

Name:

# HUMAN BODY SYSTEMS: support, movement, covering

## Skeletal System: p. 12-23

Identify the 5 major functions of the skeletal system:

I. 5 major functions:

A.

B.

C.

D.

E.

What cell organelle (or cell process) has the **same function** as the skeletal system? **EXPLAIN YOUR CHOICE!**

---

---

Place the tube sleeve over the elbow of your writing hand. Now try to list the 4 joints of the body without damaging the sleeve. Difficult to do without an elbow joint! Remove the sleeve and list the moveable joints of the body **WITH examples of where to find these joints.**

II. Moveable joints of the body

A.

B.

C.

D.

E.

There are a few important connective tissues associated with the skeletal system. Please explain the **importance of each tissue.**

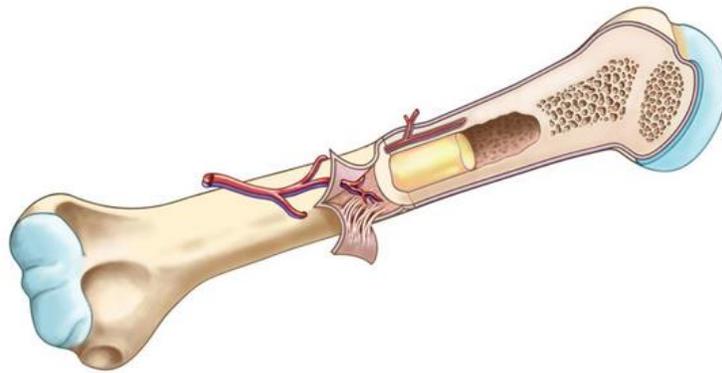
**Ligaments-**

**Cartilage-**

**Red marrow-**

**Yellow marrow-**

Look at all the bones and compare with picture on page 16-17. Label the marrow, compact bone, and spongy bone.



How can you keep your bones strong and healthy?

---

---

List 2 **skeletal system problems** explaining (a) what causes the problem **AND** (b) how to treat it.

1.
  - a.
  - b.
2.
  - a.
  - b.

## Muscular System: p. 24-28

The muscular system is responsible for movement in the body, whether it is voluntary or involuntary. Consider your reflexes. When someone taps you on the knee, the leg jumps without you thinking about it. These are involuntary movements. Voluntary movements include things like walking and talking.

Fill in the grid below about the 3 types of muscle tissue:

MUSCLE TYPE			Cardiac Muscle
Voluntary?	Yes	No	
React Quickly?	Yes		Yes
Tire Quickly?	Yes		

- There are over 30 muscles in the human hand.
- Your lips are red because the skin is so thin that you can see the muscles below it.
- It takes 17 muscles to smile and 43 to frown.
- The tongue is the strongest muscle in the body.
- Muscles make up roughly one-third of a person's body weight.
- You get goosebumps when you're cold because tiny muscles beneath the skin contract to close the pores on the skin and prevent some body heat from escaping. This causes the hair on your skin to stand up.

While sitting at the table, place your left hand under the desk and try to lift up. With your other hand feel the biceps muscle (front of upper arm). It should flex. Next, place the same hand on the top of the desk and push down. With your other hand feel the triceps muscle (back of upper arm). It should be flexed. Our muscles work in pairs: when one contracts the other relaxes. **Observe the movement of flexing and relaxing of the "muscles" in the arm model.** Muscles only contract and relax so they need to be arranged in pairs to get work done.

Our skeletal muscle reacts quickly yet will also tire quickly. Using the flex grips you will squeeze repeatedly for 1 minute without stopping. Write how you felt afterwards below:

---



---

Now repeat the squeezing with the SAME hand for ONE MORE MINUTE. Were you able to keep the same pace?

---

---

The cardiac muscle of the heart would have no problem beating constantly and not fatigue (tire out) but skeletal muscle sure does! Calculate how many times your heart beats during a 49 minute science class if your heart rate is 70 beats per minute. **Show your work for this calculation below:** (could you squeeze the flex grips at this rate?!)

Now stand up and slightly bend your knees and stay in a moderate squat for a minute... once again your skeletal muscles will fatigue fast. Glad we have the skeletal system (bones) to do the major support for our body!

### **Muscle Strength Exploration:**

Record data from the lab exploring muscle density and strength below (*see procedure/materials in the bin*). Answer the conclusion questions when you are done with data collection.

1) How is the distance you can stretch the rubber band affected by the number (density) of rubber bands and by the width (size) of your rubber band? How does that impact strength?

2) How are rubber bands a model of muscle fibers? How was strength being measured/modeled?

### **Motor Skills:**

The coordination of muscle movements are known as motor skills. As we grow older, we develop more coordination using our fine motor skills and large motor skills. These activities test some of your motor skills.

1. Hold the right foot off the ground for 12 seconds, place it down, and hold the left foot off the ground for 12 seconds. Did you notice anything in your balance from left to right?
2. Toss the bean bag into the air and catch it with hands, five times consecutively, with your hands only. How good is your hand to eye coordination?
3. Now touch each finger to your thumb starting with the index to pinky and then back again. Time how long it takes to touch each fingertip back and forth 5 times. Now use other hand (if started with right now do left). Do you notice any difference from left hand to right hand in your dexterity?

## Integumentary System (SKIN): p. 30-35

Identify the 6 major functions of the integumentary system:

I. 6 major functions:

A.

B.

C.

D.

E.

F.

What cell organelle (or cell process) has the **same function** as the integumentary system? **EXPLAIN YOUR CHOICE!**

---

---

Label the skin diagram with epidermis, dermis, fat layer (hypodermis), hair follicle, oil gland, sweat gland, and blood vessels.

