



## TEACHER GUIDE

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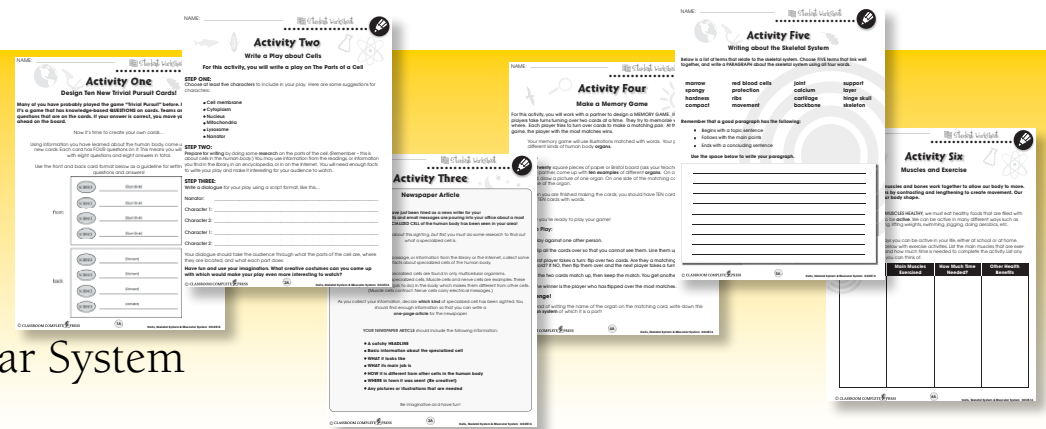
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# The Muscular System - Muscles

1. Match the words on the left to the definitions on the right. You may use a dictionary to help.

<b>bundled</b>	<b>A</b>	A slender, threadlike object
<b>cardiac</b>	<b>B</b>	A group of things gathered close together are _____
<b>involuntary</b>	<b>C</b>	Another word for striped
<b>striated</b>	<b>D</b>	A word used to describe things related to the heart
<b>fiber</b>	<b>E</b>	Something that happens without thinking about it or choosing it to happen is _____

2. The muscular system has two main jobs. Can you guess what they are? Think about how your body works and what you already know about muscles. Then underline your two guesses from the list below.

- muscles help us think faster
- muscles help us sleep better
- muscles give our body shape
- muscles give us better hearing
- muscles help us move

3. In the chart below list some of the things your muscles have helped you to do today. Try to list at least five different things.

1.	
2.	
3.	
4.	
5.	
Thanks, muscles! Without you I wouldn't have been able to do any of these things today!	



# The Muscular System - Muscles

**T**here are over 600 muscles in the human body. Together they make up the **muscular system**.

Just like your skeleton, your muscles are below the skin. This means that you can only see the outline of muscles and feel them change shape when they move. Try this - hold your arm up like a weightlifter and tighten your fist. Can you feel the muscles in your upper arm getting bigger and harder? Doing this exercise gives you a clue about the two main jobs of muscles:



**1. Muscles give our body shape; 2. Muscles help us move.** Muscles help us do almost everything - from running on the playground, to pulling the blankets up at night, to breathing in and out.

All muscles in the body are made of cells that are like elastic string. These cells are called **muscle fibers**. Muscle fibers are **bundled** together in groups to form muscles. The number and length of the fibers depends on the size of the muscle.

### Types of Muscle

There are three types of muscle in the human body. The chart below tells you about them.

Muscle Type	What It Looks Like	How It Moves	What It Does
Skeletal	Striated (striped)	Voluntary (we can control the movement)	Attached to our bones, allowing them to move
Smooth	Smooth	Involuntary (we cannot control the movement)	Controls movement inside our body
Cardiac	Striated (striped)	Involuntary (we cannot control the movement)	Allows our heart to pump blood

**STOP** What surprising thing have you learned about muscles? Why did it surprise you?

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# The Muscular System - Muscles

1. Circle **T** if the statement is TRUE or **F** if it is FALSE.

- T** **F** a) The human body has over 1000 muscles.
- T** **F** b) Muscles help us move.
- T** **F** c) Cardiac muscle is voluntary muscle.
- T** **F** d) Every human muscle is made of one large muscle fiber.
- T** **F** e) If something is "involuntary" it means we cannot control it.
- T** **F** f) The human body has three important muscles on top of the skin.
- T** **F** g) Muscles give our body shape.
- T** **F** h) Smooth muscles are striated.
- T** **F** i) Cardiac muscles are involuntary muscles that help pump our blood.

2. Fill in each blank with a word from the list. There will be two words left over.

- bundled**   **shape**   **three**   **cells**   **run**   **two**   **fibers**  
**breathe**   **move**   **elastic**   **muscles**

Muscles have \_\_\_\_\_ main jobs. They give our body \_\_\_\_\_  
 and help us to \_\_\_\_\_. Without muscles we couldn't \_\_\_\_\_  
 or \_\_\_\_\_. All muscles are made of \_\_\_\_\_ like  
 \_\_\_\_\_ string. These are called muscle \_\_\_\_\_. These fibers  
 are \_\_\_\_\_ together to create muscles.



# The Muscular System - Muscles

- What are two ways muscles help us?  
\_\_\_\_\_
- What do skeletal and cardiac muscles look like?  
\_\_\_\_\_
- What muscle do you think is the most important and why?  
\_\_\_\_\_

### Extension and Application






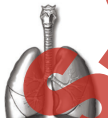

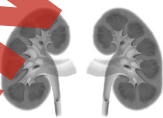
6. Below is a list of words from the reading. Choose five words that link together well. Then write a **short story** about a day in the life of a muscle. Be imaginative!

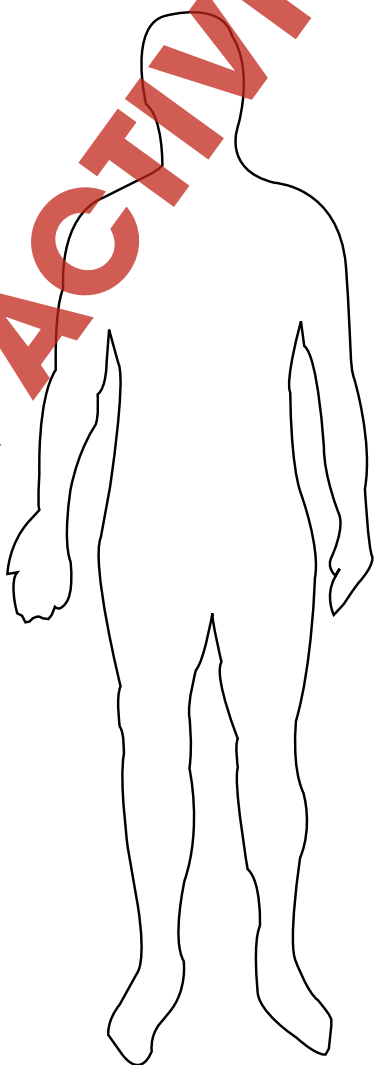
muscle   fiber   cardiac   striped   system  
 arm   cell   movement   surprised   change  
 attached   voluntary   smooth   control  
 help   surprising   feel   clue

- Using the Internet or books from the library, research **six** different foods that help build healthy muscles. Create a menu, including these foods, to promote muscle-healthy eating.
- Multiple Sclerosis** is a serious muscle disease. Research important facts about this disease in an encyclopedia or on the Internet. Write a three-paragraph report based on the information you find. Try to find out when it was discovered. List its symptoms and treatments.

## Pin the Organ on the Body

Below is an outline of the human body. On the left side of the page are pictures of important **ORGANS** in the body. Your task is to **CUT OUT** each organ and to **PASTE** it on the body where it belongs. You may use information from the reading passages, the Internet, or other resource materials to find the answers.

- a) liver 
- b) intestines 
- c) brain 
- d) bladder 
- e) heart 
- f) lungs 
- g) stomach 
- h) kidneys 



## Crossword Puzzle!

### Across

1. Muscle tissue changes size by \_\_\_\_\_ and lengthening
3. The human body is made of \_\_\_\_\_ cells
4. Muscle \_\_\_\_\_ are like elastic string
6. Humans are \_\_\_\_\_ organisms
8. The knee is an example of a \_\_\_\_\_ joint
10. \_\_\_\_\_ muscles allow our bones to move
11. Cells group together to form \_\_\_\_\_
13. Cells contain special information called \_\_\_\_\_
14. There are \_\_\_\_\_ major organ systems in the human body



### Down

1. The liquid inside a cell is called \_\_\_\_\_
2. The skeletal system is made of bones, joints and \_\_\_\_\_
4. The heart is made of \_\_\_\_\_ muscle
5. Nerve tissue carries messages from the brain in the form of electrical \_\_\_\_\_
7. The digestive system is made of mostly \_\_\_\_\_ muscles
9. Muscles work in \_\_\_\_\_; one shortens and the other lengthens
12. Mitochondria turn food into \_\_\_\_\_

### Word List

specialized	cytoplasm
contracting	energy
DNA	cardiac
cells	involuntary
tissues	pairs
hinge	cartilage
multicellular	signals
eight	skeletal

## Comprehension Quiz

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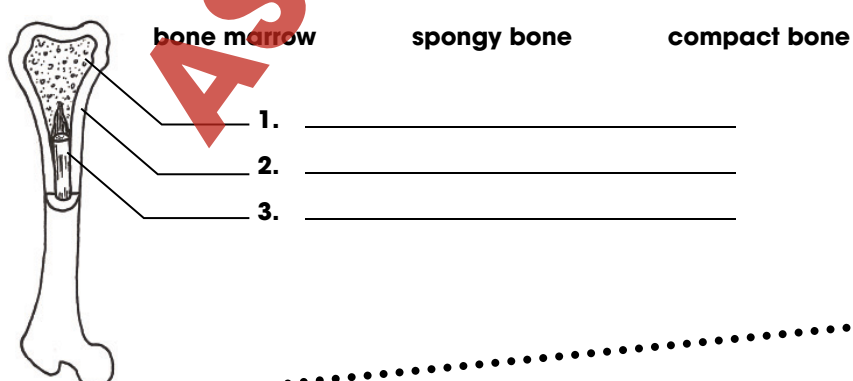
### Part A

Circle **T** if the statement is **TRUE** or **F** if it is **FALSE**.

- 1) The cell nucleus contains hereditary information called DNA.
- 2) In the human body, organs are made of groups of tissue that have a specific job.
- 3) Organ systems are simpler than organs.
- 4) Three of the major organ systems in the human body are the respiratory system, the skeletal system and the brain system.
- 5) In the circulatory system, the heart pumps blood through our nerves.
- 6) The main jobs of the skeletal system are to give protection and support.
- 7) The ends of our bones are covered by a rubbery material called cytoplasm.
- 8) Skeletal muscles control the digestion of food in our stomach.

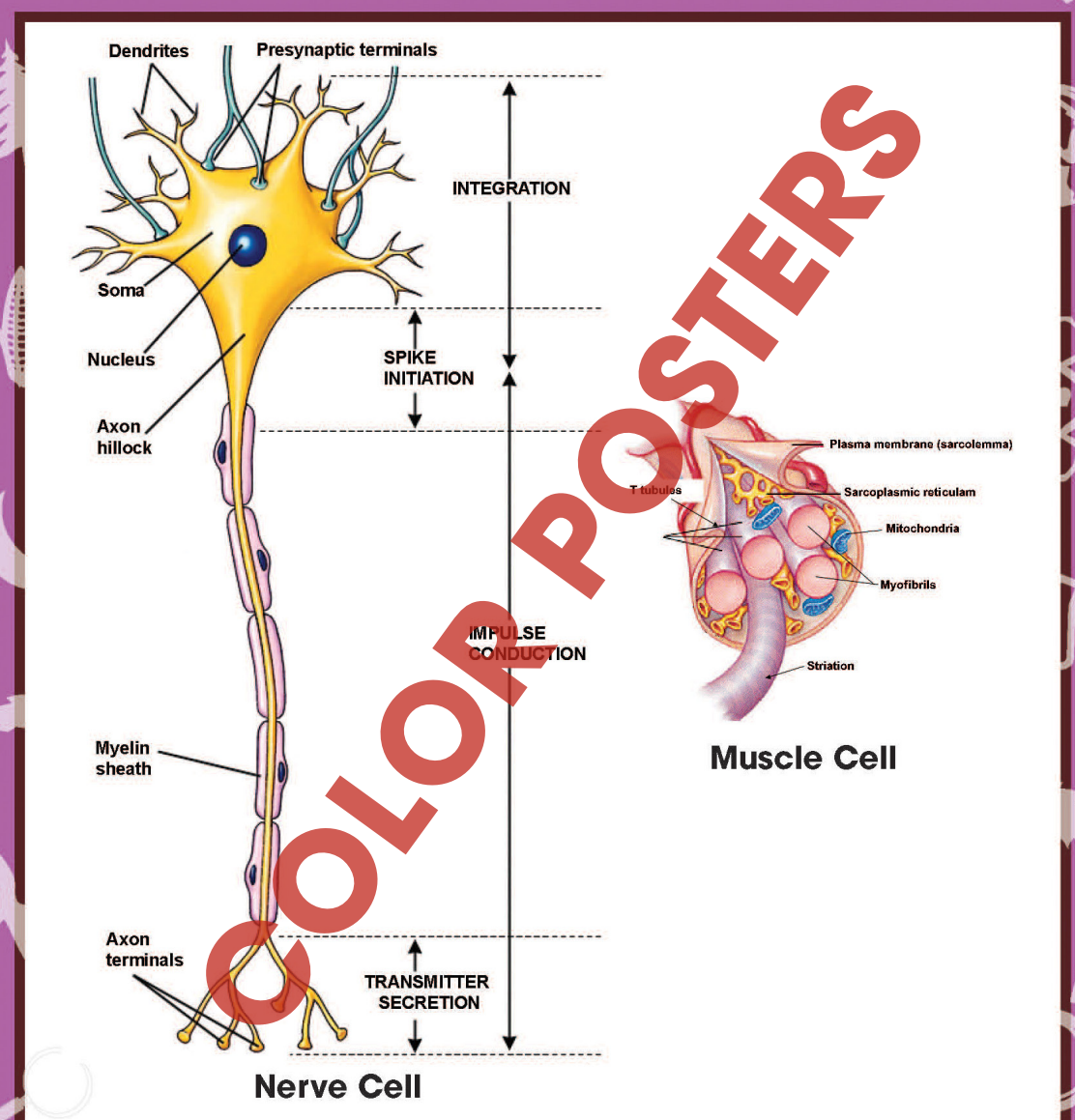
### Part B

On the diagram below, label the three layers of bone. Use the words in the list.



SUBTOTAL: /14

## Human Body Cells



NAME: \_\_\_\_\_

After You Read 



# The Skeletal System - Joints and Cartilage

1. Circle **T** if the statement is TRUE or **F** if it is FALSE.

- T F a) The human skeleton is made of 406 bones.
- T F b) The main job of our joints is to help bones move.
- T F c) The hip is an example of a hinge joint.
- T F d) The wrist is an example of a hinge joint.
- T F e) Cartilage protects bones from grinding against each other when they move.
- T F f) The shoulder is an example of a ball and socket joint.
- T F g) A hinge joint is stronger than a ball and socket joint.
- T F h) There are 29 bones in our skull all joined by cartilage.
- T F i) Elbows and knees are both examples of hinge joints.
- T F j) Sliding joints help wrists and ankles move in all directions.

2. Here are pictures of each of the three kinds of joints that we have learned about. Label each picture with the correct joint name.



a) \_\_\_\_\_  
\_\_\_\_\_



b) \_\_\_\_\_  
\_\_\_\_\_



c) \_\_\_\_\_  
\_\_\_\_\_

1.

- a) **F**
- b) **T**
- c) **F**
- d) **F**
- e) **T**
- f) **T**
- g) **T**
- h) **F**
- i) **T**
- j) **T**

- 3. They allow bones to move
- 4. It would be painful, difficult. Answers will vary
- 5. Answers will vary
- 6. Answers will vary
- 7. Answers will vary
- 8. Answers will vary
- 9. Answers will vary

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1.

- A) fiber
- B) bundled
- C) striated
- D) cardiac

E) involuntary

2.

- a) sliding joint
- b) ball and socket joint
- c) hinge joint

3.

Answers will vary

31

33

Answers will vary

34

1.

- a) **F**
- b) **T**
- c) **F**
- d) **F**
- e) **T**
- f) **F**
- g) **T**
- h) **F**
- i) **T**

- 3. They give our body shape and help us move
- 4. Stripes
- 5. Answers will vary
- 6. Answers will vary
- 7. Answers will vary
- 8. Answers will vary

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1. Answers will vary



# EASY MARKING ANSWER KEY

- a) two
- b) shape
- c) move
- d) run/breathe
- e) run/breathe
- f) cells
- g) elastic
- h) fibers
- i) bundled

2. Voluntary: biting an apple, kicking a ball, walking to the bus

Involuntary: your heart beating, blood moving in your veins, getting goose bumps at a scary movie, digesting an apple

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