The Skeletal System

Total Questions: 2  SC.912.L.14.12 - Describe the anatomy and histology of bone tissue.
Focus: Students will know the parts of the bone
Content Limits: This will include: anatomical long bone structures, bone tissues (aka bone, cartilage, joints, marrow) repairs and remodeling.

Total Questions: 4  SC.912.L.14.14 - Identify the major bones of the axial and appendicular skeleton
Focus: Students will know all 206 bones of the adult body
Content Limits: Items will not include a diagram of an adult skeleton with specific bony landmarks (example lateral epicondyle of the right femur)

Bones you need to know:

<table>
<thead>
<tr>
<th>GROUP 1 – BONES OF THE UPPER LIMBS (ARMS)</th>
<th>GROUP 2 – BONES OF THE LOWER LIMBS (LEGS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Humerus</td>
<td>1. Femur</td>
</tr>
<tr>
<td>2. Ulna</td>
<td>2. Patella</td>
</tr>
<tr>
<td>3. Radius</td>
<td>3. Tibia</td>
</tr>
<tr>
<td>4. Carpals</td>
<td>4. Fibula</td>
</tr>
<tr>
<td>5. Metacarpals</td>
<td>5. Tarsals</td>
</tr>
<tr>
<td></td>
<td>7. Phalanges</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scapula</td>
<td>1. Mandible</td>
</tr>
<tr>
<td>2. Clavicle</td>
<td>2. Zygomatic</td>
</tr>
<tr>
<td>4. ribs</td>
<td>4. Frontal</td>
</tr>
<tr>
<td>5. vertebral</td>
<td>5. Occipital</td>
</tr>
<tr>
<td>7. Coccyx</td>
<td>7. Temporal</td>
</tr>
<tr>
<td>8. Coxal bones (pelvic bones)</td>
<td></td>
</tr>
</tbody>
</table>

Skeletal Sample Questions:

1. Which of the following is not a function of the skeleton system?
   a. Movement                             c. creation of blood cells
   b. Storage of hormones                 d. storage of fat in yellow marrow

2. How many phalanges (total) does the pinky have?
   a. 1                                     c. 3
   b. 2                                     d. 0

3. A tear of a ligament is a
   a. Sprain                                c. Fracture
   b. Strain                                d. Stress Fracture

4. What are the two types of bone tissue?
   a. compact and spongy                   c. adipose and areolar
   b. blood and lymph                      d. muscular and cardiac
5. ______ homeostasis is a function of the skeletal system
   a. Oxygen
   b. Calcium
   c. Cellular
   d. Nitrogen

6. This is the smallest of the two bones of the lower leg and is located more laterally and more posteriorly
   a. Femur
   b. Tibia
   c. Fibula
   d. Ulna

7. Which of the following bones is not found on the upper limb?
   a. Ulna
   b. Radius
   c. Tarsals
   d. Humerous

8. Which of the following bones is NOT located on the head?
   a. Frontal
   b. Mandible
   c. Parietal
   d. Clavicle

9. Which of the following bones is located on the back?
   a. Sternum
   b. Scapula
   c. Clavicle
   d. Humerus

10. Which of the following bones offers the most protection to the body?
    a. Ribs
    b. Patella
    c. Zygomatic
    d. Carpals

For each of the following sets of bones, identify the bone that is least related by location

11. a. humerus  b. tibia  c. ulna  d. radius
12. a. carpals  b. metatarsals  c. calcaneal  d. tarsals
13. a. occipital  b. parietal  c. temporal  d. clavicle

14. How many phalanges does the human body have on both feet combined?
   a. 14  c. 10
   b. 28  d. 56

Axial/Appendicular:
15. Which of the following bones is part of the appendicular skeleton?
    I) Carpals
    II) Clavicle
    III) Coxal bones (ilium, ischium, publis)
    IV) Femur
    a. I, IV  c. I, II, III, IV
    b. II and III  d. I, II, IV
16. Which of the following bones is found on the axial skeleton?
   I) Axis  III) Talus
   II) Sternum  IV) Scapula
   a. I only  c. I, II and IV
   b. I and II  d. I, II, III, and IV

17. The diaphysis
   a. Is the space inside (deep) the epiphysis
   b. The distal and proximal ends of the bone
   c. Surrounds the bone wherever it is not covered by articular cartilage
   d. The long, cylindrical, main portion of the bone

18. The region where the diaphysis joins the epiphysis is the
   a. Metaphysis  c. Endosteum
   b. Periosteum  d. Medullary cavity

Skeletal Labeling:
✓ Axial:
   o Skull
   o Mandible
   o Sternum
   o Ribs
   o Vertebral column
   o Sacrum
✓ Appendicular:
   o Clavicle
   o Scapula
   o Humerus
   o Ulna
   o Radius
   o Metacarpals
   o Phalanges
   o Coxa
   o Femur
   o Patella
   o Tibia
   o Fibula
   o Tarsals
   o Metatarsals
   o Phalanges

Muscular System:

<table>
<thead>
<tr>
<th>Total Questions: 6</th>
<th>SC.912.L.14.20 - Identify the major muscles of the human on a model or diagram.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will know major muscle groupings</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>This will not include: origin, insertion of specific action</td>
</tr>
</tbody>
</table>

DIRECTIONS: IDENTIFY THE LOCATION AND FUNCTION OF THE FOLLOWING MUSCLES
1. Zygomaticus -
2. Orbicularis oculi -
3. Orbicularis oris -
1. Frontalis -
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2. Masseter
3. Deltoid
4. Gastrocnemius
5. Pectoralis major
6. Intercostals
7. Trapezius
8. Rectus abdominus
9. Masseter
10. external obliques
11. Quadriceps femoris
12. Biceps brachii
13. Triceps brachii
14. Hamstrings
15. Latissimus Dorsi

Muscle Names:
1. ____________ Large diamond-shaped muscle of the upper back
2. ____________ Calf muscle
3. ____________ muscle encircling the mouth
4. ____________ lateral shoulder; shaped like a triangle
5. ____________ vertical abdominal muscles
6. ____________ large muscle of the buttocks
7. ____________ vertical muscle along the shin
8. ____________ facial muscle; vertical; along the sides of the face; important for chewing
9. ____________ facial muscle; along the cheek bone; important for smiling
10. ____________ posterior upper arm
11. ____________ anterior upper arm
12. ____________ posterior thigh; bend (flexes) the knee
13. ____________ anterior thigh; extends the knee
14. ____________ chest muscle
15. ____________ thin muscle of the neck; runs from the lateral lower skull to the top of the sternum
16. ____________ lower back; large; triangular shaped
17. ____________ muscle of forehead
18. ____________ facial muscle; downward at an angle from sides of lips
19. ____________ encircles the eyes
20. ____________ lower back of head
21. ____________ lateral skull; near the temples
22. ____________ the most superior of the 3 muscles of the shoulder blade
23. ____________ lateral abdominal muscles; angled downward
24. ____________ lower lateral (in anatomical position!) arm muscle
25. ________________ thin banded muscle of thigh that runs from the lateral hip to medial knee

Sample Muscular System Questions:

1. Which of the following is a function of the muscular system?
   a. Generate heat that helps maintain body temperature
   b. Movement of the body
   c. Breakdown of nutrients
   d. A and B are correct
   e. A, B, and C are correct

2. Which type of muscle tissue is voluntary?
   a. Cardiac
   b. Smooth
   c. Skeletal
   d. All of the above

3. This connects muscle to bone
   a. Fascicle
   b. Tendon
   c. Fiber
   d. Perimysium

4. Which of the following muscles is NOT part of the quadriceps femoris?
   a. Rectus femoris
   b. Soleus
   c. Vastus lateralis
   d. Vastus medialis

5. Which of the following is NOT part of the hamstrings?
   a. Biceps femoris
   b. Semitendinosus
   c. Semimembranosus
   d. Fibularis longus

Nervous System

Total Questions: 4
SC.912.L.14.21 - Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.

Focus:

- Students will know all the structures of the PNS and CNS, including lobes of the brain and cranial nerves.
- Students will be able to understand what the somatic, autonomic, parasympathetic, and sympathetic nervous systems control.

Content Limits:

- Items will not include the function of specific peripheral nerves.
- Items will not include specific neurotransmitters.

Total Questions: 2
SC.912.L.14.18 - Describe signal transmission across a myoneuronal junction

Focus:

Students will know order of action potential along a neuron to the myoneuronal junction.

Content Limits:

Items may include information about acetylcholine.

Total Questions: 4
SC.912.L.14.28 – Identify the major functions of the spinal cord

Focus:

Students will know the structure and functions of the spinal cord

Content Limits:

Items may include functions of the spinal cord

Total Questions: 4
SC.912.L.14.50 – Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.

Focus:

Students should know all structures and functions of vision, hearing, balance, olfactory, and tasting

Content Limits:

Items may include focus on injuries to certain structures and its effect on the body
Nervous System Sample Questions:

1. The nervous system
   a. Maintains homeostasis
   b. Communicates with the body via action potentials
   c. Is responsible for thoughts and behaviors
   d. Initiates voluntary movements
   e. All of these are correct

2. The cochlea
   a. Contain hair-covered cells for hearing
   b. Is found in the inner ear
   c. Works together with the semicircular canals for hearing
   d. All are correct
   e. A and B are correct

3. The peripheral nervous system
   a. Includes the brain and spinal cord
   b. may be divided into somatic and autonomic nervous systems.
   c. is only involved with unconscious (involuntary) activities.
   d. A and B are correct

4. The somatic nervous system
   a. Provides motor signals and conscious control to skeletal muscles
   b. Includes sympathetic and parasympathetic divisions
   c. Regulates the gastrointestinal tract
   d. Is dependent on the autonomic system for control

5. Which of the following events occurs at a neuromuscular junction as well as a synapse between two neurons?
   a. Arrival of nerve impulse at the end of the neuron
   b. Opening of the Na+ channels
   c. Opening of the H+ gates
   d. All of the above
   e. A and B

Use the following to answer the next 3 questions:

   a. Sensory neurons
   b. Central nervous system
   c. Motor neurons
   d. Peripheral nervous system

6. Delivers response signal to the brain
7. Any part of the nervous system other than the brain and spinal cord
8. Delivers response signals to muscles, glands, and other tissues

Use the following to answer the next 2 questions:

   a. Autonomic nervous system
   b. Parasympathetic nervous system
   c. Somatic nervous system
   d. Sympathetic nervous system

9. Relays sensory information from skeletal muscles to CNS
10. Provides “fight or flight” response

11. Which of the following describes the gap between neurons?
   a. Synapse
   b. Nodes of Ranvier
   c. Axonal terminals
   d. dendrites

12. The substance released at axonal terminals to propagate a nerve impulse is called a
   a. An ion
   b. Sodium-potassium pump
   c. Neurotransmitter
   d. An action potential

13. Each of the following are considered a major part of the brain EXCEPT the:
   a. Brainstem
   b. Cerebellum
   c. Cerebrum
   d. Diencephalon
   e. Plexus

14. Which of the following involves the hypothalamus?
   a. Sexual drive
   b. Feelings of rage, aggression, pain and pleasure
   c. Sleep and wake cycles
   d. All of the above

15. The cerebrum
   a. Is the “thinking part of the brain”
   b. Is the smallest part of the brain
   c. is divided into 5 hemispheres and 2 lobes
   d. all of the above

16. The ossicles
   a. Are bones that transmit sound vibrations to the inner ear
   b. Is the portion of the ear that is external and captures sound waves
   c. Are primarily responsible for equilibrium
   d. Are tiny hair-cells that are located in the cochlea

17. The semicircular canals
   a. Are filled with photoreceptor cells that are activated by light
   b. Are located in the middle of the gray matter of the spinal cord for the passage of cerebrospinal fluid
   c. Are filled with fluid and are important for hearing
   d. Are involved with maintaining one’s equilibrium

18. This controls the amount of light entering the eye
   a. Retina
   b. Lens
   c. Iris
   d. Sclera

19. What part of the eye is the colored portion, as determined by the amount of inherited melanin?
   a. Iris
   b. Pupil
   c. retina
   d. Sclera

20. In order for accommodation to occur, what part of the eye must bend?
   a. Pupil
   b. Lens
   c. Optic disk
   d. Blind spot
21. Short projections of the neuron of which there are many.
   a. Axons
   b. Myelin sheaths
   c. Dendrites
   d. Nuclei

22. Which statement describes the direction of a nerve impulse through a neuron?
   a. In through the axon terminals, through the axon, and out the dendrites
   b. In through the dendrites, through the axon, and out the axon terminals
   c. In through the cell body, through the dendrites, out the axon
   d. In through the dendrites, through the axon terminals, out the cell body

23. When a neuron is polarized, the concentration of:
   a. Sodium and potassium ions are higher on the inside of its membrane
   b. Sodium and potassium ions are higher on the outside of its membrane
   c. Sodium ions are high on the inside of its membrane and potassium is higher on the outside
   d. Sodium ions are higher on the outside of its membrane and potassium is higher on the inside
   e. Sodium and potassium ions are in equal concentrations on the inside and outside of the membrane.

24. Identify another function of the spinal cord
   a. Plays a key role in the processing of emotions
   b. Contains neural circuits that can independently control numerous reflexes
   c. Linked the nervous system to the endocrine system via the pituitary gland
   d. Is responsible for stimulation of “rest-and-digest” or “feed and breed” activities that occur when the body is at rest

25. Which parts of the ear contain receptors for equilibrium?
   a. Cochlea and middle ear
   b. Ampulla and Eustachian tube
   c. Tympanic membrane (eardrum) and spinal cord
   d. Semi-circular canals and vestibule

26. While identifying and labeling cadaver muscles, your lab partner accidentally pokes your finger with a pin. Place the following steps in the correct order from beginning to end of your body’s response.
   i. Impulses travel through anterior (ventral) root of spinal nerve(s)
   ii. Sensory neuron relays impulse to spinal cord
   iii. Motor impulses reach muscles, causing withdrawal of the affected limb
   iv. Integrating centers interpret sensory impulses, and then generate motor impulses
   v. Sensory receptors activated by stimulus
   vi. Impulse travels through posterior (dorsal) root of spinal nerve

   a. 5, 3, 6, 4, 1, 2
   b. 5, 2, 1, 4, 6, 3
   c. 5, 2, 6, 4, 1, 3
   d. 2, 1, 5, 4, 6, 3
   e. 3, 5, 1, 2, 4, 6

27. All of the following would be indicators of increased sympathetic activity EXCEPT:
   a. Dilated pupils
   b. Increased blood flow to skeletal muscles
   c. Constricted bronchioles
   d. Decreased blood flow to digestive viscera
28. The location where a nerve connects with a muscle is called a
   a. Joint
   b. Sliding filament junction
   c. Neurotransmitter
   d. Neuromuscular junction

29. Structurally, neurons are unique because they are the only cells in the body that have
   a. Lacunae and canaliculi
   b. Axons and dendrites
   c. Satellite cells and neuroglia
   d. Soma and stroma

Endocrine System

<table>
<thead>
<tr>
<th>Total Questions: 4</th>
<th>SC.912.L.14.32 - Describe the anatomy and physiology of the endocrine system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will know all endocrine organs and main types of hormones</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>This may include endocrine diseases, however, students will not be held accountable for specific differences related to this benchmark</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Questions: 2</th>
<th>SC.912.L.14.30 – Compare endocrine and neural controls of physiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will know the physiological difference between neural control and endocrine control</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>This may include neurological and endocrine diseases, however, students will not be held accountable for specific differences related to this benchmark</td>
</tr>
</tbody>
</table>

✓ Know all endocrine organs and main types of hormones
   o Pituitary gland –
   o Hypothalamus –
   o Thyroid –
   o Parathyroid –
   o Adrenal Glands –
     ▪ Cortex
     ▪ Medulla
   o Pancreas –
   o Pineal Gland –
   o Thymus –
   o Gonads –
     ▪ Ovaries
     ▪ Testes
✓ Endocrine diseases
   o Diabetes
   o Hyperthyroidism

Endocrine Sample Questions:

_____ 1. Pituitary  a. Estrogen
_____ 2. Pineal Gland b. Thyroxine
_____ 3. Thyroid c. Growth Hormone
_____ 4. Pancreas d. Melatonin
_____ 5. Ovaries e. Insulin

For each of the following words, circle the most UNRELATED term.

6. Insulin  Melatonin  Glucagon
7. Corticosteroids  Epinephrine  Thymosin

8. Where are the adrenal glands located?
   a. Above the brain  c. Below the ovaries
   b. Above the kidneys  d. Behind the thyroid gland

9. Growth hormone
   a. Stimulates milk production in mammary glands
   b. Stimulates the reabsorption of water from kidneys
   c. Stimulates protein synthesis and bone muscle growth
   d. None of the above

10. All of the following are functions of hormones EXCEPT:
    a. Maintaining homeostasis
    b. Regulating growth, development, and behavior
    c. Exchanging oxygen and carbon dioxide between air and lungs
    d. Responding to stimuli from outside the body

11. Development of secondary sex characteristics and gamete formation in females are stimulated by secretions of the gland labeled:
    a. #1  c. #8
    b. #6  d. #9

12. The gland that produces the hormone insulin and glucagon is labeled:
    a. #5  c. #8
    b. #7  d. #9

13. Thyroid stimulating hormone is secreted by the gland labeled:
    a. #2  c. #7
    b. #5  d. #9

14. This gland is often called the “master gland”
    a. Hypothalamus  c. Thymus
    b. Pituitary Gland  d. Pancreas

15. What is the main target area of the growth hormone (GH) produced by the pituitary gland?
    a. Mammary glands  c. Adrenal cortex
    b. Bones and muscles  d. Thyroid

16. Which of the following hormones stimulates and maintains milk production following childbirth?
    a. Adrenocorticotropic hormones (ACTH)  c. Estrogen
    b. Thyroid-stimulating hormone  d. Prolactin

17. This hormone is responsible for stimulating contractions of the uterus during labor.
    a. Antidiuretic hormone  c. Oxytocin
    b. Thyroxine  d. Triiodothyronine (T3)

18. Which of the following disorders is NOT considered a Growth Hormone disorder?
    a. Pituitary Dwarfism  c. Acromegaly
    b. Gigantism  d. Grave’s disease

Diagram 1.1
Cardiovascular System:

<table>
<thead>
<tr>
<th>Total Questions: 4</th>
<th>SC.912.L.14.36 – Describe the factors affecting blood flow through the cardiovascular system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will know how to determine different cardiovascular diseases based on given signs and symptoms</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>This may include varying values of blood pressure and cholesterol in order to draw conclusions based on presented data (includes height, weight, and lifestyle)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Questions: 2</th>
<th>SC.912.L.14.39 – Describe hypertension and some of the factors that produce it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will diagnose different cardiovascular diseases based on given signs and symptoms</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>This may include varying values of blood pressure and cholesterol in order to draw conclusions based on presented data (includes height, weight, and lifestyle)</td>
</tr>
</tbody>
</table>

Cardiovascular Sample Questions:

Match the following:

1. Neutrophils  
   a. Fights off parasites
2. Eosinophils  
   b. Releases histamine
3. Monocytes    
   c. 1st responders, phagocytes
4. Lymphocytes  
   d. Releases histamine
5. Basophils    
   e. B cells, T cell, Natural Killer (NK) cells

6. James was recently diagnosed with hypertension. His doctor gave him specific instructions on how to make changes to his lifestyle to prevent complications from this disease. His doctor gave him a prescription for Angiotensin, a specific diet to follow, and a workout regimen to help lower his blood pressure. James has chosen not to follow the doctor’s orders and continues to eat the incorrect foods, not take his medication, and not work out. What are some complications that can result from not following the doctor’s instructions?
   a. Migraines, nausea, and constipation
   b. Chest pains, increased pulse rate, and obesity
   c. Heart failure and stroke
   d. High blood sugar and obesity

7. This is generated by the contraction of the ventricles and is the pressure exerted by the blood on the walls of a blood vessel.
   a. Hypertension
   b. Blood Pressure
   c. Cardiac Output
   d. Stroke Volume

8. This is the amount of blood ejected from the heart each minute.
   a. Blood pressure
   b. Cardiac Output
   c. Stroke Volume
   d. Pulse Rate

9. The proteins on the surface of erythrocytes that are responsible for determining blood type are
   a. Antigens
   b. Antibodies
   c. Antihistamines
   d. Blood Typing Proteins

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10. The proteins in the blood plasma responsible for fighting against donated blood that does not match the recipient’s blood type is called
   a. Antigens
   b. Antibodies
   c. Antihistamines
   d. Blood Typing Proteins

11. Jane goes to the hospital where she is given a blood transfusion. If Jane has type B blood, what type of antibodies does her blood have?
   a. A
   b. B
   c. AB
   d. O

12. This is the decrease in oxygen-carrying capacity of the blood.
   a. Anemia
   b. Hypoglycemia
   c. Leukemia
   d. Lymphoma

13. Jane goes to the hospital for routine blood work. Her results showed she has an increase in her white blood cell count. What does this mean?
   a. She is healthy
   b. She is sick
   c. She has Polycythemia
   d. She has Anemia

14. These cell fragments are important in blood clotting.
   a. Erythrocytes
   b. Leukocytes
   c. Platelets
   d. Hemoglobin

15. These cells are important for the body’s defense system. They can slip out of the blood and target infected areas.
   a. Erythrocytes
   b. Leukocytes
   c. Platelets
   d. Hemoglobin

16. Stroke volume x Heart Rate is the formula for what?
   a. Cardiac output
   b. Stroke volume
   c. Blood pressure
   d. Pulse

Respiratory System:

<table>
<thead>
<tr>
<th>Total Questions: 4</th>
<th>SC. 912.L.14.44 – Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport, and the mechanisms that control the rate of ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will know mechanisms for ventilation including gas exchange</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>This will include information of asthma and bronchitis</td>
</tr>
</tbody>
</table>

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Respiratory System Sample Questions:

1. Diaphragm a. #1
2. Nose b. #2
3. Pharynx c. #7
4. Larynx d. #5
5. Trachea e. #6
6. Bronchi f. #9

Part II: Multiple Choice

7. Which is not a characteristic of the respiratory system?
   a. Delivers oxygen to the body and disposes of carbon dioxide
   b. Works with the circulatory system
   c. Surrounded by the thoracic cavity
   d. Works with the endocrine system

8. This part of the respiratory system is the place of gas exchange.
   a. Bronchi
   b. Bronchioles
   c. Alveoli
   d. Trachea

9. Which of the following is the correct order for inhaling?
   a. (1) Volume of thorax increases and pressure decreases, (2) diaphragm contracts and flattens, (3) rib cage moves upwards and outwards as intercostal muscles contract, and (4) air enters (and lungs inflate)
   b. (1) Air enters and lungs inflate, (2) volume of thorax increases and pressure decreases, (3) rib cage moves upwards and outwards as intercostal muscles contract, and (4) diaphragm contracts and flattens
   c. (1) diaphragm contracts and flattens, (2) rib cage moves upwards and outwards as intercostal muscles contract, (3) volume of thorax increases and pressure decreases, and (4) air enters and lungs inflate
   d. (1) Diaphragm contracts and flattens, (2) volume of thorax increases and pressure decreases, (3) rib cage moves upwards and outwards as intercostal muscles contract, and (4) air enters and lungs inflate

10. Which of the following occurs during gas exchange?
    a. Oxygen is delivered from the lungs to the blood stream
    b. Carbon dioxide is eliminated from the bloodstream to the lungs
    c. Gas exchange occurs in the lungs between the alveoli and the capillaries
    d. All of the above

11. How is oxygen transported in the blood?
    a. Oxygen attached to hemoglobin molecules inside the red blood cells and form oxyhemoglobin
    b. A small amount of oxygen is dissolved in the plasma
    c. Oxygen is transported in the plasma as a bicarbonate ion
    d. A&B
    e. A&C
12. Talking, coughing, exercising, and increased body temperatures are all examples of which mechanism that controls rate of ventilation?
   a. Physical  c. Emotional
   b. Volition  d. Chemical

13. This mechanism that controls the rate of ventilation results from a reflex that is initiated by stimuli acting through the centers in the hypothalamus.
   a. Physical  c. Emotional
   b. Volition  d. Chemical

14. This is the most important mechanism that controls the rate of ventilation. Increases in carbon dioxide and decreases in the pH of the blood lead to an increase in the rate and depth of breathing.
   a. Physical  c. Emotional
   b. Volition  d. Chemical

15. This mechanism of ventilation is used during singing, swallowing, and holding your breath during activities such as swimming.
   a. Physical  c. Emotional
   b. Volition  d. Chemical

16. This respiratory disorder is caused by the inflammation of the lining of the bronchial tubes. If you have this illness, it is harder to pass air in and out of the lung and you will display a distinctive cough.
   a. Bronchitis  c. Tonsillitis
   b. Asthma  d. Emphysema

17. John has been having difficulty breathing lately. His symptoms are reoccurring wheezing, chest tightness, shortness of breath and coughing. The doctor takes a look and notices he has an inflamed and NARROWED airway. What disorder/disease does John have?
   a. Bronchitis  c. Tonsillitis
   b. Asthma  d. Emphysema

18. Put the process of air entering the lungs in the correct order:

**Digestive System:**

<table>
<thead>
<tr>
<th>Total Questions: 4</th>
<th>SC.912.L.14.46 – Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption, and neural and hormonal mechanisms of control.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus:</td>
<td>Students will know the mechanisms of digestion, including absorption areas of macromolecules</td>
</tr>
<tr>
<td>Content Limits:</td>
<td>Items will not include digestive disorders or diseases</td>
</tr>
</tbody>
</table>
Digestive System Sample Questions:

1. Chyme a. A hole in the mucus lining of the stomach
2. Heart burn/acid reflux b. Substance in the stomach that is formed from food and enzymes
3. Liver c. Location of chemical digestion of carbs, proteins, nucleic acids & fats
4. Ulcer d. The part of the GI tract that absorbs water
5. Small Intestine e. Where bile is formed
6. Large Intestine f. Occurs when the contents of the stomach move into the esophagus
7. Stomach g. This is where protein digestion mainly occurs

8. The teeth and tongue of the oral cavity break food stuff down physically. This is
   a. Mechanical digestion    c. Absorption
   b. Chemical digestion     d. Peristalsis

9. What is the function of the esophagus?
   a. Move food through peristalsis    c. Chemically digest fats and absorb some vitamins
   b. Digest protein                d. Absorption of proteins and alcohol

10. Which of the following answers correctly sequences the pathway food takes from beginning to end?
    a. ascending colon, descending colon, small intestine, esophagus
    b. stomach, small intestine, sigmoid colon, ascending colon
    c. stomach, small intestine, ascending colon, descending colon
    d. esophagus, stomach, large intestine, small intestine, colon

11. Which part of the GI Tracts does not absorb anything?
    a. Liver    c. Small Intestine
    b. Stomach   d. Large Intestine

12. These digest some nutrients, produce vitamins, and produce gas.
    a. Large intestine    c. Liver
    b. Small intestine   d. Bacteria

13. This accessory organ produces bile and leaves through the common hepatic duct.
    a. Liver    c. Gallbladder
    b. Pancreas  d. Duodenum

14. This accessory organ releases enzymes into the duodenum and has an endocrine function
    a. Liver    c. Gallbladder
    b. Pancreas d. Duodenum

15. You and your friends go out to eat and order a huge basket of onion rings (a fatty food). Which of the following accessory organs will release bile in response to the onion rings entering the duodenum?
    a. Liver    c. Gallbladder
    b. Pancreas d. Duodenum

16. Which of the following are a function of the salivary glands?
    a. Cleanses mouth    c. Moisten Food
    b. Taste       d. All of the above

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Mechanical Digestion or Chemical Digestion?

17. Putting a cheeseburger in your mouth and chewing.
   a. Mechanical       b. Chemical

18. The churning of food in the stomach is an example of which type of digestion?
   a. Mechanical       b. Chemical

19. This type of digestion involves a sequence which large food is broken down to building blocks such as proteins.
   a. Mechanical       b. Chemical