# Exercises

## Skin, Bones & Muscles Exercises

1. What is homeostasis?
2. What is an example of the body maintaining homeostasis?
3. Cells make up tissues, at least how many tissues make up an organ?
4. What are the four main types of tissues?
5. Describe how a negative feedback works and give an example.
6. What is the biggest organ in the body?
7. The skin, hair, and nails make up which system?
8. What are three ways the integumentary system helps maintain homeostasis?
9. What are the two layers of skin? What is the fatty layer underneath the skin called?
10. What role does melanin play in the skin?
11. What causes acne?
12. What three components make up the skeletal system?
13. What are the main functions of bones?
14. What is the difference between red bone marrow and yellow bone marrow?
15. What are the three classes of joints?
16. What are the four types of movable joints?
17. What are two key nutrients bones need?
18. What's the difference between skeletal muscle, smooth muscle, and cardiac muscle?
19. Muscles work in pairs, what do we call the one that bends the joint? What do we call the one that straightens the joint?
20. What is the difference between stretching exercises, aerobic exercises, and anaerobic exercises?

 

# Exercises

## Digestive System Exercises

1. What is a diet?
2. Why does our body need nutrients?
3. What are the six essential nutrients? Describe them in your own words.
4. What model of a proper diet do we currently use; *MyPlate* or *MyPyramid*?
5. What are the three general pieces of advice the USDA gives in regards to maintaining a healthy diet?
6. Does the protein food group, according to the USDA, include only meat?
7. Is 30% lean meat the type of meat you should buy often? Why or why not?
8. What is the difference between “enriched” grains and “non- enriched” grains?
9. Do “enriched” refined grains contain fiber?
10. Who should avoid dairy products?
11. If you eat a healthy, balanced diet, is it necessary to get weekly exercise? If so, how much?
12. What is the difference between mechanical digestion and chemical digestion?
13. What are the two steps after digestion?
14. Name two key enzymes used for digestion.
15. What is peristalsis?
16. Is protein chemically digested in the mouth? If not there, where?
17. What are the three parts of the small intestine? What are their functions?
18. What is the main function of the large intestine?

 

# Exercises

## Cardiovascular System Exercises

1. What is the overall purpose of the cardiovascular system?
2. How could body temperature be affected if someone has poor circulation?
3. What are the four parts of blood?
4. Sickle-cell anemia is a disease in which RBC's cannot carry hemoglobin properly. What could happen to a person who has sickle-cell anemia?
5. What protein give's RBC's their red color?
6. What would happen to a person with too few WBC's?
7. Hemophilia is a disease in which platelets do not work properly. What could happen to someone who has hemophilia?
8. Why do arteries have thick walls?
9. Why do veins have valves?
10. Name the four chambers of the heart.
11. Where does the pulmonary artery start? Where does it lead?
12. What is the difference between oxygen-rich and oxygen poor blood?
13. What happens to blood in the lungs?
14. What is the name of the only vein that carries oxygen poor blood?
15. Which chamber of the heart does blood enter after leaving the pulmonary vein?
16. In which blood vessel does oxygen transfer happen?
17. Where do the superior and inferior vena cava lead?
18. Which organ gets blood from the coronary artery?
19. What is the difference between systolic and diastolic blood pressure?
20. How can hypertension be treated?
21. When can atherosclerosis cause a heart attack?
22. What happens if blood vessels leading to the brain are blocked?
23. What are three benefits of not smoking related to the cardiovascular system

 

# Exercises

## Respiratory & Excretory Systems Exercises

1. What is the job of the respiratory system?
2. What happens to air in the nasal cavity?
3. What does the diaphragm do when you inhale?
4. Why is it important for the epiglottis to cover the trachea when you are eating?
5. What happens in the alveoli?
6. When pressure is different, in what direction do fluids flow?
7. How does your body use differences in pressure when you exhale?
8. What is the difference between breathing and respiration?
9. What is internal respiration?
10. What disease results from an inflammation on the bronchi?
11. What types of things can cause an asthma attack?
12. What types of things cause pneumonia?
13. Why are the lungs part of both the respiratory and excretory system?
14. Besides the excretory system, what system are the kidneys a part of?
15. What do the kidneys do?
16. What is urine?
17. After traveling down the ureters, where does urine go?
18. How do kidney stones develop?
19. What is the purpose of a kidney dialysis machine?
20. What are the most common types of UTI?

 

# Exercises

## Controlling the Body Exercises

1. How does the nervous system relate to the other organ systems?
2. What is a synapse?
3. What organs are in the central nervous system?
4. What are the three parts of the brain?
5. If the left side of the cerebrum is injured, will the right or left side of the body most likely be affected? Why?
6. What do the vertebrae do?
7. What is the function of myelin?
8. What is the difference between the somatic and autonomic nervous sytem?
9. When is the sympathetic nervous system used?
10. How is a reflex different from a typical message to the brain?
11. What is the purpose of cones in the eyes?
12. What is the path of light coming into the cornea?
13. What happens to images if a person has myopia?
14. What two things are ears responsible for?
15. If the hairs in the ears semicircular canals move, what message is sent to the brain?
16. What are some parts of the body that have many touch receptors?
17. Where are taste buds found?
18. What causes Reye's Syndrome?
19. What occurs during a seizure?
20. What are some things you can do to "exercise" your brain?

 

# Exercises

## Diseases and Defenses Exercises

1. What is the difference between an infectious and noninfectious disease?
2. What are four types of pathogens?
3. How are viruses different than other pathogens?
4. Can a noninfectious disease be caused by a pathogen?
5. How do vectors spread disease?
6. What is the single best way to avoid getting an infectious disease?
7. How can you avoid coming into contact with vectors when you are out in nature?
8. What is the body's first line of defense?
9. How do body excretions keep you from getting sick?
10. How does mucus stop pathogens?
11. What role does cilia play in the nose?
12. What comes out of your body when you cough or clear your throat?
13. When does your body send out signals for an inflammation?
14. How are inflammations helpful?
15. How are fevers helpful?
16. What types of white blood cells are involved in inflammations?
17. When would your body produce an immune response?
18. Where are lymphocytes produced?
19. What is the function of the thymus gland?
20. What do killer t-cells do?

 

# Answers to Exercises

## Answers to Skin, Bones & Muscles Exercises

1. What is homeostasis? The ability of the body to maintain a stable internal environment in the response to external changes.
2. What is an example of the body maintaining homeostasis? Many examples to choose from. One might be when we sweat to keep our body temperature down, or when we shiver to keep the temperature up. Another example is how we regulate the amount of sugar in our blood. All of the examples should show how the body uses a negative feedback loop to maintain homeostasis. We sweat just until we are cooled down, we shiver until we are warmed up, and we put sugar in our system just until we have enough.
3. Cells make up tissues, at least how many tissues make up an organ? Two or more tissues working together to serve the same function constitute an organ.
4. What are the four main types of tissues? Epithelial tissue, muscular tissue, nervous tissue, and connective tissue.
5. Describe how a negative feedback works and give an example. A mechanism of control in the body in which the result of a bodily function acts as a signal to stop. Plus one example (like the control of blood sugar, or blood temperature).
6. What is the biggest organ in the body? The skin.
7. The skin, hair, and nails make up which system? The integumentary system.
8. What are three ways the integumentary system helps maintain homeostasis? 1.) Helping regulate temperature, 2.) Sending sensory information about the environment outside the body to the brain 3.) Keeping water and germs out of the body 4.) Acts as a barrier to sunlight.
9. What are the two layers of skin? What is the fatty layer underneath the skin called? The two layers are the epidermis and the dermis. The fatty layer beneath is the hypodermis or subcutaneous tissue.
10. What role does melanin play in the skin? It pigments the skin, and helps protect the lower layers from harmful UV rays.
11. What causes acne? Clogging of the oil glands.

12. What three components make up the skeletal system? Bones, ligaments, and cartilage.
13. What are the main functions of bones? Support: Bones give the body its structure—its shape. It holds up the tissue against the pressure of gravity. protection: The bones protect certain tissues. For example, the skull protects the brain, and the ribs protect the heart and lungs. Movement: The bones work in concert with the muscles to give us the ability to move. Making Blood Cells: Certain parts of certain types of bones make blood cells. Storage: Bones store calcium and phosphorus (mostly calcium).
14. What is the difference between red bone marrow and yellow bone marrow? Red bone marrow makes red blood cells while yellow bone marrow makes white blood cells.
15. What are the three classes of joints? Fixed, partly-movable, and movable.
16. What are the four types of movable joints? Ball and socket joints, hinge joints, pivot joints, and gliding joints.
17. What are two key nutrients bones need? Calcium and vitamin D.
18. What's the difference between skeletal muscle, smooth muscle, and cardiac muscle? Skeletal muscle is attached to our bones and allow us to move. We do not control smooth muscle. Cardiac muscle is only found in the heart.
19. Muscles work in pairs, what do we call the one that bends the joint? What do we call the one that straightens the joint? The muscle that bends the joint is called the flexor, and the one that straightens the joint is called the extensor.
20. What is the difference between stretching exercises, aerobic exercises, and anaerobic exercises? Stretching exercises warm-up our muscles and make them more flexible, anaerobic exercise build our muscles by making them work against resistance, and aerobic exercises increase our endurance.

 

# Answers to Exercises

## Answers to Digestive System Exercises

1. What is a diet? The sum of the food and drink consumed considered in terms of its effect on health
2. Why does our body need nutrients? Because it needs energy, it needs to grow/repair itself, and it needs to maintain the systems that maintain homeostasis.
3. What are the six essential nutrients? Describe them in your own words. Protein, carbohydrates, lipids, vitamins, minerals, water.
4. What model of a proper diet do we currently use; MyPlate or MyPyramid? MyPlate.
5. What are the three general pieces of advice the USDA gives in regards to maintaining a healthy diet? Balance calories intake, eat certain [nutrient rich] foods, eat fatty and sugary foods in moderation.
6. Does the protein food group, according to the USDA, include only meat? No it also includes vegetables, fish, eggs, and poultry.
7. Is 30% lean meat the type of meat you should buy often? Why or why not? No, because it has far too much fat. You should look for 94% lean meat.
8. What is the difference between “enriched” grains and “non- enriched” grains? Enriched grains contain vitamins and minerals we need that are lost in the refining process.
9. Do “enriched” refined grains contain fiber? No, fiber is not added back to enriched refined grains.
10. Who should avoid dairy products? People who cannot digest lactose—people who are lactose intolerant.
11. If you eat a healthy, balanced diet, is it necessary to get weekly exercise? If so, how much? Yes, exercise is always necessary. 60 minutes of exercise three days a week is a good level of activity.
12. What is the difference between mechanical digestion and chemical digestion? Mechanical digestion is accomplished with the teeth, which chemical digestion breaks food down into the nutrients via chemicals and enzymes (catalysts).
13. What are the two steps after digestion? Absorption and elimination.

 

14. Name two key enzymes used for digestion. Amylase, pepsin, or pancreatic lipase.
15. What is peristalsis? Peristalsis is the wave-like movement of the digestive system used to move food from the mouth to anus.
16. Is protein chemically digested in the mouth? If not there, where? No, protein is digested by pepsin in the stomach.
17. What are the three parts of the small intestine? What are their functions? The duodenum, the jejunum, and the ileum. The duodenum is the first part of the small intestine. In the duodenum the food from the stomach is further digested (chemically). Some of the chemicals are secreted from the duodenum itself, others are secreted from the liver and pancreas.The jejunum; Most nutrients are absorbed into the body at this second part of the small intestine. The nutrients are absorbed through tiny blood vessels. The ileum Here nutrients are also absorbed into the blood stream. What is not absorbed in the ileum is passed as waste through the large intestine.
18. What is the main function of the large intestine? Eliminate solid waste from the body.

 

# Answers to Exercises

## Answers to Cardiovascular System Exercises

1. What is the overall purpose of the cardiovascular system? to move blood to the various parts of the body
2. How could body temperature be affected if someone has poor circulation? the body would not be able to heat up or cool down to the ideal temperature
3. What are the four parts of blood? plasma, platelets, RBC's, WBC's
4. Sickle-cell anemia is a disease in which RBC's cannot carry hemoglobin properly. What could happen to a person who has sickle-cell anemia? Oxygen would not get to the organs of the body.
5. What protein give's RBC's their red color? hemoglobin
6. What would happen to a person with too few WBC's? they would have a weak immune system and could more easily get diseases
7. Hemophilia is a disease in which platelets do not work properly. What could happen to someone who has hemophilia? their blood would not clot when they got minor cuts and scrapes
8. Why do arteries have thick walls? because the blood in them is under high pressure
9. Why do veins have valves? to keep the blood from flowing backwards
10. Name the four chambers of the heart. right atrium, left atrium, right ventricle, left ventricle
11. Where does the pulmonary artery start? Where does it lead? it starts at the heart and leads to the lungs
12. What is the difference between oxygen-rich and oxygen poor blood? oxygen-rich blood has oxygen and oxygen-poor blood has very little
13. What happens to blood in the lungs? it gets oxygen
14. What is the name of the only vein that carries oxygen poor blood? pulmonary vein
15. Which chamber of the heart does blood enter after leaving the pulmonary vein? left atrium
16. In which blood vessel does oxygen transfer happen? capillaries
17. Where do the superior and inferior vena cava lead? the right atrium of the heart
18. Which organ gets blood from the coronary artery? heart

 

19. What is the difference between systolic and diastolic blood pressure? systolic is the highest blood pressure; diastolic is the lowest
20. How can hypertension be treated? improved diet, increased exercise, or medication
21. When can atherosclerosis cause a heart attack? when a coronary artery becomes completely blocked
22. What happens if blood vessels leading to the brain are blocked? a stroke
23. What are three benefits of not smoking related to the cardiovascular system decreased risk of hypertension, coronary heart disease, and stroke

 

# Answers to Exercises

## Answers to Respiratory & Excretory Systems Exercises

1. What is the job of the respiratory system? to provide the body with oxygen and remove carbon dioxide
2. What happens to air in the nasal cavity? air is warmed and moistened
3. What does the diaphragm do when you inhale? contracts to make more room in the chest
4. Why is it important for the epiglottis to cover the trachea when you are eating? this prevents food from going down the trachea
5. What happens in the alveoli? oxygen travels from the alveoli to the blood and carbon dioxide travels from the blood to the alveoli
6. When pressure is different, in what direction do fluids flow? from high to low pressure
7. How does your body use differences in pressure when you exhale? the pressure inside the body increases, becoming greater than the pressure outside, causing air to flow out
8. What is the difference between breathing and respiration? breathing is the act of air coming in and out of the body; respiration includes all gas transfer
9. What is internal respiration? the transfer of oxygen from the blood to the various parts of the body
10. What disease results from an inflammation on the bronchi? bronchitis
11. What types of things can cause an asthma attack? change of temperature, physical activity, poor air quality
12. What types of things cause pneumonia? bacteria, viruses, fungi, and parasites
13. Why are the lungs part of both the respiratory and excretory system? they are involved gas exchange as well as removing a waste product (carbon dioxide)
14. Besides the excretory system, what system are the kidneys a part of? urinary
15. What do the kidneys do? filter urine

 

16. What is urine? a mixture of water and nitrogen-containing compounds, including urea
17. After traveling down the ureters, where does urine go? to the bladder
18. How do kidney stones develop? nitrogen-containing compounds crystallize in the urinary system
19. What is the purpose of a kidney dialysis machine? to act as the kidneys by filtering blood, if the kidneys have shut down
20. What are the most common types of UTI? bladder infections

 

# Answers to Exercises

## Answers to Controlling the Body Exercises

1. How does the nervous system relate to the other organ systems? The nervous system controls the other systems
2. What is a synapse? The place where the axon of one neuron meets the dendrite of another
3. What organs are in the central nervous system? The brain and spinal cord
4. What are the three parts of the brain? Cerebrum, cerebellum, and brain stem
5. If the left side of the cerebrum is injured, will the right or left side of the body most likely be affected? Why? The right, because each hemisphere of the cerebrum controls the opposite side of the body
6. What do the vertebrae do? Protect the spinal cord
7. What is the function of myelin? Allow messages to move quickly along nerve cells
8. What is the difference between the somatic and autonomic nervous sytem? The somatic system controls voluntary system, while the autonomic system controls involuntary motion
9. When is the sympathetic nervous system used? In emergencies
10. How is a reflex different from a typical message to the brain? Reflexes bypass the brain, and are controlled by the spinal cord
11. What is the purpose of cones in the eyes? To see in color
12. What is the path of light coming into the cornea? After passing the cornea, the light goes through the pupil, then the lens, and is focused on the retina
13. What happens to images if a person has myopia? The image focuses in front of the retina instead of on it
14. What two things are ears responsible for? Hearing and body position (balance)
15. If the hairs in the ears semicircular canals move, what message is sent to the brain? That the body is moving
16. What are some parts of the body that have many touch receptors? Palms, soles of feet, lips, tongue
17. Where are taste buds found? On the tongue

 

18. What causes Reye's Syndrome? Giving aspirin to young children with viral infections
19. What occurs during a seizure? A person becomes unconscious and may have violent jerking motions
20. What are some things you can do to "exercise" your brain? Read, learn, and do activities like crossword puzzles

 

# Answers to Exercises

## Answers to Diseases and Defenses Exercises

1. What is the difference between an infectious and noninfectious disease? Infectious disease can be spread, but noninfectious disease cannot

2. What are four types of pathogens? Bacteria, viruses, protozoa, and fungi

3. How are viruses different than other pathogens? They are not alive

4. Can a noninfectious disease be caused by a pathogen? Yes

5. How do vectors spread disease? They bite someone with the pathogen, keep the pathogen with them, then spread that pathogen to the next person they bite

6. What is the single best way to avoid getting an infectious disease? Washing your hands

7. How can you avoid coming into contact with vectors when you are out in nature? Wear long sleeves and long pants

8. What is the body's first line of defense? The thick outer layer of the skin called the epidermis

9. How do body excretions keep you from getting sick? Many body excretions contain pathogen-killing chemicals

10. How does mucus stop pathogens? Pathogens get stuck in the sticky mucus

11. What role does cilia play in the nose? Cilia sweeps up pathogens and moves them out of the body

12. What comes out of your body when you cough or clear your throat? Mucus and pathogens

 

13. When does your body send out signals for an inflammation? When pathogens have entered the body through the skin

14. How are inflammations helpful? They bring white blood cells to the site of the infection

15. How are fevers helpful? They raise your body temperature, making it harder for many pathogens to reproduce quickly

16. What types of white blood cells are involved in inflammations? Phagocytes

17. When would your body produce an immune response? When both the first and second lines of defense have failed

18. Where are lymphocytes produced? In red bone marrow

19. What is the function of the thymus gland? To store lymphocytes until they are mature

20. What do killer t-cells do? Attack and destroy specific pathogens

 