b. Make the heart beat.
   c. Pull blood into the heart.
   d. Make the heart rest.
6. The _____ receives oxygen-depleted blood and empties it into the _____, whereas oxygenated blood from the lungs enters the _____ and empties into the _____.
   a. Left atrium, left ventricle, right atrium, right ventricle
   b. Right ventricle, right atrium, left ventricle, left atrium
   ✔ c. Right atrium, right ventricle, left atrium, left ventricle
   d. Left ventricle, left atrium, right ventricle, right atrium

Heart Structures Dissection Quiz
   ✓ Select the right or left ventricle.
   ✓ Select the right or left atrium.
   ✓ Select the aorta (base of).
   ✓ Select any part of the tricuspid valve.
   ✓ Select the chordae tendineae of the mitral valve.
   ✓ Select the right or left Purkinje fibers.
   ✓ Select the bundle of His.

Blood Vessels and Circulation Quiz 3

1. Which of the following causes blood pressure?
   a. It is caused by the size of the blood vessels and the amount of force needed to move blood through the vessels.
   b. It is caused by electrical impulses in the blood vessels and the resulting contractions that move blood through the vessels.
   ✔ c. It is caused by the blood flow generated by the heart as it pumps and the resistance that blood encounters as it moves through the enclosed vessel.
   d. It is caused by the relaxation of the heart and the subsequent increase in blood flow through the vessels.

2. If your instructor asked you to discuss the arteries of the upper limb in order, from superior to inferior, which of the following would you most likely say?
   a. The subclavian artery is the first part of the long trunk that supplies each upper extremity, and at the lower border of the teres major, it becomes the brachial artery, which ends in the axilla, where it becomes the axillary artery.
   b. The brachial artery is the first part of the long trunk that supplies each upper extremity, and at the clavicle, it becomes the subclavian artery, which ends at the lower border of the tendon of the teres major, where it becomes the axillary artery.
   c. The axillary artery is the first part of the long trunk that supplies each upper extremity, and at the clavicle, it becomes the subclavian artery, which ends at the lower border of the tendon of the teres major, where it becomes the brachial artery.
   ✔ d. The subclavian artery is the first part of the long trunk that supplies each upper extremity, and at the axilla, it becomes the axillary artery, which ends at the lower border of the tendon of the teres major, where it becomes the brachial artery.

3. Which of the following accurately identifies the paired and unpaired visceral branches of the abdominal aorta?
   a. The paired visceral branches are the phrenic and lumbar arteries, whereas the unpaired visceral branch is the median sacral artery.
   b. The unpaired visceral branches are the suprarenal and renal arteries and the median sacral artery, whereas the paired visceral branches are the superior and inferior mesenteric arteries and the phrenic and lumbar arteries.
   c. The paired visceral branches are the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery, whereas the unpaired visceral branches are the suprarenal, renal, and gonadal arteries.
   ✔ d. The unpaired visceral branches are the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery, whereas the paired visceral branches are the suprarenal, renal, and gonadal arteries.

4. The _____ provides blood supply to the brain and contains alternate routes in case of blockage.
   a. Venous sinuses
   b. Azygos system
   ✓ c. Circle of Willis
   d. Hepatic portal system

5. The _____ is the largest artery in the body.
   ✓ a. Aorta
   b. Pulmonary artery
   c. Common carotid artery
   d. Subclavian artery
6. If your friend asked you to distinguish between pulmonary and systemic circulation, which of the following would you most likely say?
   a. Systemic circulation manages the gas exchange and oxygenation of blood, and pulmonary circulation simply delivers oxygenated blood throughout the body.
   b. In pulmonary circulation, the arteries transport oxygenated blood and the veins transport deoxygenated blood, whereas in systemic circulation, the opposite is true.
✓ c. Pulmonary circulation moves blood between the heart and lungs, and systemic circulation moves blood between the heart and the rest of the body.
   d. Systemic circulation moves blood between the heart and lungs, and pulmonary circulation moves blood between the heart and the rest of the body.

7. Deoxygenated blood from the intestines drains into the
✓ b. Superior and inferior mesenteric veins.
   c. Superior and inferior vena cavae.
   d. Azygos system.

8. All of the following are types of blood vessels except
   a. Capillaries.
✓ b. Atria.
   c. Arterioles.
   d. Venules.

9. If you were giving an oral presentation on the hepatic system, you would most likely make all of the following points except
   a. The hepatic portal vein collects blood from the vessels that drain the stomach, intestines, colon, spleen, pancreas, and gall bladder.
   b. The hepatic portal vein transports oxygen-depleted blood to the liver, which performs detoxification, protein synthesis, and other functions.
✓ c. On its way to the liver, blood passes through the right, left, and intermediate hepatic veins, which originate in the inferior vena cava.
   d. In the liver, the branches of the hepatic portal vein subdivide and end in smaller vessels known as sinusoids, which are permeable.

10. All of the following are structures arteries and veins have in common except
   a. Tunica externa.
✓ b. Valves.
   c. Tunica intima.
   d. Tunica media.

18 Lymphatic System and Immunity: How do we fight pathogens?

**Lymphatic System Dissection Quiz**
- Select the spleen.
- Select the thymus.
- Select the thoracic duct (left lymphatic duct).
- Select the right or left cubital lymph nodes.
- Select the right or left lumbar trunk.
- Select the right lymphatic duct.
- Select the right or left subclavian trunk.
- Select any of the right or left jugular lymphatic trunks.
- Select any of the axillary lymph nodes.
- Select the right or left bronchomediastinal trunk.

**Lymphatic System and Immunity Multiple Choice Quiz**

1. If your instructor asked you to explain the role lymph nodes play in the lymphatic system, which of the following would you likely say?
   a. Lymph nodes remove macrophages and lymphocytes from the lymph before it reenters the bloodstream.
✓ b. Lymph nodes infuse lymph with pathogens before it reenters the bloodstream.
   c. Lymph nodes filter lymph before it reenters the bloodstream.
   d. Lymph nodes break lymph down into nutrients, which enter the bloodstream.
2. Which of the following accurately compares the afferent and efferent vessels of lymph nodes?
   a. Pathogens and debris enter the node through the afferent vessels, and lymphocytes enter via the efferent vessels.
   ✔️ b. Lymph enters the node through afferent vessels, and filtered lymph leaves the node through efferent vessels.
   c. Lymph enters the node through the afferent vessels, and pathogens and debris are removed via the efferent vessels.
   d. Lymph enters the node through efferent vessels, and filtered lymph leaves the node through afferent vessels.

3. If your friend asked you to explain why lymph nodes are clustered in areas where the head and limbs meet the torso and near the intestines, which of the following would you likely say?
   a. This distribution defends the extremities and intestines from pathogens circulating in air and blood.
   ✔️ b. This distribution defends the torso from pathogens entering from the extremities or from ingested food.
   c. This distribution prevents all pathogens from entering the body.
   d. This distribution ensures that the body will have the pathogens it needs to complete its immune responses.

4. Which of the following accurately compares the red pulp and white pulp of the spleen?
   a. Neither the red pulp nor the white pulp contain macrophages.
   b. The red pulp is where adaptive T and B cell responses are mounted, whereas the white pulp primarily functions as a filtration system of the blood.
   c. The white pulp makes up most of the spleen's tissue, whereas the red pulp consists mainly of lymphocytes.
   ✔️ d. The red pulp makes up most of the spleen's tissue, whereas the white pulp consists mainly of lymphocytes.

5. Which of the following accurately compares T cells and B cells?
   ✔️ a. After maturing, both T cells and B cells enter the bloodstream, then colonize lymphatic tissues like the spleen and lymph nodes.
   b. B cells develop and mature in the thymus, whereas T cells develop and mature in the spleen.
   c. T cells develop and mature in the thymus, whereas B cells develop and mature in the bloodstream.
   d. Both T cells and B cells develop and mature in the thymus.

6. Which of the following identifies the lymph trunks of the body in the correct order, from superior to inferior?
   a. Intestinal, lumbar, bronchomediastinal, subclavian, jugular
   b. Subclavian, jugular, bronchomediastinal, intestinal, lumbar
   ✔️ c. Jugular, subclavian, bronchomediastinal, lumbar, intestinal
   d. Bronchomediastinal, jugular, intestinal, lumbar, subclavian

7. If your friend asked you to explain the cisterna chyli, which of the following would you likely say?
   ✔️ a. The cisterna chyli is a lymphatic sac that, if present, forms the base of the thoracic duct anterior to the first or second lumbar vertebra.
   b. The cisterna chyli is a lymphatic sac that is always present and is formed by the splitting of the right and left lumbar lymphatic trunks.
   c. The cisterna chyli is a lymphatic sac that, if present, is formed by the convergence of the thoracic and right lymphatic ducts.
   d. The cisterna chyli is a lymphatic sac that is always present and forms the base of the right lymphatic duct anterior to the first or second lumbar vertebra.

8. Capsules of tissue that filter lymph and contain lymphocytes that destroy pathogens are called
   a. Lymph trunks.
   b. Lymphatic capillaries.
   ✔️ c. Lymph nodes.
   d. Lymphatic ducts.

9. Inside the _____, abnormal blood cells are consumed by macrophages, and lymphocytes carry out immune responses.
   a. Bone marrow
   b. Heart
   c. Thymus
   ✔️ d. Spleen

10. Lymph empties into the bloodstream at the junction of which two veins?
    ✔️ a. The external and internal jugular veins
    b. The subclavian and internal jugular veins
    c. The subclavian and external jugular veins
    d. The vertebral and internal jugular veins
11. If your instructor asked you to explain why innate immune responses are necessary for adaptive immune responses to succeed, which of the following would you likely say?

✔ a. Innate immune responses slow pathogen growth and allow time for the adaptive immune response to strengthen and either control or eliminate the pathogen.

b. Innate immune responses are effective at completely controlling pathogen growth, which makes it easy for adaptive immune responses to eliminate all pathogens.

c. Innate immune responses form memory cells, which quickly identify pathogens and release antibodies to enable the adaptive immune response to eliminate the pathogens.

d. Innate immune responses produce antigen, which enables the adaptive immune response to eliminate pathogens.

12. Which of the following accurately distinguishes B cells from T cells?

✔ a. B cells produce antibodies, whereas T cells do not.

b. B cells produce antigens, whereas T cells do not.

c. B cells are activated by antigens, whereas T cells are activated by antibodies.

d. B cells are the primary cells of innate immune responses, whereas T cells are the primary cells of adaptive immune responses.

13. All of the following accurately compare antibody-mediated immunity and cell-mediated immunity except

a. Antibody-mediated immunity involves B cells, whereas cell-mediated immunity involves T cells.

✔ b. Antibody-mediated immunity involves T cells, whereas cell-mediated immunity involves B cells.

c. Both antibody-mediated immunity and cell-mediated immunity result in the formation of memory cells that prepare for the next pathogen invasion.

d. Both antibody-mediated immunity and cell-mediated immunity are ways cells in the body can fight unknown invaders.

14. Which of the following accurately distinguishes the innate immune response from the adaptive immune response?

✔ a. The innate immune response provides a faster and more general defense against invading pathogens than the adaptive immune response.

b. The innate immune response provides slower and more general defense against invading pathogens than the adaptive immune response.

c. The innate immune response provides a faster and more targeted defense against invading pathogens than the adaptive immune response.

d. The innate immune response provides a slower and more targeted defense against invading pathogens than the adaptive immune response.

15. If you were explaining the innate immune response to a friend who doesn’t understand it, which of the following would you likely say?

a. The innate immune response occurs when memory cells in the body recognize and destroy invading pathogens.

b. The innate immune response occurs when plasma cells release antibodies that eliminate pathogens.

✔ c. The innate immune response involves physical defenses, antimicrobial substances, fever, inflammation, and phagocytes that consume pathogens.

d. The innate immune response occurs when B and T lymphocytes recognize and neutralize invading microbes in the lymphatic system and bloodstream.

16. If your instructor asked you to explain why inflammation is such an important part of the innate immune response, which of the following would you likely say?

a. The inflammatory reaction reduces blood flow to the site of injury to limit blood loss.

b. Inflammation seals up the site of injury, preventing pathogens from entering the body.

c. Inflammation reduces swelling in the injured area to reduce damage to the tissues.

✔ d. The inflammatory reaction brings white blood cells to the site of injury, allowing them to destroy pathogens and remove them and debris from the site.

17. _____ produce _____, substances that recognize the antigens on foreign microbes and act as tags that identify the invaders.

a. T cells, phagocytes

✔ b. B cells, antibodies

c. T cells, antibodies

d. B cells, phagocytes
18. When bacteria or other pathogens are present in the body, certain white blood cells consume the microorganisms to protect the body from infection, in a process called
   a. Inflammation.
   b. Antibody response.
   ✔ c. Phagocytosis.
   d. Cell-mediated response.
19. As part of the innate immune response, once infection takes place, _____ to accelerate the immune response.
   a. White blood cells leave the tissues and enter the bloodstream
   ✔ b. Fever elevates body temperature
   c. Sweating lowers body temperature
   d. White blood cells enter the tissues and lower body temperature
20. All of the following are physical barriers against invading pathogens except
   ✔ a. Macrophages.
   b. Mucous membranes.
   c. Skin.
   d. Saliva.

19 Respiration:
How do we get oxygen into our systems and CO₂ out?

Upper Respiratory System Dissection Quiz
   ✔ Select the epiglottis.
   ✔ Select one of the arytenoid cartilages.
   ✔ Select the right or left vocal cord.
   ✔ Select the cricothyroid membrane.

Upper Respiratory Structures Multiple Choice Quiz
1. If your friend asked you to identify the factors that affect phonation, you would likely include all of the following factors except
   a. The amount of tension in the vocal folds.
   ✔ b. The motion of the epiglottis.
   c. The size of the folds.
   d. Structures in the oral and nasal cavities.
2. Which of the following explains why the epiglottis is so important?
   a. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs inhaled particles away from the esophagus and into the trachea.
   ✔ b. The epiglottis triggers the cough reflex, which pushes air forcefully up though the larynx, forcing particles up and out of the respiratory system.
   c. The epiglottis swings up and down, directing food into the esophagus and fluid into the trachea.
   d. Inhaled air and ingested nutrients both pass through the oropharynx, and the epiglottis directs food and fluid away from the trachea and into the esophagus.
3. If your friend asked you to explain how air flows through the upper respiratory tract, which of the following would you likely say?
   ✔ a. Inhaled air passes from the nasal or oral cavity through the pharynx and larynx and into the trachea.
   b. Inhaled air passes through the pharynx into the nasal or oral cavity and then through the larynx into the trachea.
   c. Inhaled air passes through the larynx into the nasal or oral cavity and then through the trachea into the pharynx.
   d. Inhaled air passes from the nasal or oral cavity through the trachea and pharynx and into the larynx.
4. Structures in the nasal mucosa do all of the following to air except
   a. Moist it.
   ✔ b. Dry it.
   c. Filter it.
   d. Warm it.
5. All of the following are nasal cartilages except
   a. Ethmoid cartilage.
   ✔ b. Septal cartilage.
   c. Major alar cartilage.
   d. Lateral cartilage.
6. Air entering the nasal cavity flows through passages created by the
   a. Nasopharynx.
   b. Nares.
   ✔ c. Mucous membrane.
   d. Nasal conchae.
7. Which of the following is an upper respiratory structure?
   a. Trachea
   ✔  c. Pharynx
   b. Diaphragm
   d. Lungs

8. Which of the following accurately compares the three major cell types of the alveolar wall?
   ☑  a. Most gas exchange occurs through alveolar macrophages, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and type II alveolar cells remove particulate debris from the alveolar surfaces.
   b. Most gas exchange occurs through type I alveolar cells, alveolar fluid secreted from type II alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.
   c. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from alveolar macrophages keeps the alveolar surfaces moist, and type I alveolar cells remove particulate debris from the alveolar surfaces.
   d. Most gas exchange occurs through type II alveolar cells, alveolar fluid secreted from type I alveolar cells keeps the alveolar surfaces moist, and alveolar macrophages remove particulate debris from the alveolar surfaces.

5. Where does gas exchange occur?
   a. In the bronchioles
   b. In the trachea
   c. In the bronchi
   ✔  d. In the alveoli

6. A delicate, double-layered serous membrane, called the _____, covers the surface of each lung.
   a. Alveoli
   b. Pneumothorax
   ✔  c. Pleura
   d. Peritoneum

7. Relaxation of smooth muscle in the bronchioles during exercise causes _____, whereas allergic reactions and histamines cause _____.
   a. Reduced ventilation, bronchodilation
   ✔  b. Bronchodilation, bronchoconstriction
   c. Reduced ventilation, increased ventilation
   d. Bronchoconstriction, bronchodiilation

8. All of the following are lower respiratory structures except
   a. The trachea.
   b. The lungs.
   c. The bronchi.
   ✔  d. The pharynx.

---

5. Lower Respiratory Structures Multiple Choice Quiz

1. All of the following are differences between the left and the right lungs except
   a. The left lung is slightly smaller than the right lung.
   ✔  b. The left lung is divided into three lobes, whereas the right lung is divided into two lobes.
   c. The right lung is slightly shorter than the left lung.
   d. The left lung is divided into two lobes, whereas the right lung is divided into three lobes.

2. Deoxygenated blood is pumped from the heart’s right ventricle and enters the lungs via pulmonary _____, and oxygenated blood drains through the pulmonary _____ to the left atrium.
   a. Arteries, veins
   b. Veins, capillaries
   c. Venules, arterioles
   d. Veins, arteries
   ✔

3. Gases are exchanged across the walls of the pulmonary _____ in the lungs, and the oxygen content of the blood rises.
   a. Venules
   b. Veins
   c. Arteries
   d. Capillaries
   ✔

4. What reduces the tension of the alveoli and allows them to maintain their shape?
   a. Alveolar macrophages
   b. Surfactant in alveolar fluid
   ✔  c. Type I alveolar cells that line the alveoli
   d. Particulate debris in alveolar fluid

---

Graded Quiz Bank: Instructor’s Manual 281
Select any of the vessels that convey deoxygenated blood from the right ventricle to the lungs.
Select any part of the pulmonary trunk.
Select the oblique fissure of the right or left lung.
Select the middle lobe of the right lung.
Select the right or left hilum.

**Respiration Multiple Choice Quiz 3**

1. What creates the movement that helps inspiration and expiration of air during pulmonary ventilation?
   a. Nervous signals from the cerebral cortex
   b. The pleural fluid that surrounds the lungs
   c. The lungs themselves
   d. Contraction and relaxation of muscles in the diaphragm and thorax
   ✔ d. Contraction and relaxation of muscles in the diaphragm and thorax

2. During normal exhalation, the diaphragm and external intercostals
   a. Relax.
   b. Contract.
   c. Depress the ribs.
   d. Flex the vertebral column.
   ✔ a. Relax.

3. Why does oxygen diffuse from the alveolus into the pulmonary capillary?
   a. Both the alveolus and the surrounding pulmonary capillaries have a low-oxygen partial pressure.
   b. Both the alveolus and the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   c. The alveolus has a low-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a low-oxygen partial pressure.
   d. The alveolus has a high-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a high-oxygen partial pressure.
   ✔ c. The alveolus has a low-oxygen partial pressure, whereas the surrounding pulmonary capillaries have a low-oxygen partial pressure.

4. The gas-transporting molecules in red blood cells are called
   a. Erythrocytes.
   b. Plasma.
   c. Alveoli.
   d. Hemoglobin.
   ✔ d. Hemoglobin.

5. When chemoreceptors in the aortic arch and common carotid arteries detect changes in carbon dioxide and oxygen levels in the blood, they send signals up to which two cranial nerves?
   a. Vagus and glossopharyngeal
   b. Hypoglossal and glossopharyngeal
   c. Vagus and hypoglossal
   d. Accessory and trigeminal
   ✔ a. Vagus and glossopharyngeal

6. If you were explaining Boyle's law to a friend who does not understand it, you would likely make all of the following points except
   a. An increase in the volume of a container lowers the pressure of the air inside.
   b. A decrease in the volume of a container raises the pressure in the reduced space.
   c. An increase in the volume of a container raises the pressure of the air inside.
   d. Pressure and volume are inversely related.
   ✔ c. An increase in the volume of a container raises the pressure of the air inside.

7. Which of the following is a similarity between inspiration and expiration during forced breathing?
   a. Both involve accessory muscles of the neck.
   b. Both are passive processes.
   c. Both occur due to muscles relaxing.
   d. Both occur due to muscle contractions.
   ✔ d. Both occur due to muscle contractions.

8. Which of the following accurately explains external respiration?
   a. Oxygen from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream, while carbon dioxide from oxygen-depleted blood diffuses from the capillaries into the alveoli and is expelled through exhalation.
   ✔ b. Oxygen from the blood diffuses from the capillaries into the alveoli and is expelled through exhalation, while carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   c. Oxygen and carbon dioxide from inhaled air diffuses from the alveoli into the pulmonary capillaries surrounding them and is pumped through the bloodstream.
   d. Oxygen moves from the alveoli to the pulmonary arteries and carbon dioxide leaves the pulmonary veins to enter the alveoli.
9. If you were giving an oral presentation on internal respiration, you would likely make all of the following points except
a. In the lungs, oxygen is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.
b. At the narrow capillaries within body tissues, red blood cells release oxygen, which diffuses through the capillary walls into tissues.
c. At the narrow capillaries within body tissues, the waste product carbon dioxide diffuses into the bloodstream, where it is carried inside red blood cells and in plasma back to the lungs.
✔ d. In the lungs, carbon dioxide is absorbed into the red blood cells, binding to hemoglobin, which carries it to body tissues.

10. If your instructor asked you how breathing patterns can be altered, which of the following would you not want to say?
a. The body adjusts the rate and depth of normal breathing in response to metabolic needs.
b. Talking, sneezing, and coughing can alter breathing patterns for short periods of time.
✔ c. Breathing patterns can only be altered by acute diseases and injuries.
d. The medulla oblongata adjusts the breathing rate as needed, in response to changes in carbon dioxide and oxygen levels in the blood.

Hemoglobin Short Answer Quiz

Describe conditions that change hemoglobin's binding efficiency.

Explain what cooperative binding means, with respect to hemoglobin.

20 Digestion:
How do we turn food into molecules our systems can use?

Digestion: To the Stomach Multiple Choice Quiz

1. Which of the following best describes the papillae on the tongue?
   a. Taste buds are raised projections on the tongue's surface. Circumvallate and fungiform taste buds contain papillae; filiform papillae create friction that helps the tongue move food.
   b. The papillae are raised projections on the tongue's surface. Circumvallate and fungiform papillae contain taste buds; fungiform papillae create friction that helps the tongue move food.
   ✔ c. The papillae are raised projections on the tongue's surface. Circumvallate and fungiform papillae contain taste buds; filiform papillae create friction that helps the tongue move food.
   d. The papillae are raised projections on the tongue's surface. Filiform papillae contain taste buds; circumvallate and fungiform papillae create friction that helps the tongue move food.

2. Which of the following best describes how the structures of the oral cavity work?
   ✔ a. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.
b. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the esophagus by the epiglottis, which folds down to block the trachea.
c. Once food enters the oral cavity, the teeth chew it and saliva completely digests it. During swallowing, the bolus is moved into the trachea by the epiglottis, which folds down to block the esophagus.
d. Once food enters the oral cavity, the teeth chew it and saliva partially digests it. During swallowing, the bolus is moved into the trachea by the epiglottis, which folds down to block the esophagus.

3. During swallowing, the epiglottis prevents choking by folding down to close off the _____ and _____.
   a. Larynx, esophagus
   ✔ b. Larynx, trachea
c. Esophagus, trachea
d. Larynx, pharynx

4. The muscles that move the mandible during mastication are the
   a. Occipitofrontalis, the temporalis, and the superficial and deep masseters.
   b. Occipitofrontalis, the temporalis, and the medial and lateral pterygoids.
   c. Superficial and deep masseters, the hyoglossus, and the medial and lateral pterygoids.
   ✔ d. Temporalis, the superficial and deep masseters, and the medial and lateral pterygoids.
5. Taste buds are found in the _____ and _____.
   ✔ a. Circumvallate papillae, fungiform papillae
   b. Circumvallate papillae, filiform papillae
   c. Fungiform papillae, filiform papillae
   d. Fungiform papillae, fauces

6. If you were explaining the stomach regions to a friend, you might say all of the following except
   ✔ a. The cardia, or cardiac region, connects the stomach to the duodenum.
   b. The pylorus, or pyloric region, connects the stomach to the duodenum.
   c. The body is the main part of the stomach and it is located below the fundus.
   d. The fundus is located inferior to the diaphragm.

7. Which of the following is a good description of the function of the stomach sphincters?
   ✔ a. The cardiac sphincter is where a bolus enters the stomach from the esophagus. The pyloric sphincter is where chyme exits the stomach into the duodenum.
   b. The cardiac sphincter is where chyme enters the stomach from the esophagus. The pyloric sphincter is where a bolus exits the stomach into the duodenum.
   c. The pyloric sphincter is where a bolus enters the stomach from the esophagus. The cardiac sphincter is where chyme exits the stomach into the duodenum.
   d. The pyloric sphincter is where chyme enters the stomach from the esophagus. The cardiac sphincter is where chyme exits the stomach into the duodenum.

8. All of the following are regions of the stomach except
   a. The cardia.
   b. The fundus.
   ✔ c. The duodenum.
   d. The body.

9. Where does food enter the stomach?
   ✔ a. In the cardiac sphincter
   b. In the fundus
   c. In the pyloric sphincter
   d. In the duodenum

**Digestion: From the Stomach Multiple Choice Quiz**

1. The taenia coli are bands of _____ running along the outside of the colon.
   a. Lymphatic tissue
   ✔ b. Muscle
   c. Endocrine tissue
   d. Membrane

2. All of these are true of villi except
   ✔ a. They propel chyme through the pyloric sphincter.
   b. They line the interior wall of the small intestine.
   c. They help absorb nutrients from ingested food.
   d. They contain lacteals of the lymphatic system.

3. How does the pathway of bile to the duodenum differ from the pathway of pancreatic juice?
   ✔ a. If bile is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Pancreatic juice flows only to the duodenum.
   b. Pancreatic juice flows out of the pancreas via only one duct, whereas bile may flow out of the liver via two ducts.
   c. Bile flows out of the liver via only one duct, whereas pancreatic juice only flows out of the pancreas via one duct.
   d. If pancreatic juice is not immediately needed for digestion, it may flow to the gall bladder via the cystic duct, instead of to the duodenum. Bile flows only to the duodenum.

4. Why is the hepatic portal system important?
   ✔ a. It ensures that blood is oxygenated before entering the circulation.
   b. It allows nutrients and wastes to be processed in the gall bladder instead of entering the circulation directly.
   c. It allows nutrients and wastes to be processed in the pancreas instead of entering the circulation directly.
   d. It allows nutrients and wastes to be processed in the liver instead of entering the circulation directly.

5. Which of the following describes the longest portion of the alimentary canal?
   ✔ a. The large intestine is where water is absorbed.
   b. The small intestine is where absorption of nutrients occurs.
   c. The rectum and anal canal are where waste is eliminated.
   d. The stomach is where food is broken down into chyme.
6. How would you explain peristalsis to someone who needed help understanding how it works?
   a. Peristalsis occurs throughout the alimentary canal to move digested food forward. The waves of contractions are dramatic, and one peristaltic wave can be enough to move a bolus down the esophagus.
   b. Peristalsis occurs in the stomach and intestines to move digested food forward. The waves of contractions are small and regular.
   ✔️ c. The alimentary canal is a continuous tube. The walls of the tube include layers of smooth muscle. The rhythmic contraction and relaxation of the smooth muscle is called peristalsis.
   d. The alimentary canal is a continuous tube. The walls of the tube include layers of smooth muscle. These layers of smooth muscle contract randomly to propel digested food forward. The contractions take place at the same rate throughout the alimentary canal.

7. Where does chyme exit the stomach into the duodenum?
   ✔️ a. In the pyloric sphincter
   b. In the esophagus
   c. In the cardiac sphincter
   d. In the gastroesophageal sphincter

8. If you were summarizing the defecation reflex, you might include all of the following except
   a. The reflex is triggered by feces stretching the rectum.
   b. The internal anal sphincter relaxes.
   c. Voluntary relaxation of the external anal sphincter allows defecation to occur.
   ✔️ d. Involuntary relaxation of the external anal sphincter allows defecation to occur.

9. If you wanted to explain the function of bacteria in the large intestine to someone who did not understand it, you might include all of the following except
   a. Bacteria break down carbohydrates and other substances in chyme.
   ✔️ b. Bacteria absorb water in the colon.
   c. Bacteria release vitamin B, which the colon absorbs.
   d. Bacteria release vitamin K, which the colon absorbs.

10. Which of the following best describes what happens to nutrients in the chyme as it travels through the small intestine?
    a. The nutrients are further broken down by bacteria. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.
    ✔️ b. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by secretions from organs.
    c. The nutrients are further broken down by intracellular enzymes. Then they are taken up by intestinal lining cells and digested further by bacteria.
    d. The nutrients are further broken down by secretions from organs. Then they are taken up by intestinal lining cells and digested further by intracellular enzymes.

11. Which of these is the best explanation of the structure of the colon?
    a. The cecum is the first part of the colon, followed by the descending colon, the transverse colon, the ascending colon, and then the sigmoid colon.
    ✔️ b. The cecum leads into the colon, which begins with the ascending colon, followed by the transverse colon, the descending colon, and then the sigmoid colon.
    c. The cecum is the first part of the colon, followed by the ascending colon, the transverse colon, the descending colon, and then the sigmoid colon.
    d. The cecum leads into the colon, which begins with the descending colon, followed by the transverse colon, the ascending colon, and then the sigmoid colon.

12. Which of the following is a similarity between the circular folds and the villi?
    ✔️ a. They both increase the surface area available for absorption.
    b. They both secrete chyme.
    c. They are both located in the large intestine.
    d. They are both tiny raised projections.
13. How would you summarize the last few steps of the digestive process?
   a. Water is absorbed in the small intestine.
      Nutrients are absorbed in the large intestine.
      Waste is eliminated through the rectum and anal canal.
   b. Water is absorbed in the small intestine.
      Nutrients are absorbed in the large intestine and rectum.
      Waste is eliminated through the anal canal.
   ✔  c. Nutrients are absorbed in the small intestine.
      Water is absorbed in the large intestine. Waste
      is eliminated through the rectum and anal canal.
   d. Nutrients are absorbed in the small intestine.
      Water is absorbed in the large intestine and rectum.
      Waste is eliminated through the anal canal.

14. Which structures in the intestine increase the surface area available for absorption?
   ✔  a. Circular folds and villi
   b. Villi and pyloric sphincter
   c. Circular folds and haustra
   d. Villi and haustra

15. From the cecum to the rectum, the regions of the colon are the
   a. Descending colon, sigmoid colon, transverse colon, ascending colon.
   ✔  b. Ascending colon, transverse colon, descending colon, sigmoid colon.
   c. Descending colon, transverse colon, sigmoid colon, ascending colon.
   d. Ascending colon, descending colon, transverse colon, sigmoid colon.

16. Chyme passes from the _____ of the small intestine through the ileocecal valve into the _____.
    a. Duodenum, colon
    ✔  b. Ileum, colon
    c. Duodenum, cecum
    d. Ileum, cecum

Digestion Dissection Quiz
- Select any of the salivary ducts.
- Select any of the muscles of mastication.
- Select the epiglottis.
- Select any molar.
- Select the right or left palatine tonsil.
- Select the common bile duct.
- Select any part of the pancreas.
- Select the gall bladder.
- Select any part of the duodenum.
- Select the pyloric sphincter.
- Select the cardiac sphincter.
- Select the longitudinal muscle layer of the stomach.
- Select the circular muscle layer of the stomach.
- Select the oblique muscle layer of the stomach.
- Select the esophagus.
- Select any incisor.
- Select the appendix.
- Select the rectum.
- Select the taenia coli of the transverse colon.

Digestion Short Answer Quiz
- Explain what would happen to the digestive process if a patient took too many antacids.
- Explain how food is broken down, from what is on the table to the small molecules the body actually uses.
- How does diet influence the gut microbiome? Explain how this could influence health.

21 Urinary System: How do we maintain osmotic balance?

Kidneys, Nephrons, and Urine Production
Multiple Choice Quiz

1. If your instructor asked you to explain the role of antidiuretic hormone in the urinary system, which of the following points would you likely make?
   a. Antidiuretic hormone stimulates waste secretion in the kidneys.
   b. Antidiuretic hormone inhibits waste secretion in the kidneys.
   ✔  c. Antidiuretic hormone increases water reabsorption by the kidneys.
   d. Antidiuretic hormone limits water reabsorption by the kidneys.
2. If your instructor asked you to trace the process of urine formation, which of the following identifies the steps in the correct order?

✔ a. Glomerular filtration occurs first and then reabsorption and secretion occur simultaneously.

b. Glomerular filtration occurs first, secretion occurs second, and reabsorption occurs third.

c. Secretion occurs first, glomerular filtration occurs second, and reabsorption occurs third.

d. Reabsorption and secretion occur simultaneously first and then glomerular filtration occurs.

3. If your instructor asked you to explain what prevents proteins and blood cells from going through the filtration membrane, which of the following would you most likely say?

✔ a. The filtration membrane contains chemicals that repel proteins and blood cells.

b. Proteins and blood cells are too large to fit through the pores in the filtration membrane.

c. Blood pressure binds the proteins and blood cells to the glomerulus.

d. The filtration membrane has a sticky surface that catches proteins and blood cells.

4. If the hypothalamus detects decreased water concentration in the blood, it stimulates the pituitary gland to release more

✔ a. Angiotensinogen.

b. Natriuretic hormones.

c. Antidiuretic hormone.

d. Aldosterone.

5. What is the impetus for glomerular filtration?

a. Blood pressure inside the capillaries in the glomerulus is controlled by the surrounding capsular space.

✔ b. Blood pressure inside the capillaries in the glomerulus is higher than that of the surrounding capsular space.

c. Blood pressure inside the capillaries in the glomerulus is equal to that of the surrounding capsular space.

d. Blood pressure inside the capillaries in the glomerulus is lower than that of the surrounding capsular space.

6. How many nephrons does each kidney include?

✔ a. Over a million

b. Hundreds

c. Thousands

d. Less than one hundred

7. The first step in urine formation is

✔ a. Micturition.

b. Secretion.

c. Reabsorption.

d. Glomerular filtration.

8. If your instructor asked you to outline the path through which plasma is filtered into urine through the nephron, which of the following would you identify as the correct path?

✔ a. Ureter, capillaries, distal convoluted tubule, proximal convoluted tubule, glomerular capsule, nephron loop, collecting duct

b. Ureter, collecting duct, capillaries, proximal convoluted tubule, distal convoluted tubule, nephron loop, glomerular capsule

c. Capillaries, glomerular capsule, proximal convoluted tubule, nephron loop, distal convoluted tubule, collecting duct, ureter

d. Glomerular capsule, distal convoluted tubule, nephron loop, proximal convoluted tubule, capillaries, collecting duct, ureter

9. Which of the following visually distinguishes the renal cortex from the renal medulla?

✔ a. The cortex is lighter colored, whereas the medulla is darker.

b. The cortex is darker colored, whereas the medulla is lighter.

c. The cortex is pyramid-shaped, whereas the medulla is funnel-shaped.

d. The cortex is funnel-shaped, whereas the medulla is bean-shaped.

10. If your instructor asked you to do an oral report on the functions of the kidney's structures, which of the following would you most likely say?

✔ a. The renal pyramid functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.

b. The renal pelvis functions as an excretory channel for the kidney, funneling urine from the kidney into the ureters.

c. The renal pelvis contains nephrons that filter blood and create urine.

d. The renal cortex contains nephrons that filter blood and create urine.
11. If you were explaining blood flow through the nephron to a friend who does not understand the process, which of the following would you most likely say?

a. Blood enters each kidney through the renal vein and then travels through the venules to the glomerulus, where it is filtered; the filtered blood travels through the capillaries surrounding the nephrons and then into the arteries, exiting the kidney through the renal artery.

✔ b. Blood enters each kidney through the renal artery and then travels through the capillaries to the glomerulus, where it is filtered; the filtered blood travels through the arterioles surrounding the nephrons and then into the veins, exiting the kidney through the renal vein.

c. Blood enters each kidney through the renal vein and then travels through the capillaries to the glomerulus, where it is filtered; the filtered blood travels through the arterioles surrounding the nephrons and then into the veins, exiting the kidney through the renal vein.

✔ d. Blood enters each kidney through the renal artery and then travels through the arterioles to the glomerulus, where it is filtered; the filtered blood travels through the capillaries surrounding the nephrons and then into the veins, exiting the kidney through the renal vein.

12. Where does urine production take place?

✔ a. In the renal cortex

✔ b. In the renal pelvises

c. In the renal pyramids

d. In the renal columns

13. Each kidney consists of an outer renal _____ and an inner renal _____.

✔ a. Pyramid, pelvis

✔ b. Cortex, medulla

c. Pyramid, cortex

d. Medulla, cortex

Urinary Dissection Quiz

❱ Select the right or left renal vein.

❱ Select the right or left renal artery.

❱ Select the right or left ureter.

❱ Select any of the renal pyramids.

❱ Select the right or left renal pelvis.

❱ Select the internal urethral sphincter.

❱ Select the external urethral sphincter.

❱ Select the urethra.

Urine Storage Multiple Choice Quiz

1. If your friend asked you to explain the difference between the internal and external urethral sphincters, which of the following would you likely say?

✔ a. The internal urethral sphincter is involuntary, whereas the external urethral sphincter is voluntary.

b. The internal urethral sphincter pushes urine from the urethra into the bladder, whereas the external urethral sphincter determines how much urine is expelled at a time.

c. The internal urethral sphincter determines how much urine is expelled at a time, whereas the external urethral sphincter controls the intensity of urination.

d. The internal urethral sphincter is voluntary, whereas the external urethral sphincter is involuntary.

2. If you were explaining the micturition reflex to a friend who does not understand the process, which of the following would you say to explain the steps in the correct order?

a. When the bladder fills with urine, contractions of the detrusor muscle cause stretch receptors in the bladder wall to transmit nerve impulses to the sacral spinal cord, triggering relaxation of the internal and external urethral sphincters.

✔ b. When the bladder fills with urine, the internal and external urethral sphincters relax, causing stretch receptors in the bladder wall to transmit nerve impulses to the sacral spinal cord that trigger detrusor muscle contractions.

c. When the bladder fills with urine, stretch receptors in the bladder wall transmit nerve impulses to the sacral spinal cord, triggering contraction of the detrusor muscle, relaxation of the internal urethral sphincter, and voluntary relaxation of the external urethral sphincter.

d. When the bladder fills with urine, the internal urethral sphincter relaxes, causing stretch receptors in the bladder wall to transmit nerve impulses to the sacral spinal cord that trigger detrusor muscle contractions and ultimately voluntary relaxation of the external urethral sphincter.

3. If your instructor asked you to explain the ureters to your peers, you would likely make all of the following points except

✔ a. The ureters convey urine from the bladder out of the body.

b. The ureters are thick-walled, narrow tubes.

c. The ureteral orifices, along with the internal urethral orifice, make up the trigone of the bladder.

d. The ureters enter the bladder through slitlike openings in the posterolateral bladder floor.
4. All of the following are regions of the male urethra except
   a. Spongy urethra.
   b. Prostatic urethra.
   ✔ c. Vestibular urethra.
   d. Membranous urethra.

5. Which structures maintain urinary continence?
   a. Ureters
   ✔ b. Internal and external urethral sphincters
   c. Kidneys
   d. Renal pelvises

6. When the bladder fills with urine, _____ in the bladder wall trigger the micturition reflex.
   a. Muscle contractions
   ✔ b. Stretch receptors
   c. Muscle relaxation
   d. Hormone receptors

7. At which approximate bladder volume will micturition occur unless the external urethral sphincter is powerful enough to stop it?
   ✔ a. 500 ml
   b. 200 ml
   c. 100 ml
   d. 750 ml

8. In males, the bladder is located _____ the rectum and _____ the prostate gland.
   a. Behind, above
   b. Behind, below
   c. In front of, below
   ✔ d. In front of, above

9. When the bladder reaches an approximate volume of 200-250 ml, the _____ muscle begins to contract and the _____ muscle begins to relax, creating the urge to micturate.
   a. Internal urethral, detrusor
   b. Internal urethral, external urethral
   ✔ c. External urethral, detrusor
   d. Detrusor, internal urethral

10. Ureters are tubes of smooth muscle that move urine from the renal pelvises to the bladder through
    a. Anastalsis.
    ✔ b. Peristalsis.
    c. Reflux.
    d. Passive drainage.

22 Reproduction:
Do you come from the land down under?

Male Reproductive System Dissection Quiz

Select the corpus spongiosum.
Select either of the corpora cavernosa.
Select any part of the prostate.
Select the right or left seminal vesicle.
Select either of the testes.
Select the right or left epididymis.
Select the right or left spermatic cord.
Select any part of the prostatic urethra.
Select the right or left ejaculatory duct.
Select the glans penis.

Female Reproductive System Dissection Quiz

Select any part of the uterus.
Select any part of the right or left ovary.
Select the right or left ovarian ligament.
Select the right or left fimbriae.
Select the right or left uterine tube.
Select the vestibule.
Select the clitoris.
Select the prepuce.
Select the labia minora.
Select the vagina.

Genitalia and Gamete Production Multiple Choice Quiz

1. An ovulated oocyte passes from the ovary into the _____. If the oocyte is fertilized, it implants in the _____.
   ✔ a. Uterine tube, uterus
   b. Uterus, uterine tube
   c. Uterine tube, cervix
   d. Cervix, uterus

2. Which hormone stimulates the follicle in the ovary to release an oocyte while the uterine lining is thickening?
   ✔ a. Luteinizing hormone (LH)
   b. Estrogen
   c. Progesterone
   d. Follicle-stimulating hormone (FSH)
3. All of these structures belong to the female external genitalia except
   a. The vestibule.
   ✔ b. The vagina.
   c. The prepuce.
   d. The labia minora.

4. The _____ support the uterus, ovaries, and vagina.
   a. Uterine tubes
   ✔ b. Pelvic ligaments
   c. Fimbriae
   d. Rugae

5. Which of the following best explains how the male sexual response works?
   a. Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the vas deferens.
   ✔ b. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from the corpora cavernosa, forming semen, which is ejaculated through the urethra.
   ✔ c. Peristalsis pushes sperm up through the vas deferens. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the urethra.
   d. Peristalsis pushes sperm up through the urethra. The sperm mixes with secretions from accessory glands, forming semen, which is ejaculated through the vas deferens.

6. If you were explaining the components and function of semen, you might say all of the following except
   ✔ a. Semen contains seminal fluid produced by the testes.
   b. Semen contains seminal fluid produced by accessory glands.
   c. The seminal fluid in semen transports and protects sperm cells.
   d. Semen contains sperm produced by the testes.

7. Which of the following are glands that contribute components to semen?
   a. The epididymis, prostate, and bulbourethral glands
   ✔ b. The seminal vesicles, epididymis, and bulbourethral glands
   c. The seminal vesicles, testes, and prostate
   d. The seminal vesicles, prostate, and bulbourethral glands

8. How would you describe the duct system that delivers sperm?
   a. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
   b. The duct system that delivers sperm extends up through the urethra and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.
   ✔ c. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the ejaculatory ducts. The vas deferens is part of this duct system.
   d. The duct system that delivers sperm extends up through the spermatic cords and over the bladder, descending behind it to join the seminiferous tubules. The vas deferens is part of this duct system.

9. Which of the following best explains the function of the epididymis?
   a. The epididymis is a gland where sperm produced in the testes are stored while they mature.
   ✔ b. The epididymis is a duct where sperm produced in the testes are stored while they mature.
   c. The epididymis is a duct where sperm produced in the testes are stored once they are fully functional.
   d. The epididymis is a gland where sperm produced in the testes are stored once they are fully functional.
10. If you were explaining the function of spermatogonia to a classmate, which of these would you say?
   a. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce secondary spermatocytes.
   ✔️ c. Spermatogonia are stem cells that develop into immature sperm in the seminiferous tubules. They divide by meiosis to produce primary spermatocytes.
   b. Spermatogonia are stem cells that develop into immature sperm in the epididymis. They divide by meiosis to produce primary spermatocytes.
   d. Spermatogonia are stem cells that develop into immature sperm in the seminiferous tubules. They divide by meiosis to produce secondary spermatocytes.

11. Which gland or lobe of a gland stimulates the testes to produce androgens?
   a. Hypothalamus
   ✔️ b. Anterior pituitary
   c. Prostate
   d. Posterior pituitary

12. Which of the following causes erectile tissue to swell during sexual arousal, producing an erection?
   a. Arteries in the penis constrict and veins dilate.
   ✔️ c. Arteries in the penis dilate and veins constrict.
   b. Peristalsis pushes sperm up through the vas deferens.
   d. Peristalsis pushes sperm up through the urethra.

13. How many chromosomes do immature sperm cells have once spermatogenesis concludes?
   ✔️ a. 23
   b. 46
   c. 18
   d. 36

Fetal Development Multiple Choice Quiz

1. If you were explaining the role of contractions during birth, you might say any of the following except
   ✔️ a. The contractions that signal the beginning of labor occur at random intervals.
   b. Contractions detach the placenta from the uterus and expel it.
   c. Powerful contractions push the fetus outward through the cervix.
   d. Contractions move the head of the fetus to the cervix, which dilates.

2. In describing the process of fetal reproductive development, you would include all of the following except
   ✔️ a. Male fetal development begins around the fourth week after conception.
   b. Female development occurs if two X chromosomes are present.
   c. Male development occurs if the embryo has an X and a Y chromosome.
   d. An early embryo's internal and external genitalia are undifferentiated.

3. How would you explain neurulation to a classmate who does not understand the process?
   a. Part of the dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the posterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
   ✔️ b. The entire dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the posterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
   c. The entire dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the anterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
   d. Part of the dorsal ectoderm thickens to form the neural plate. Neural folds are formed and then fuse to create the neural tube. The brain forms from the anterior end of the neural tube, and the spinal cord forms from the rest of the neural tube.
4. Which of the following best explains the development of twins?
   a. In the case of fraternal twins, each fetus usually has its own placenta, chorion, and amniotic sac. Identical twins share the placenta and the chorion, and sometimes the amniotic sac.
   ✔ b. In the case of fraternal twins, each fetus usually has its own placenta, chorion, and amniotic sac. Identical twins may each have their own placenta, chorion, and amniotic sac. In some cases, they share the placenta and the chorion; it is very rare for both the placenta and amniotic sac to be shared.
   c. In the case of both identical and fraternal twins, the placenta and chorion may be shared, but it is very rare for both the placenta and the amniotic sac to be shared.
   d. In the case of both identical and fraternal twins, each twin has its own placenta, chorion, and amniotic sac.

5. Which of the following accurately compares the conception of fraternal and identical twins?
   a. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized, each by a different sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Fraternal and identical twin pregnancies are equally common.
   ✔ b. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized by the same sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Twin pregnancies are fraternal 90% of the time.
   c. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized, each by a different sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Twin pregnancies are fraternal 90% of the time.
   d. Fraternal twins are conceived when more than one egg is released during a menstrual cycle and two eggs are fertilized by the same sperm cell. Identical twins develop from a single fertilized egg. Once the blastocyst forms, it splits into two separate groups of cells. Fraternal and identical twin pregnancies are equally common.

6. If you were explaining the role of hCG in pregnancy, you would include all of the following except
   ✔ a. hCG spikes late in the pregnancy as the corpus luteum degenerates.
   b. hCG is produced by the cells that will form the chorion later in a pregnancy.
   c. hCG maintains the corpus luteum, which secretes estrogen and progesterone.
   d. By the end of the second week of development, hCG can usually be detected in a pregnant woman's urine.

7. Which of the following is the best explanation of what happens from fertilization to implantation?
   ✔ a. The zygote divides, multiplies, and develops into an embryo over the course of about ten days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.
   b. The blastocyst divides, multiplies, and develops into an embryo over the course of about ten days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a zygote.
   c. The blastocyst divides, multiplies, and develops into an embryo over the course of about five days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a zygote.
   d. The zygote divides, multiplies, and develops into an embryo over the course of about five days as it travels along a uterine tube to the uterus. By the time it reaches the uterus, the fertilized egg has become a blastocyst.
8. During childbirth, the hormone ____ from the _____ stimulates the contraction of the uterus.
   a. Progesterone, posterior pituitary
   ✔ b. Oxytocin, posterior pituitary
c. Progesterone, anterior pituitary
d. Oxytocin, anterior pituitary

9. By which week of pregnancy is the embryo considered a fetus?
   ✔ a. Week 10
   b. Week 4
c. Week 12
d. Week 16

10. In neurulation, the anterior end of the neural tube forms the _____, and the rest of the neural tube forms the _____.
    a. Neural plate, spinal cord
    ✔ b. Brain, spinal cord
c. Brain, neural plate
d. Spinal cord, brain

11. As the embryo develops, what do the amnion and the yolk sac become, respectively?
    a. Part of the digestive tract; a sac that will fill with fluid to cushion the developing embryo
    b. The placenta and structures that nourish and support the embryo; part of the digestive tract
    c. A sac that will fill with fluid to cushion the developing embryo; the placenta and structures that nourish and support the embryo
    ✔ d. A sac that will fill with fluid to cushion the developing embryo; part of the digestive tract

12. When the cells of the blastocyst divide into two groups, about 15 days after conception, one group includes _____ and the other group forms an environment to protect and nourish the embryo.
    a. Morula cells
    b. Endometrial cells
    ✔ c. The earliest embryonic cells
d. Placental cells

13. Before a zygote implants on the uterine wall, it develops first into a(n) ____ and then into a blastocyst.
    a. Oocyte
    b. Embryo
    c. Gamete
    ✔ d. Morula

14. By the time the fertilized egg implants in the uterus, it has become a collection of hundreds of cells called a(n)
    a. Blastocyst.
    ✔ b. Embryo.
c. Zygote.
d. Gamete.

15. During sexual reproduction, sperm cells fertilize a
    a. Gamete.
    ✔ b. Secondary oocyte.
c. Zygote.
d. Primary oocyte.

16. Which of the following is true of a zygote cell?
    ✔ a. It has 46 chromosomes.
b. It fertilizes the female gamete.
c. It is a secondary oocyte cell.
d. It has 23 chromosomes.