Body Organization and Homeostasis

This section tells how the body is organized and describes the four types of tissue in the human body.

Use Target Reading Skills
As you read, make an outline about body organization and homeostasis. Use the red headings for the main ideas and the blue headings for the supporting ideas.

<table>
<thead>
<tr>
<th>Body Organization and Homeostasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Cells</td>
</tr>
<tr>
<td>A. Structures of cells</td>
</tr>
<tr>
<td>B.</td>
</tr>
<tr>
<td>II. Tissues</td>
</tr>
<tr>
<td>III.</td>
</tr>
<tr>
<td>IV.</td>
</tr>
<tr>
<td>A.</td>
</tr>
<tr>
<td>B.</td>
</tr>
<tr>
<td>C.</td>
</tr>
</tbody>
</table>
Body Organization and Homeostasis (continued)

Introduction
1. List the levels of organization in the human body, starting with the smallest unit.
   a. __________________________
   b. __________________________
   c. __________________________
   d. __________________________

Cells
2. The basic unit of structure and function in a living thing is a(n) __________________________.
3. Circle the letter of the outside boundary of an animal cell.
   a. cytoplasm
   b. nucleus
   c. tissue
   d. cell membrane
4. The control center that directs the cell’s activities and contains information that determines the cell’s form and function is the __________________________.
5. What is the cytoplasm?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
6. Is the following sentence true or false? Cells carry on the processes that keep organisms alive. __________________________

Tissues
7. What is a tissue?
   __________________________________________________________________________
   __________________________________________________________________________
8. Complete the table to show the functions and examples of the tissues in the human body.

<table>
<thead>
<tr>
<th>Tissue</th>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epithelial</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Organs and Organ Systems**

9. A structure that is made up of different kinds of tissues is a(n) _________________.

10. Circle the letter of the organ.
    a. muscle cell
    b. blood
    c. lungs
    d. digestive system
Body Organization and Homeostasis (continued)

11. Is the following sentence true or false? An organ has a specific job that is more complex than that of a tissue. ________________________

12. What is an organ system?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Match the organ system with its function.

<table>
<thead>
<tr>
<th>Organ Systems</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ 13. endocrine</td>
<td>a. Takes oxygen into the body</td>
</tr>
<tr>
<td>____ 14. circulatory</td>
<td>b. Supports and protects the body</td>
</tr>
<tr>
<td>____ 15. excretory</td>
<td>c. Removes wastes</td>
</tr>
<tr>
<td>____ 16. respiratory</td>
<td>d. Controls body process by means of chemicals</td>
</tr>
<tr>
<td>____ 17. digestive</td>
<td>e. Takes food into the body and breaks it down</td>
</tr>
<tr>
<td>____ 18. skeletal</td>
<td>f. Transports materials to and from body cells</td>
</tr>
</tbody>
</table>

Homeostasis

19. The process by which an organism’s internal environment is kept stable in spite of changes in the external environment is called ________________________.

20. How does your body maintain a constant temperature on a hot day?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Bones, Muscles, and Skin  •  Review and Reinforce

Body Organization and Homeostasis

Understanding Main Ideas
The illustration below shows the levels of organization in a reptile. The levels are numbered 1–4, with 4 being the highest level and 1 being the lowest level. Match the following items with the number that represents the lowest appropriate level of organization in the illustration.

1. tissue ________________________
2. an object consisting of several different tissues ________________________
3. the smallest unit of the body ________________________
4. group of organs that operate as a system ________________________

Building Vocabulary
Fill in the blanks with Key Terms.

5. The ________________________ is the structure in a cell that contains information that determines the cell’s characteristics.
6. ________________________ tissue makes up organs that are able to contract, or shorten. ________________________ tissue makes up the organs that send messages to control the body.
7. The inside of the digestive system is lined with ________________________ tissue.
8. The kidney is a(n) ________________________. The excretory system is a(n) ________________________. A(n) ________________________ is the basic unit of structure and function in a living thing.
9. ________________________ tissue provides support for your body and connects all its parts.
10. ________________________ is the area between the cell membrane and the nucleus; it contains a clear, jellylike substance.
The Skeletal System

This section describes the skeletal system and its function. It also tells how to keep your bones strong and healthy.

Use Target Reading Skills

Before you read, preview the red headings. In the graphic organizer below, ask a what or a how question for each heading. As you read, answer your questions.

The Skeletal System

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What does the skeleton do?</td>
<td></td>
</tr>
</tbody>
</table>

What the Skeletal System Does

1. List the five major functions of the skeleton.
   a. ________________________________________________
   b. ________________________________________________
   c. ________________________________________________
   d. ________________________________________________
   e. ________________________________________________
The Skeletal System (continued)

2. Circle the letter of the bone that makes up the center of the skeleton.
   a. skull
   b. pelvic girdle
   c. backbone
   d. femur

3. The 26 small bones that make up the backbone are the ________________________.

4. How does the skeleton help the body move?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

5. Circle the letter of the bone that protects the brain.
   a. backbone
   b. pelvic girdle
   c. ribs
   d. skull

6. The long bones of the arms and legs make ________________________.

Joints of the Skeleton

7. What is a joint?
   ____________________________________________________________
   ____________________________________________________________

8. What are the two kinds of joints in the body?
   a. ________________________  b. ________________________

9. Circle the letter of bones that are held together by immovable joints.
   a. knee
   b. ankle
   c. skull
   d. shoulder blade
10. Complete the table to show the four types of movable joints.

<table>
<thead>
<tr>
<th>Movable Joints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint</td>
</tr>
<tr>
<td>Hinge</td>
</tr>
<tr>
<td>Ball-and-socket</td>
</tr>
<tr>
<td>Pivot</td>
</tr>
<tr>
<td>Gliding</td>
</tr>
</tbody>
</table>

11. The bones in movable joints are held together by strong connective tissues called ____________________.

**Bones—Strong and Living**

12. Circle the letter of each sentence that is true about bones.
   a. Bones are very strong and lightweight.
   b. Concrete can absorb more force without breaking than bone can.
   c. Bones make up over half of an adult’s body weight.
   d. Bones are hard because they contain minerals.

13. When do bone cells form new bone tissue?
    __________________________________________________________________________
    __________________________________________________________________________
    __________________________________________________________________________
    __________________________________________________________________________
The Skeletal System (continued)

14. Label the parts of the bone in the diagram below.

[Diagram of a bone with labeled parts a, b, c, and d]

15. Match each part of a bone with its characteristics.

<table>
<thead>
<tr>
<th>Bone Parts</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. marrow</td>
<td>a. Where blood vessels and nerves enter and leave the bone</td>
</tr>
<tr>
<td>16. outer membrane</td>
<td>b. Has small canals with blood vessels running through</td>
</tr>
<tr>
<td>17. compact bone</td>
<td>c. Strong, but lightweight because it has many small spaces within it</td>
</tr>
<tr>
<td>18. spongy bone</td>
<td>d. Soft connective tissue in the spaces in bone</td>
</tr>
</tbody>
</table>

19. A connective tissue that is more flexible than bone is called __________________________.

20. Circle the letter of each sentence that is true about how bones form.

a. Much of an infant’s skeleton is bone.
   b. As the body grows, the cartilage in the skeleton is replaced with hard bone tissue.
   c. By the time the body stops growing, all of the cartilage has been replaced with bone.
   d. Cartilage covers the ends of many bones in the body of an adult.

Taking Care of Your Bones

21. What can you do to keep your bones healthy? _______________________________

   _______________________________________________________________________

   _______________________________________________________________________

22. A condition in which the body’s bones become weak and break easily is called __________________________.
The Skeletal System

Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. Name the five functions of the skeleton.
2. What lifestyle choices help keep bones healthy and strong?
3. What do movable joints enable the body to do? What are the four types of movable joints?

Label the numbered parts of the femur below in the spaces provided.

4. ____________________________
5. ____________________________
6. ____________________________
7. ____________________________

Building Vocabulary

Fill in the blank to complete each statement.

8. A place in the body where two bones come together is a(n) ____________________________.
9. ____________________________ is a condition in which the body’s bones become weak and break easily.
10. A(n) ____________________________ is one of the 26 small bones that make up your backbone.
11. The tip of your nose is able to move from side to side because it is made up of a connective tissue that is more flexible than bone. This type of tissue is called ____________________________.
12. A(n) ____________________________ is the strong connective tissue that holds the bones together in a movable joint.
The Muscular System

This section tells about the three kinds of muscle tissue in the human body, how muscles work to move the body, and how to care for your muscles.

Use Target Reading Skills

Preview Figure 15. Then, in the graphic organizer below, write two questions that you have about the diagram. As you read, answer your questions.

Q. How does skeletal muscle help my body move?

A. 

Q. 

A. 

Types of Muscle

1. List the two groups of muscles in the body and describe how they are controlled.
   a. 
   b. 

2. Circle the letter of the action that is controlled by involuntary muscles.
   a. smiling
   b. breathing
   c. walking
   d. standing up
3. Complete the table to compare and contrast the three types of muscle tissue in the body.

<table>
<thead>
<tr>
<th>Types of Muscles</th>
<th>Location in Body</th>
<th>Voluntary or Involuntary</th>
<th>Striated or Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skeletal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td>Inside many internal organs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. A strong connective tissue that attaches muscles to bone is a(n) ________________.

5. Is the following sentence true or false? Skeletal muscles react quickly and tire easily. ________________

6. The repeated contractions of cardiac muscle are called ________________.

Muscles at Work

7. When do muscles contract, or become shorter and thicker?
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

8. Is the following sentence true or false? Muscle cells can extend, or get longer, as well as contract, or get shorter. ________________

9. Why must skeletal muscles work in pairs to move a bone?
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

10. To bend the elbow, the biceps muscle ________________ and the triceps muscle returns to its ________________.
The Muscular System

Understanding Main Ideas

Complete the table below to describe the characteristics of each type of muscle. Write yes or no next to each number.

<table>
<thead>
<tr>
<th>Muscle Types</th>
<th>Voluntary</th>
<th>Involuntary</th>
<th>Reacts quickly</th>
<th>Tires quickly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skeletal</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
</tr>
<tr>
<td>Smooth</td>
<td>5.</td>
<td>6.</td>
<td>7.</td>
<td>8.</td>
</tr>
<tr>
<td>Cardiac</td>
<td>9.</td>
<td>10.</td>
<td>11.</td>
<td>12.</td>
</tr>
</tbody>
</table>

Answer the following questions in the spaces provided.

13. Why do skeletal muscles have to work in pairs?

________________________________________________________________________
________________________________________________________________________

14. How can you help prevent muscle injuries?

________________________________________________________________________
________________________________________________________________________

Building Vocabulary

Answer the following questions with a short statement.

15. What types of actions are controlled by smooth muscles? What type of muscle is smooth muscle?

________________________________________________________________________
________________________________________________________________________

16. What types of actions are controlled by skeletal muscles? What type of muscle is skeletal muscle?

________________________________________________________________________
________________________________________________________________________

17. How is cardiac muscle similar to both smooth muscle and skeletal muscle?

________________________________________________________________________
________________________________________________________________________
The Skin

This section explains the structure of skin, what skin does, and how to keep skin healthy.

Use Target Reading Skills

As you read the section titled The Body’s Tough Covering, write the main idea—the biggest or most important idea—in the graphic organizer below. Then, write five supporting details. The supporting details give examples of the main idea.

The Body's Tough Covering

1. Circle the letter of each sentence that is true about the skin.
   a. The skin lets disease-causing microorganisms and harmful substances into the body.
   b. The skin keeps water from escaping from the body.
   c. The skin produces vitamin C.
   d. The skin gathers information about the environment.

2. Is the following sentence true or false? To cool the body, blood vessels in the skin enlarge to let more blood run through them to move body heat to the outside. ________________

3. Why are pain messages important to the body? ______________________________
   _______________________________________________________________________
   _______________________________________________________________________

4. Skin cells produce ____________________ in the presence of sunlight.
Bones, Muscles, and Skin  •  Guided Reading and Study

**The Epidermis**

5. The outermost layer of skin is the ________________________.

6. Is the following sentence true or false? Nerves and blood vessels run through the epidermis. ________________________

7. New cells that form deep in the epidermis gradually move upward to the surface of the skin, where after about ________________________, the cells die.

8. Is the following sentence true or false? The layer of dead cells on the surface of the skin protects the body. ________________________

9. Is the following sentence true or false? Melanin, a pigment that gives skin its color, protects the skin from burning in sunlight. ________________________

**The Dermis**

10. The inner layer of the skin is the ________________________.

11. Circle the letter of each structure in the dermis.
   a. hairs
   b. bones
   c. sweat glands
   d. oil glands

12. Perspiration reaches the surface of the skin through openings called ________________________.

13. What are follicles? ________________________

**Caring for Your Skin**

14. Complete the concept map to show how to keep your skin healthy.

---

Keep skin healthy

by

- [ ]

- [ ]

- [ ]

- [ ]

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The Skin

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. List the functions of the skin.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. How do the dead cells of the epidermis help the body?

_________________________________________________________________________
_________________________________________________________________________

3. What structures does the dermis contain?

_________________________________________________________________________
_________________________________________________________________________

4. How can you help to keep your skin healthy?

_________________________________________________________________________
_________________________________________________________________________

Building Vocabulary

Use the vocabulary below to label the following diagram.

pore  epidermis  hair follicle  dermis

5. ____________

6. ____________

7. ____________

8. ____________