

Assess Your Understanding

The Skeletal System

What Does the Skeleton Do?

got it?

I get it! Now I know that my skeleton _____

I need extra help with _____

What Role Do Joints Play?

1a. EXPLAIN Why does your body need both movable and immovable joints?

b. RELATE CAUSE AND EFFECT How would your knees move if they had ball-and-socket joints?

got it?

I get it! Now I know that joints _____

I need extra help with _____

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Assess Your Understanding

The Skeletal System

What Are the Characteristics of Bones?

2a. **EXPLAIN** How do eating a balanced diet and exercising regularly help your bones?

b. **APPLY CONCEPTS** How do you know that bone is living tissue?

got it?

I get it! Now I know that my bones are _____

I need extra help with _____

Use the corner of the page to fold away from the corner of your copy machine to copy onto letter-size paper.

Key Concept Summaries

The Skeletal System

What Does the Skeleton Do?

Your inner framework, or **skeleton**, is made up of all the bones in your body. **Your skeleton has five major functions. It provides shape and support, enables you to move, and protects your organs. It also produces blood cells and stores minerals and other materials until your body needs them.** Your skeleton is made up of hundreds of

bones of different shapes and sizes. A total of 26 small bones, or **vertebrae**, make up your backbone in the vertebral column. Most of the body's bones are associated with muscles, which pull on the bones to make them move. The skull's protection of the brain is an example of bones' protection of organs.

What Role Do Joints Play?

A **joint** is a place where two bones come together. **Joints allow bones to move in different ways.** You have two types of joints. Immovable joints connect bones but allow little or no movement. Movable joints allow the body to make many

different movements. The bones in movable joints are held together by **ligaments**, which are made of strong connective tissue.

What Are the Characteristics of Bones?

Bones are complex living structures that grow, develop, and repair themselves. Bones are made up of bone tissue, blood vessels, and nerves. A thin, tough outer membrane covers all of a typical bone except the ends. Beneath the membrane is a thick layer of **compact bone**. This bone is hard and dense but not solid; it contains minerals such as phosphorus and calcium that strengthen it. Bone can absorb more force without breaking than concrete or granite, yet it is far lighter than those materials. **Spongy bone** has small spaces within it, making it lightweight but still strong. Bone has soft connective tissue called

marrow, which is responsible for producing most blood cells and for storing fat. Bones form new bone tissue as you grow. **Cartilage** is a strong connective tissue that is more flexible than bone. At birth, human beings' bones are mostly cartilage. Gradually most cartilage is replaced with bone. Some cartilage still protects the ends of your bones. A combination of a balanced diet and regular exercise helps build and maintain strong, healthy bones. As you grow older, your bones start to lose some minerals, leading to **osteoporosis**, a condition in which bones become weak and break easily.

On a separate sheet of paper, explain five ways in which bones are important to the human body.

Lesson Quiz

The Skeletal System

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

1. _____ Your skeleton enables you to move.
2. _____ Muscles give your body shape and support.
3. _____ Without joints, bones would not be able to move in different ways.
4. _____ Bones are made up of bone tissue, blood vessels, and nerves.
5. _____ Cartilage is responsible for producing most of your blood cells and for storing fat.

Fill in the blank to complete each statement.

6. One important function of bones is to produce _____.
7. Twenty-six small bones make up the _____.
8. A(n) _____ is a place where two bones come together.
9. The bones in movable joints are held together by strong connective tissue called _____.
10. _____ is a condition in which bones become weak and break easily because they have lost some minerals.

Assess Your Understanding

The Muscular System

What Muscles Are in Your Body?

1a. **DEFINE** What is the difference between voluntary and involuntary muscles?

b. **INFER** Why is it important that cardiac muscle tissue does not tire?

got it?

I get it! Now I know that the muscles in my body are _____

I need extra help with _____

How Do Skeletal Muscles Work?

2a. **REVIEW** How do muscles work in pairs?

b. **EXPLAIN** Why is it important to exercise both muscles in a pair?

got it?

I get it! Now I know that skeletal muscles work _____

I need extra help with _____

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Key Concept Summaries

The Muscular System

What Muscles Are in Your Body?

Involuntary muscles, which are muscles that you cannot control, perform essential activities in your body, such as keeping your heart beating and moving food through your digestive system. By contrast, **voluntary muscles** allow you to move parts of your body in different ways when you want to. **Your body has skeletal, smooth, and cardiac muscle tissue. Some of these tissues are in involuntary muscle, and some are in voluntary muscle.**

Skeletal muscles are voluntary muscles that provide

the force that moves your bones. A strong connective tissue called a **tendon** attaches skeletal muscles to a bone. The tissue called **cardiac muscle** is found only in the heart. Skeletal muscle and cardiac muscle are sometimes referred to as **striated muscle**, because of their banded appearance. The inside of many internal body organs contain **smooth muscle** tissue that is not striated. Both smooth muscle and cardiac muscle are involuntary.

How Do Skeletal Muscles Work?

Skeletal muscles do their work by contracting, or becoming shorter and thicker. Each time you move, more than one muscle is involved. **Skeletal muscles work in pairs. Muscle cells can only contract, not lengthen. While one muscle in a pair contracts, the other muscle in the pair relaxes to its original length.** Regular exercise is important for maintaining the strength and flexibility of muscles. Exercise makes

individual muscle cells grow bigger, so the whole muscle becomes thicker and stronger. Sometimes, muscles can become injured. A muscle strain occurs when muscles are overworked or overstretched. After a long period of exercise, a skeletal muscle can cramp, or contract and stay contracted. After injuring a muscle, it is important to follow medical instructions and rest the injured area so it can heal properly.

On a separate sheet of paper, tell what skeletal muscles are and how they work.

Lesson Quiz

The Muscular System

Fill in the blank to complete each statement.

1. _____ muscles allow you to move parts of your body in different ways when you want to.
2. Your body has skeletal, _____, and cardiac muscle tissue.
3. A strong connective tissue called a(n) _____ attaches skeletal muscles to a bone.
4. A(n) _____ occurs when muscles are overworked or overstretched.
5. Regular _____ is important for maintaining the strength and flexibility of muscles.

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.


6. _____ Voluntary muscles perform essential activities in your body, such as keeping your heart beating and moving food through your digestive system.
7. _____ Skeletal muscle and cardiac muscle are sometimes referred to as smooth muscle, because of their banded appearance.
8. _____ Skeletal muscles work in pairs.
9. _____ The tissue called cardiac muscle is found only in the heart.
10. _____ Both smooth muscle and cardiac muscle are voluntary.

Assess Your Understanding

The Skin

What Are the Functions and Structures of the Skin?

1a. **SUMMARIZE** How does your skin gather information about the environment?

b. **ANSWER**  What holds the body together?

got it?.....

I get it! Now I know that the skin _____

I need extra help with _____

How Can You Have Healthy Skin?

got it?.....

I get it! Now I know that I can have healthy skin by _____

I need extra help with _____

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto separate paper.

Key Concept Summaries

The Skin

What Are the Functions and Structures of the Skin?

The skin is part of the integumentary system, which also includes hair, nails, sweat glands, and oil glands. **The skin has two layers that protect the body. Skin helps regulate body temperature, eliminate wastes, gather information about the environment, and produce vitamin D.** The skin forms a barrier that keeps harmful substances outside the body. Also, the skin keeps important substances such as water and other fluids inside the body. Skin helps the body maintain a steady temperature through perspiration and the enlarging of blood vessels. Perspiration is also responsible for eliminating some waste materials from the body. Nerves in the skin gather information from the environment

about pressure, temperature, and pain. Some skin cells produce vitamin D in the presence of sunlight. Together an outer layer and an inner layer perform all the skin's functions. The **epidermis** is the outer layer of the skin, which helps protect your skin. Some cells deep in the epidermis produce **melanin**, a pigment that colors the skin. The **dermis** is the inner layer of the skin, which includes nerves, blood vessels, sweat glands, hairs, and oil glands. **Pores** are openings that allow sweat to reach the surface. Strands of hair grow within the dermis in **follicles**. Oil produced in glands around the follicles keeps the surface of the skin moist and the hairs flexible.

How Can You Have Healthy Skin?

Three habits can help you have healthy skin. Eat a healthful diet. Keep your skin clean. Limit your time in the sun. Eating a balanced diet provides the energy and raw materials needed for the growth and replacement of skin cells. A healthful diet also includes

drinking plenty of water. Washing your skin gets rid of dirt and harmful bacteria, as well as controlling oiliness. Too much sunlight can harm skin cells and cause skin cancer. **Cancer** is a disease in which some cells divide uncontrollably.

On a separate sheet of paper, explain why skin is important to the body.

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Lesson Quiz

The Skin

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

- _____ Skin helps eliminate wastes and produce vitamin D.
- _____ The dermis is the outer layer of the skin, which helps protect your skin.
- _____ Together an outer layer and an inner layer perform all the skin's functions.
- _____ The epidermis is the inner layer of the skin, which includes nerves, blood vessels, sweat glands, hairs, and oil glands.
- _____ Having healthy skin involves diet, cleanliness, and limiting time in the sun.

Fill in the blank to complete each statement.

- Skin helps the body maintain a steady _____ through perspiration and the enlarging of blood vessels.
- _____ in the skin gather information from the environment about pressure, temperature, and pain.
- Some cells deep in the epidermis produce _____, a pigment that colors the skin.
- Eating a balanced diet provides the energy and raw materials needed for the growth and replacement of _____.
- _____ produced in glands around the follicles keeps the surface of the skin moist and the hairs flexible.