

# THE SKELETAL SYSTEM

## I. TWO TYPES OF SKELETONS.

A. \_\_\_\_\_ : INTERNAL SKELETON

B. \_\_\_\_\_ : SKELETON ON THE OUTSIDE.

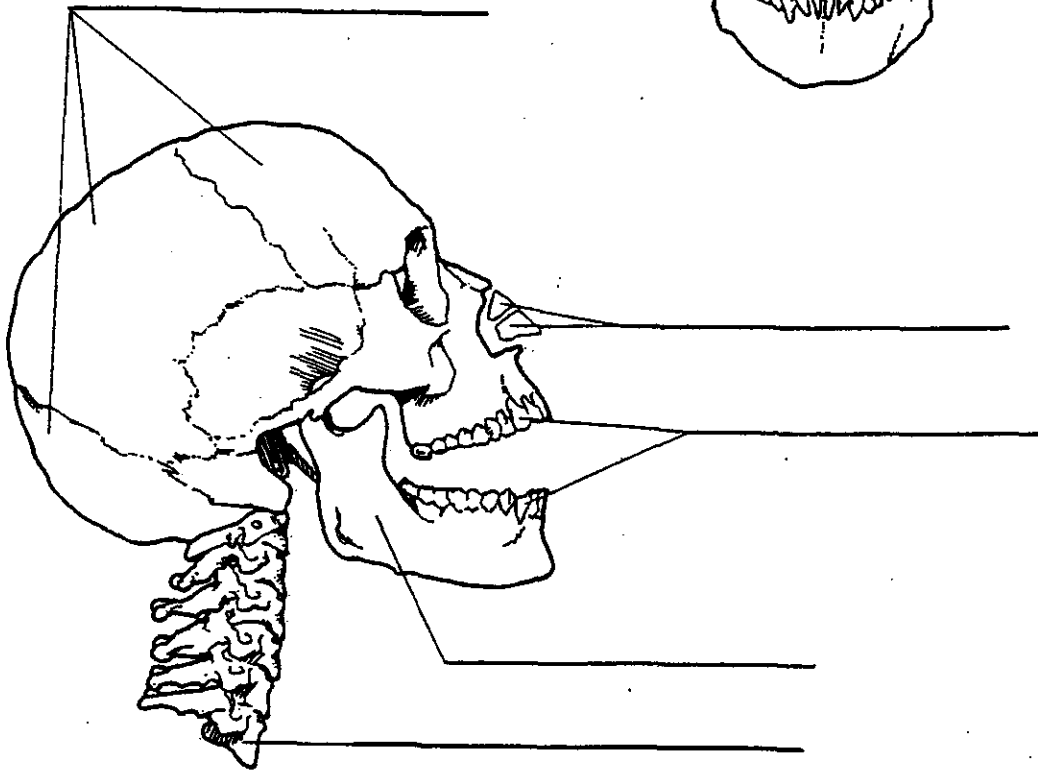
## II. FUNCTIONS

A. GIVES \_\_\_\_\_ & \_\_\_\_\_ TO YOUR BODY.

B. \_\_\_\_\_

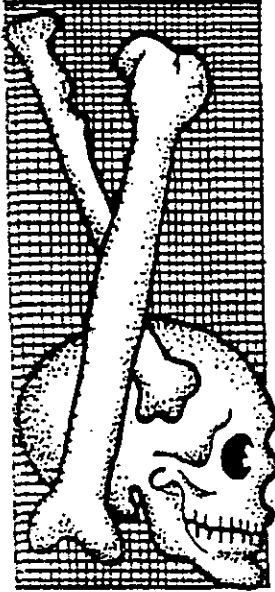
C. \_\_\_\_\_ INTERNAL  
ORGANS.

## III. BONES OF THE SKULL.

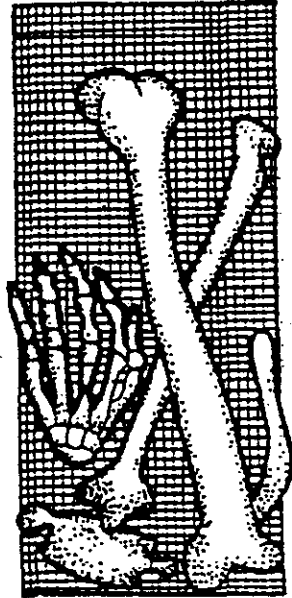


# Word Search

Find: ribs, bones, cell, marrow, calcification, endoskeleton, exoskeleton, vertebrae, calcium, ulna, system, mandible, radius, fibula, femur, phalanges, tibia, skull, scapula



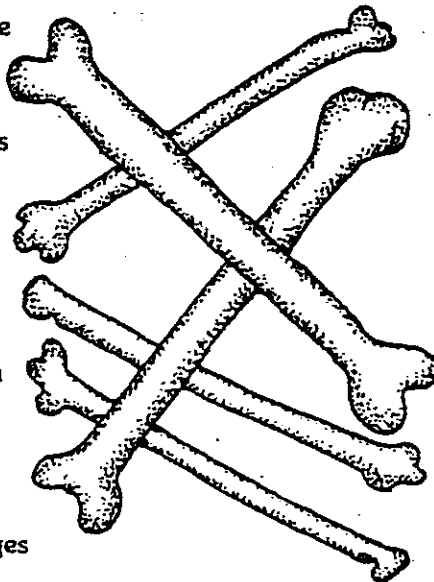
C A L C I F I C A T I O N  
 S A M L R U M E F E M U O  
 K E L A B A I B I T S P T  
 E G M C N W D C E L L H E  
 A R A O I D F I B U L A L  
 R O R S G U I R U R U L E  
 B M R R E L M B I S K A K  
 E E O R O N G W L B S N S  
 T T W G W A O O R E S G O  
 R S W A T E R B G R O E D  
 E Y G R O A L U P A C S N  
 V S N O T E L E K S O X E



# Matching

Directions: Match the scientific name of the bone with the everyday name.

- \_\_\_\_\_ 1. mandible
- \_\_\_\_\_ 2. clavicle
- \_\_\_\_\_ 3. humerus
- \_\_\_\_\_ 4. scapula
- \_\_\_\_\_ 5. tibia
- \_\_\_\_\_ 6. spine
- \_\_\_\_\_ 7. cranium
- \_\_\_\_\_ 8. pelvis
- \_\_\_\_\_ 9. patella
- \_\_\_\_\_ 10. phalanges



- a. backbone
- b. knee
- c. fingers/toes
- d. funny bone
- e. shinbone
- f. skull
- g. jaw
- h. collarbone
- i. hip bone
- j. shoulder blade

Written by Liza Newsom

## Lesson Review

Write true if the statement is true. If the statement is false, change the underlined term to make the statement true.

- \_\_\_\_\_ 1. Most of the skeletal system is make up of cartilage.
- \_\_\_\_\_ 2. The main job of the skeletal system is to support the body.
- \_\_\_\_\_ 3. A skeleton that is inside the body is an exoskeleton.
- \_\_\_\_\_ 4. The tips of the ears are made up of bone.
- \_\_\_\_\_ 5. A tough, but flexible tissue that is part of the skeletal system is cartilage.
- \_\_\_\_\_ 6. Most of a baby's skeleton is made up of cartilage.
- \_\_\_\_\_ 7. Bones work with cartilage to move parts of the body.
- \_\_\_\_\_ 8. Bones store many minerals that are needed by the body.
- \_\_\_\_\_ 9. The heart and lungs are protected by the skull.
- \_\_\_\_\_ 10. Some bones in the body make blood cells.

## Skill Challenge

**Skills:** researching, organizing

Complete the table by identifying the bones that protect the organs listed in the first column. Use library references for help if necessary.

**Table 1 Organs Protected by Bones**

Organ	Protected By
1. Lungs	
2. Brain	
3. Heart	
4. Spinal cord	
5. Teeth	

# JOINTS, TENDONS, LIGAMENTS

I. A \_\_\_\_\_ IS WHERE 2 BONES MEET.

- CONNECTED AT JOINTS BY \_\_\_\_\_ WHICH CONNECTS \_\_\_\_\_ TO \_\_\_\_\_.

II. I \_\_\_\_\_ JOINTS DO NOT ALLOW ANY MOVEMENT.

- EX: \_\_\_\_\_

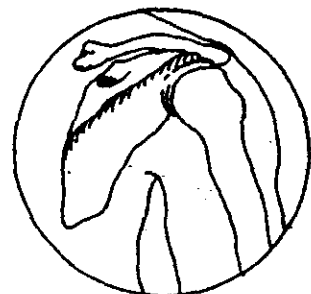
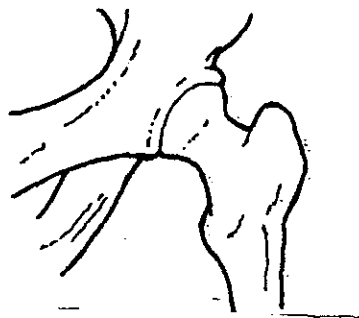
III. \_\_\_\_\_ JOINTS ALLOW A LITTLE BIT OF MOVEMENT.

- EX: \_\_\_\_\_ & \_\_\_\_\_

IV. \_\_\_\_\_ JOINTS ALLOW MOVEMENT.

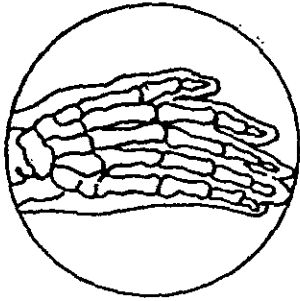
- \_\_\_\_\_ - AND - \_\_\_\_\_ JOINT: ALLOWS MOVEMENT IN \_\_\_\_\_ DIRECTIONS.

EX: \_\_\_\_\_ & \_\_\_\_\_



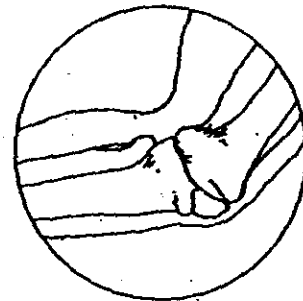
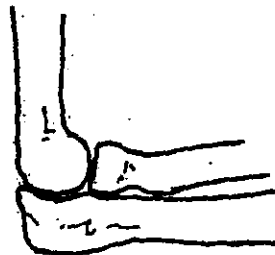
• \_\_\_\_\_ JOINTS ALLOW SOME MOVEMENT  
IN ALL DIRECTIONS.

• EX: \_\_\_\_\_



• \_\_\_\_\_ JOINTS: ALLOW BONES TO MOVE  
\_\_\_\_\_ & BACKWARD IN ONLY \_\_\_\_\_ DIRECTION.

• EX \_\_\_\_\_ & \_\_\_\_\_



• \_\_\_\_\_ JOINTS ALLOW BONES TO MOVE  
\_\_\_\_\_ TO SIDE & UP & \_\_\_\_\_.

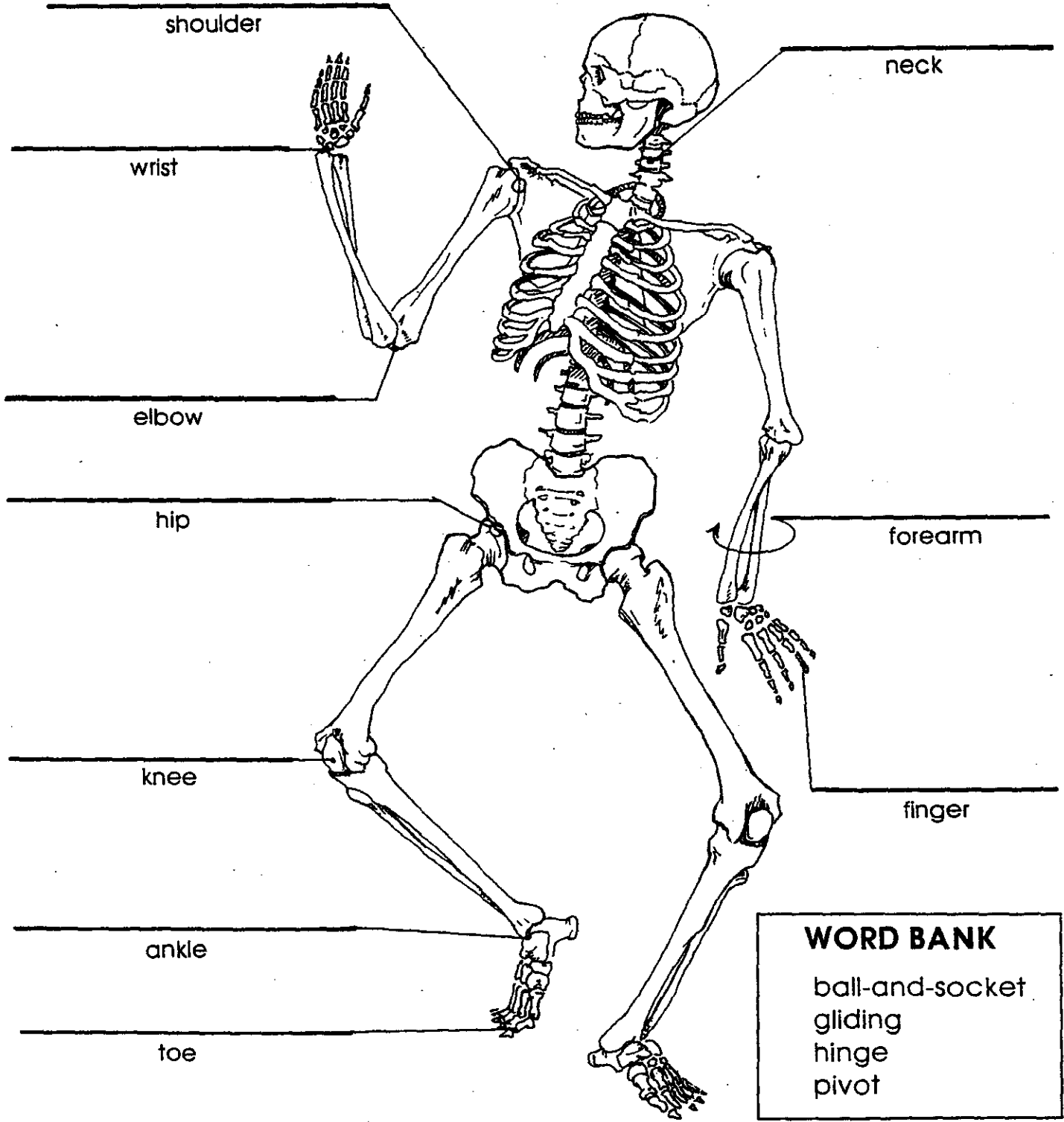
• EX: BETWEEN \_\_\_\_\_ & \_\_\_\_\_.



# The Leg Bone's Connected to the Hip Bone

Name \_\_\_\_\_

The place where two or more bones meet is called a **joint**. Joints are either movable or immovable. There are four kinds of movable joints: **hinge**, **pivot**, **gliding** and **ball-and-socket**. Label each joint on the skeleton below.



# Facts About Bones

1. The first function of the skeletal system is to form the supporting framework of the body.

2. The second function of the skeletal system is to protect and support the internal organs.

3. Cartilage helps the bones move easily.

4. Cartilage is found in the joints and spine and between the ribs.

5. Marrow is food for the bones.

6. Marrow helps heal broken bones.

7. Bones heal from the inside out.

9. A compound fracture is a break where the broken bone pierces the skin.

8. A simple fracture is one break; a multiple fracture is more than one break.

10. The ends of the femur are widened, and they are spongy inside to absorb the shock of movement.

11. The average person puts about 12,000 pounds per square inch on his femur every time he takes a step.

12. The bones of an athlete get larger just like his muscles do.

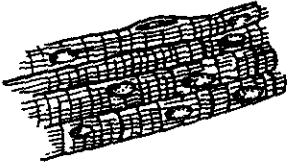
Written by Liza Newsom

# MUSCLES

1. THERE ARE \_\_\_\_\_ TYPES OF MUSCLES.

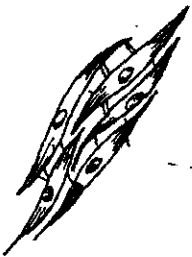
A. \_\_\_\_\_ MUSCLE:

- ALSO CALLED \_\_\_\_\_ MUSCLE.
- RESPONSIBLE FOR \_\_\_\_\_ MOVEMENT.



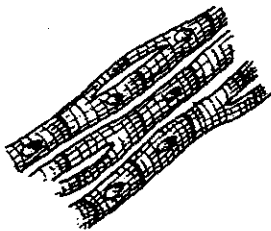
B. \_\_\_\_\_ MUSCLE:

- FOUND IN \_\_\_\_\_, THE \_\_\_\_\_ AND OTHER \_\_\_\_\_ ORGANS
- \_\_\_\_\_ BECAUSE IT CAUSES MOVEMENT YOU CANNOT CONTROL.



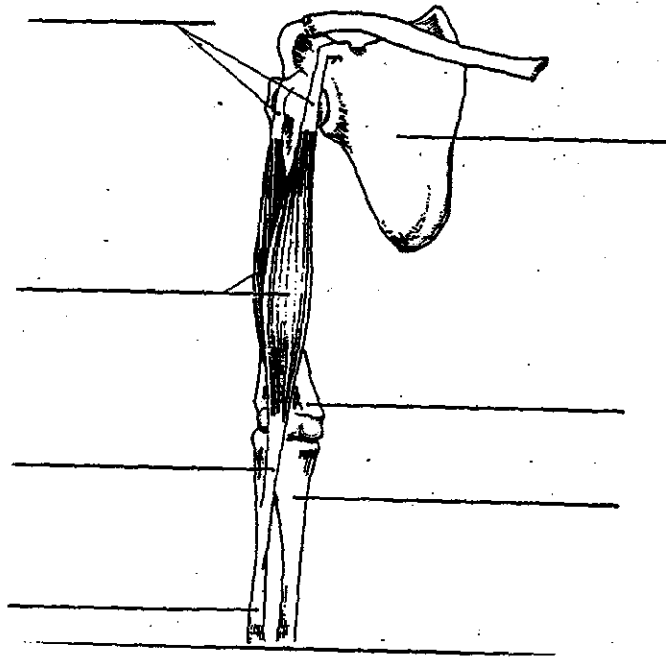
C. \_\_\_\_\_ MUSCLE:

- FOUND ONLY IN THE HEART
- CAUSES YOUR HEART TO BEAT.



I. MUSCLES HELP US \_\_\_\_\_.

III. MUSCLES ARE ATTACHED TO BONES BY \_\_\_\_\_.



III. WHEN MUSCLE SHORTENS, WE SAY IT \_\_\_\_\_  
WHEN A MUSCLE CONTRACTS, IT \_\_\_\_\_ THE  
BONE IT IS ATTACHED TO CAUSING IT TO \_\_\_\_\_.

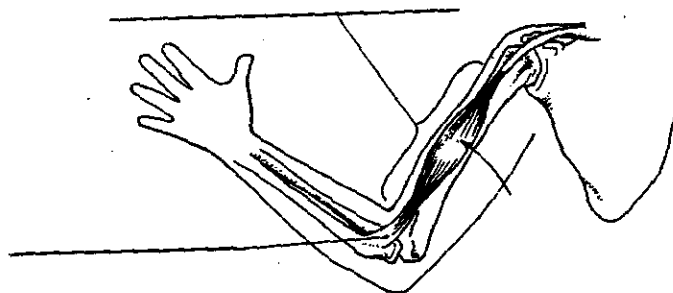
• MUSCLES THAT CAUSES JOINTS TO \_\_\_\_\_  
ARE CALLED \_\_\_\_\_.

EX: BICEPS

• MUSCLES THAT CAUSES JOINTS TO \_\_\_\_\_  
ARE CALLED \_\_\_\_\_.

EX: TRICEPS

VI. MUSCLES WORK IN TEAMS OF \_\_\_\_\_ TO BEND  
AND STRAIGHTEN.



## Muscle Fatigue

Anyone who has performed strenuous exercise knows that muscles can soon begin to ache, or show fatigue. In this activity, you will examine how quickly some of your muscles begin to tire.

Rest your elbow on the desk so that the palm of your hand is facing toward you. Open and close your hand forcefully as many times as you can in 30 seconds. Repeat four more times, each time recording your results in the chart.

Stand up. Hold a book in your hand with your arm hanging straight down at your side. Keeping your arm straight, lift the book to shoulder height. Then lower it. Count the number of times you can raise and lower your arm in 30 seconds. Repeat four more times and record your results.

Trial	Number of Fists Made	Number of Arm Lifts
1		
2		
3		
4		
5		

1. What conclusion(s) can you draw from your results? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

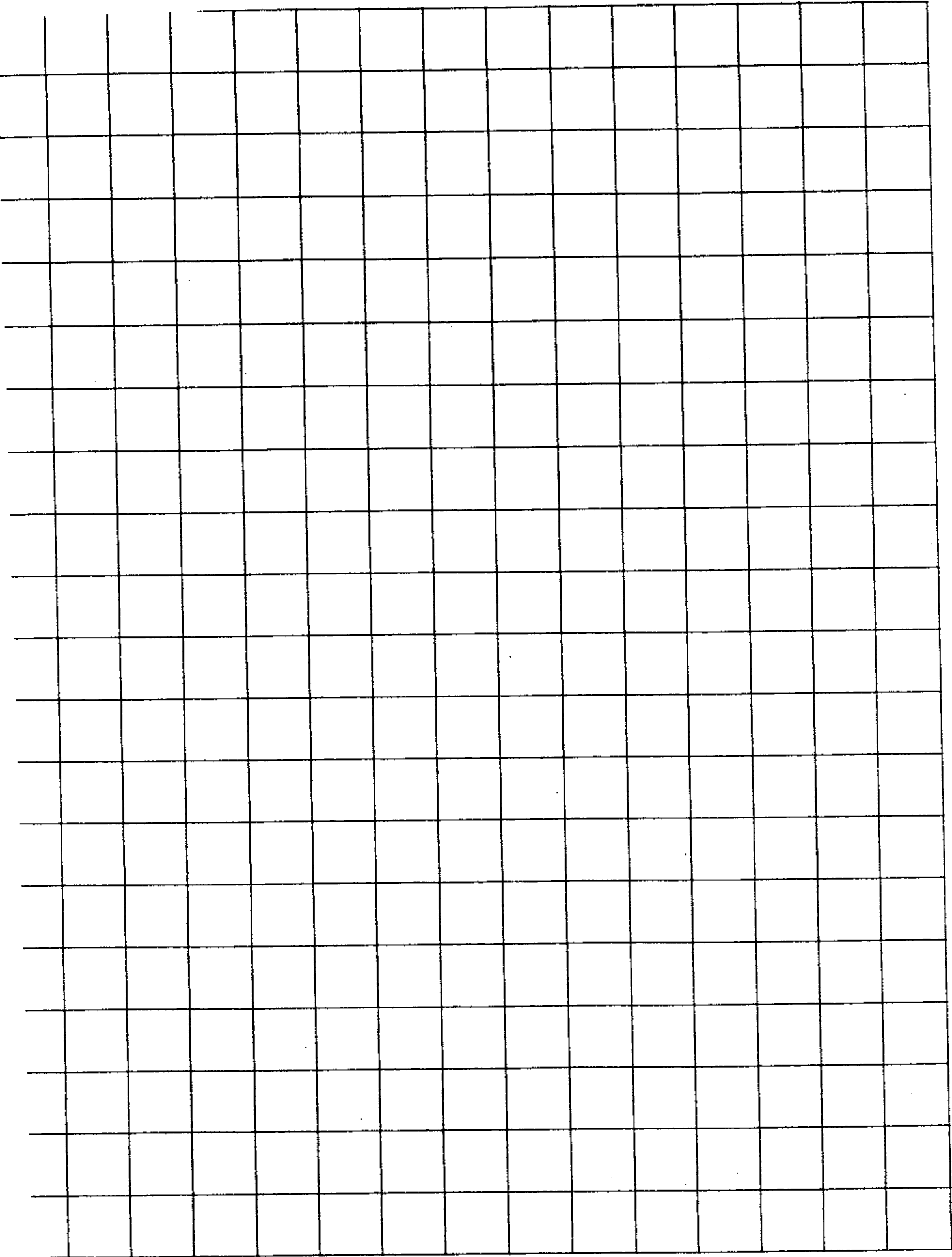
You may want to obtain results for several other class members or friends. On a sheet of graph paper, graph these results using a different color for each individual.

2. Are there differences that might be related to age, sex, or the physical fitness of the individual? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## 12-4 What is the muscular system?

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### Lesson Review

Answer the following.

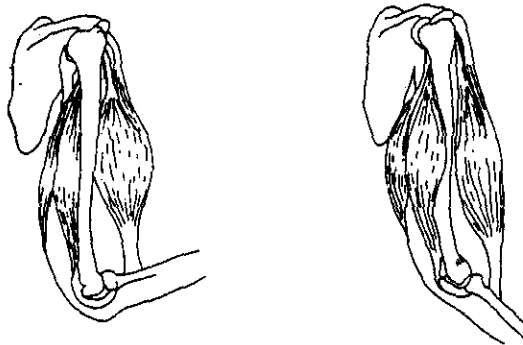
1. What is an extensor? \_\_\_\_\_
2. What is a tendon? \_\_\_\_\_
3. What is a flexor? \_\_\_\_\_
4. About how many muscles are there in the human body? \_\_\_\_\_
5. What is the difference between a tendon and a ligament? \_\_\_\_\_  
\_\_\_\_\_
6. What must a muscle do to move a bone? \_\_\_\_\_
7. How do muscles work together to move parts of the body? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. Is the biceps muscle of the arm a flexor or an extensor? \_\_\_\_\_
9. Is the triceps muscle of the arm a flexor or an extensor? \_\_\_\_\_
10. Are muscles relaxed or contracted when they move bones? \_\_\_\_\_

### Skill Challenge

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**Skills:** analyzing, identifying

Study the illustration of the muscles in the upper arm. Label each of the muscles. Then, in the space provided, describe how these muscles work together to bend the elbow. Be sure to include the terms *extensor* and *flexor* in your description.



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**12-5 What are the kinds of muscles?**

**Lesson Review**

Write the term that best completes each statement in the space provided.

1. The kind of muscle found only in the heart is \_\_\_\_\_ muscle.
2. The term "striated" means \_\_\_\_\_.
3. Striated muscle is also called \_\_\_\_\_ muscle.
4. Striated muscles are called \_\_\_\_\_ muscles because you can control their actions.
5. The kind of muscle that is found in the walls of blood vessels and the stomach is called \_\_\_\_\_ muscle.
6. Smooth muscle is sometimes called \_\_\_\_\_ muscle because it causes movements that you cannot control.
7. Both smooth muscle and \_\_\_\_\_ muscle are involuntary.
8. The term "cardiac" means \_\_\_\_\_.

**Skill Challenge**

Skills: *inferring, classifying*

Classify each of the muscles described in the first column of the table as cardiac muscle, striated muscle, or smooth muscle by placing a check mark beneath the proper heading.

**Table 1 Classifying Muscles**

Description	Cardiac	Smooth	Striated
1. Muscle found in the stomach			
2. Muscle found in the heart			
3. Muscle found in the blood vessels			
4. Muscles that bend the knee			
5. Muscles that turn the head			
6. Muscles that move the fingers			
7. Muscles of the intestines			
8. Muscles that control breathing			

# What causes hiccups?

**H**ave you ever gotten the hiccups and then become the victim of lots of free home "cures?" While you are hiccuping uncontrollably, your brother jumps from behind you, screaming "BOO!" Or your sister blows up a paper bag and smashes it gleefully in your face.

Then a well-meaning aunt appears. She makes you stand over the sink and drink water with the glass tipped away from you. "Drink from the wrong side of the glass," she urges. Meanwhile, you are spilling water down the front of your shirt. And you are still hiccuping.

Clearly, hiccups have a mind of their own. Everyone gets them occasionally, especially after a big meal or consuming alcohol. But despite the fact that people hiccup in

hundreds of different languages, scientists aren't precisely sure why.

Hiccups happen when a big muscle near your stomach goes into spasms. This muscle, called the *diaphragm*, helps us breathe. Normally, its movements are rhythmic and regular. When the diaphragm slips out of its normal pattern, breathing changes.

The out-of-control diaphragm makes you take in a big gulp of air. As the air fills your lungs, the brain sends an urgent message to your throat: "No more of this!" And your vocal cords promptly snap shut.

It's rather like a tug-of-war. The diaphragm tries to get you to inhale, while the mouth and throat do their valiant best to keep too much air from entering. And with each jerky movement of the

diaphragm, the rush of air makes a weird noise as it hits the vocal cords. That's the "hic" in hiccup.



*Hiccuping is like a tug of war between your diaphragm and your throat.*

Most hiccuping is perfectly normal and stops after a little while, as the diaphragm settles back into its normal steady rhythm. Hiccuping for more than a few minutes, though, can get painful. Your throat hurts, and you get tired of being jerked like a puppet by the *hic-hic-hic*. Usually,

however, the hiccups stop as abruptly as they started.

But for some people, hiccuping is like a chronic disease. They hiccup continuously, for weeks at a time. Their bodies become exhausted, just as if they were running a race. The hiccuping interferes with jobs, schoolwork, and talking, eating, and sleeping. By studying these hiccup sufferers, researchers are finding clues to what makes all

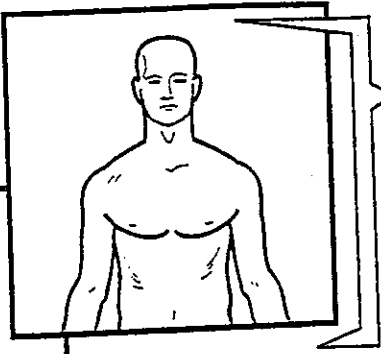
of us hiccup.

Doctors gave a small group of hiccuping adults a medicine that is normally used to control high blood pressure. The drug keeps calcium from being absorbed by brain tissue. The medicine stopped the hiccups in five of seven people tested. According to the researchers, the fact that the drug worked may mean that hiccups are caused by a temporary overload of

calcium in the brain.

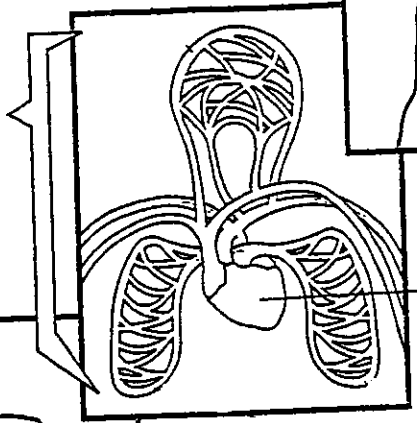
For most of us, hiccups are simply a brief but embarrassing nuisance. We would no more take high-powered medicine for hiccups than we would for sneezing. And since none of the home remedies have proven to be "cures," the next time someone attempts to try out their favorite cure on you, just say, "I'm—hic—waiting them out—hic—thank you."

# Biological Organization



**ORGANISM**

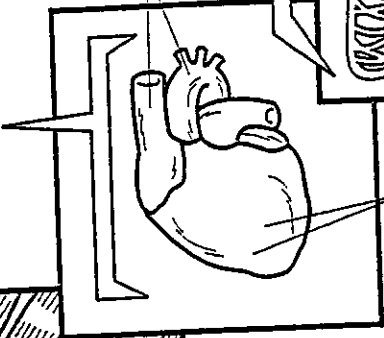
**ORGAN SYSTEM**



Blood vessels

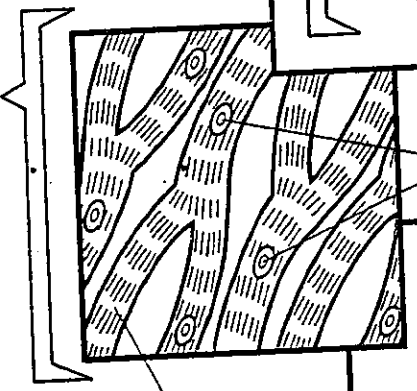
Heart

**ORGAN**



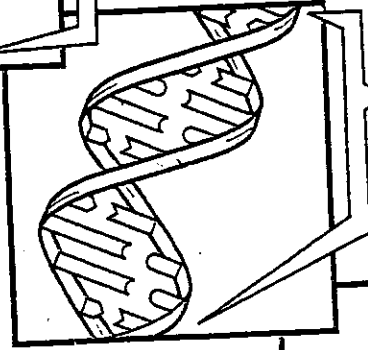
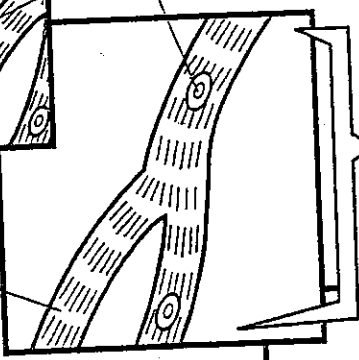
Ventricles

**TISSUE**

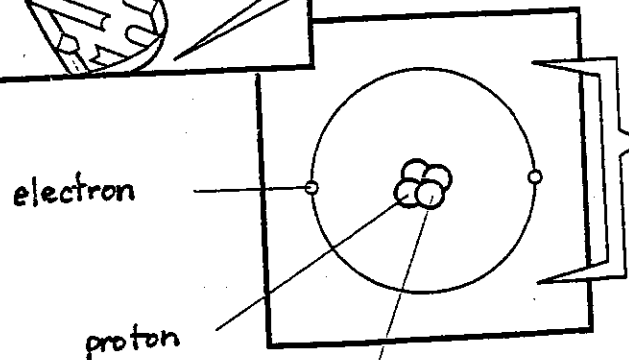


cytoplasm

**CELLS**



**MOLECULE**



electron

proton

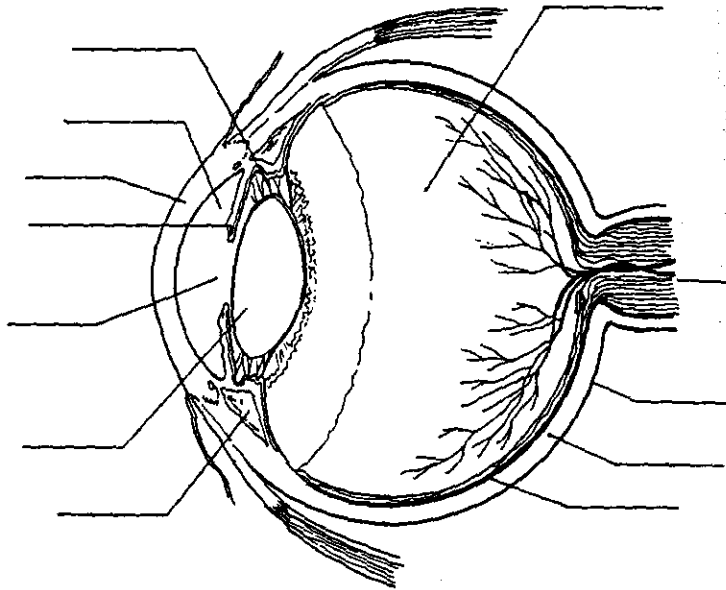
neutron

**ATOM**



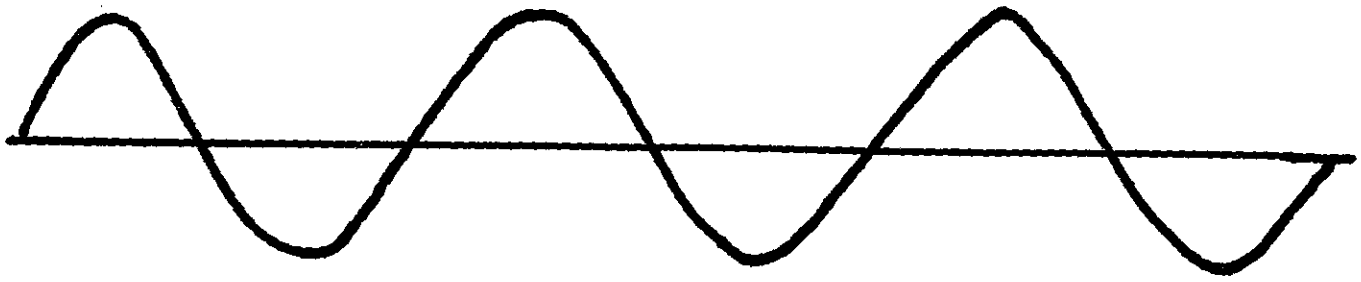
# NAME THE ORGAN SYSTEMS IN THE HUMAN BODY:

Label the parts of the human eye on the diagram below.



**DESCRIBE HOW THE EYE SENSES LIGHT.  
USE THESE WORDS: RETINA, CONES, RODS, OPTIC NERVE,  
CORNEA, LENS, PUPIL, IRIS.**

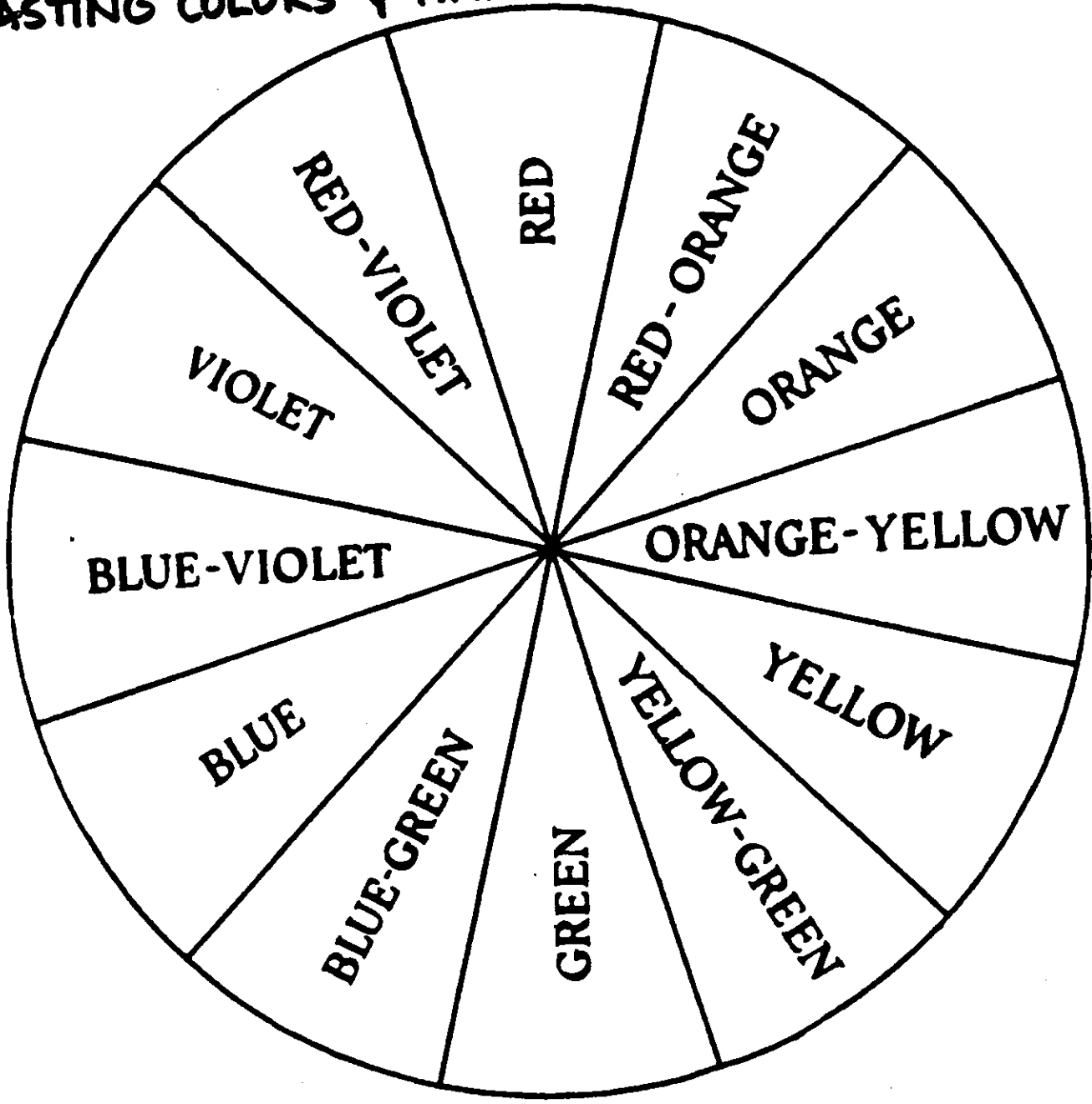
**LABEL THE PARTS OF A WAVE:**



**LIST THE COLORS IN THE SPECTRUM FROM SHORTEST WAVELENGTH TO LONGEST.**

**EXPLAIN HOW ABSORPTION AND REFLECTION DETERMINE THE COLORS WE SEE.**

The Color Wheel: USE CRAYONS TO COLOR THIS COLOR WHEEL. THEN LABEL - PRIMARY COLORS, SECONDARY COLORS, TERTIARY COLORS, COMPLIMENTARY COLORS, CONTRASTING COLORS & HARMONIOUS COLORS.

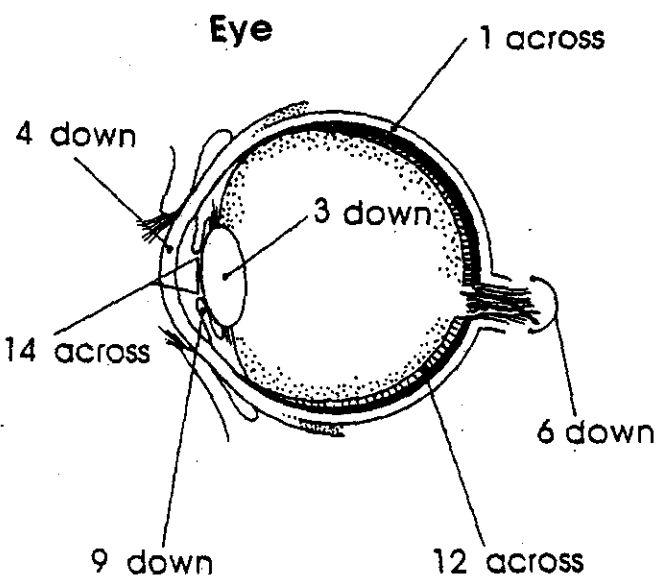
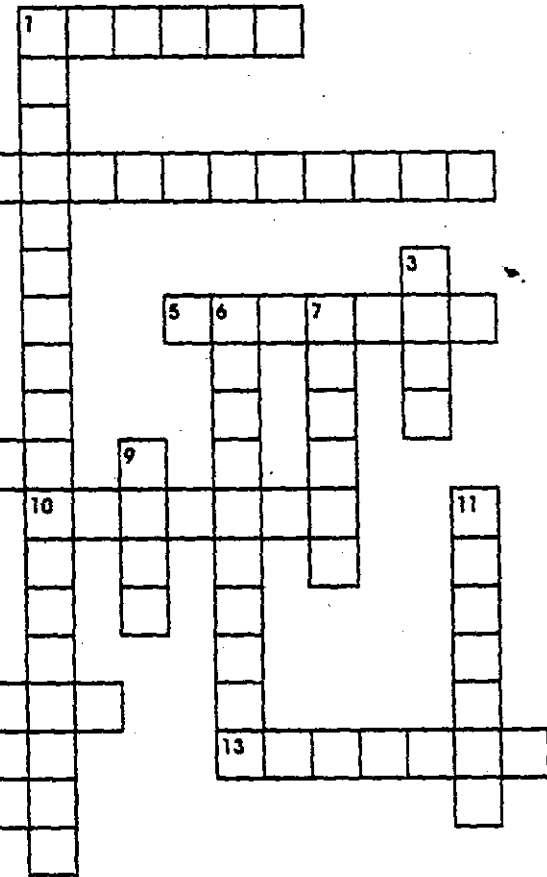
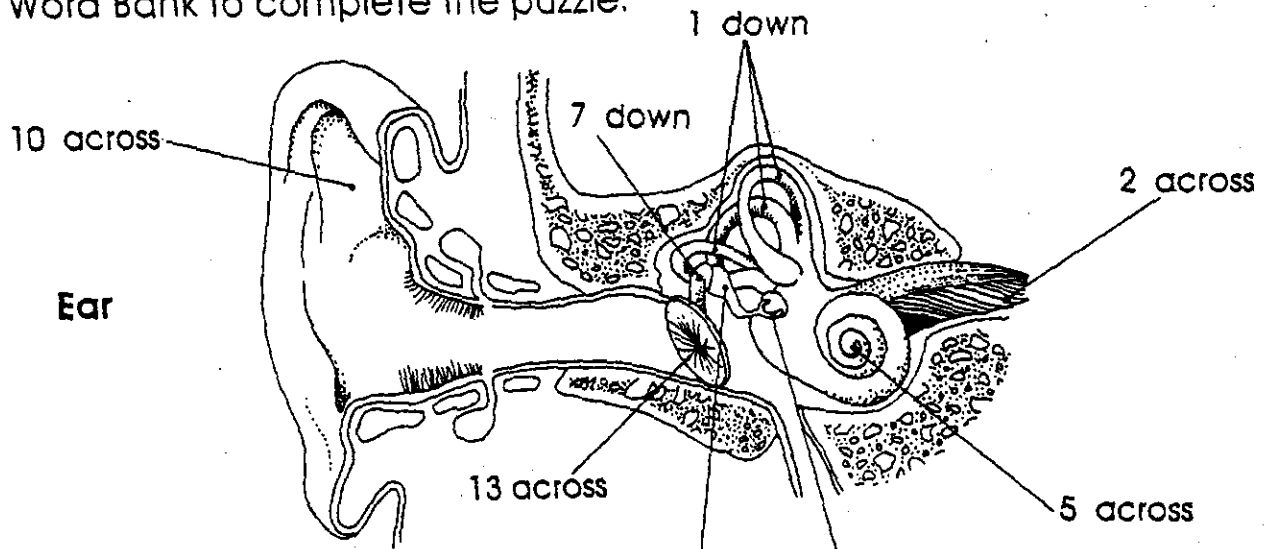


# Sensational!

Name \_\_\_\_\_

(Ear and Eye Review)

Use the Word Bank to complete the puzzle.



## WORD BANK

cornea  
lens  
sclera  
anvil  
pupil

iris  
retina  
stirrup  
auricle  
hammer

auditory nerve  
optic nerve  
cochlea  
eardrum  
semicircular canals

## Nervous System at Work

Name \_\_\_\_\_

Write the letter of each function next to its matching part.

Draw a line from the pictured part of the nervous system to its function.

### Parts

1. cerebrum \_\_\_\_\_

2. cerebellum \_\_\_\_\_

3. medulla \_\_\_\_\_

4. spinal cord \_\_\_\_\_

5. spinal nerves \_\_\_\_\_

### Function

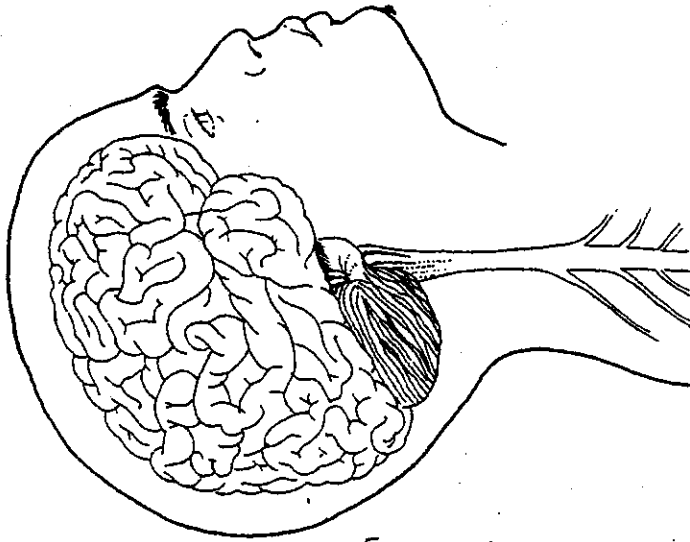
a. It controls balance and muscular coordination.

b. It controls thought, voluntary movement, memory and learning, and also processes information from the senses.

c. They carry impulses between the spinal cord and body parts.

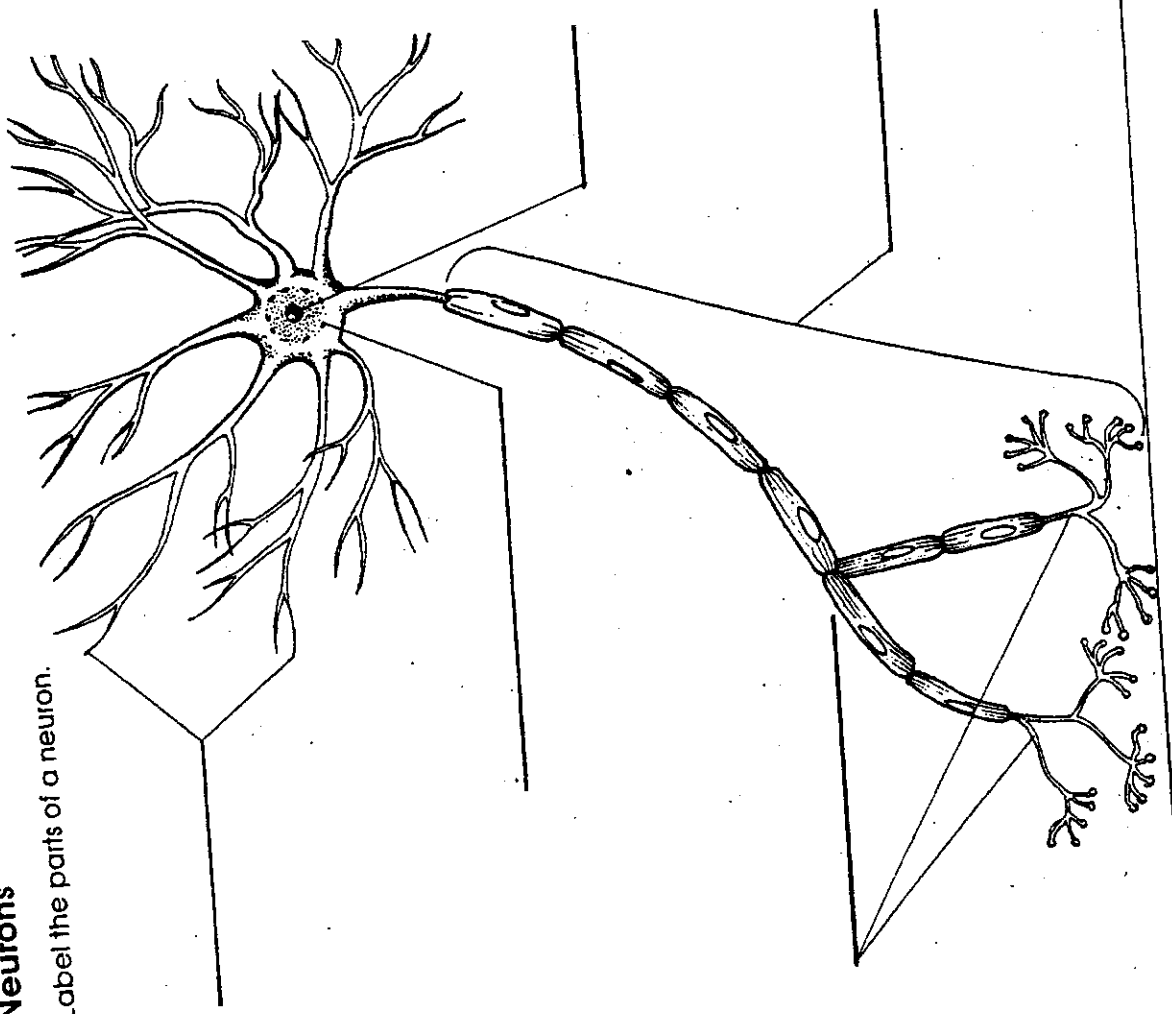
d. It controls breathing, heartbeat, and other vital body processes.

e. It relays impulses between the brain and other parts of the body.



## Neurons

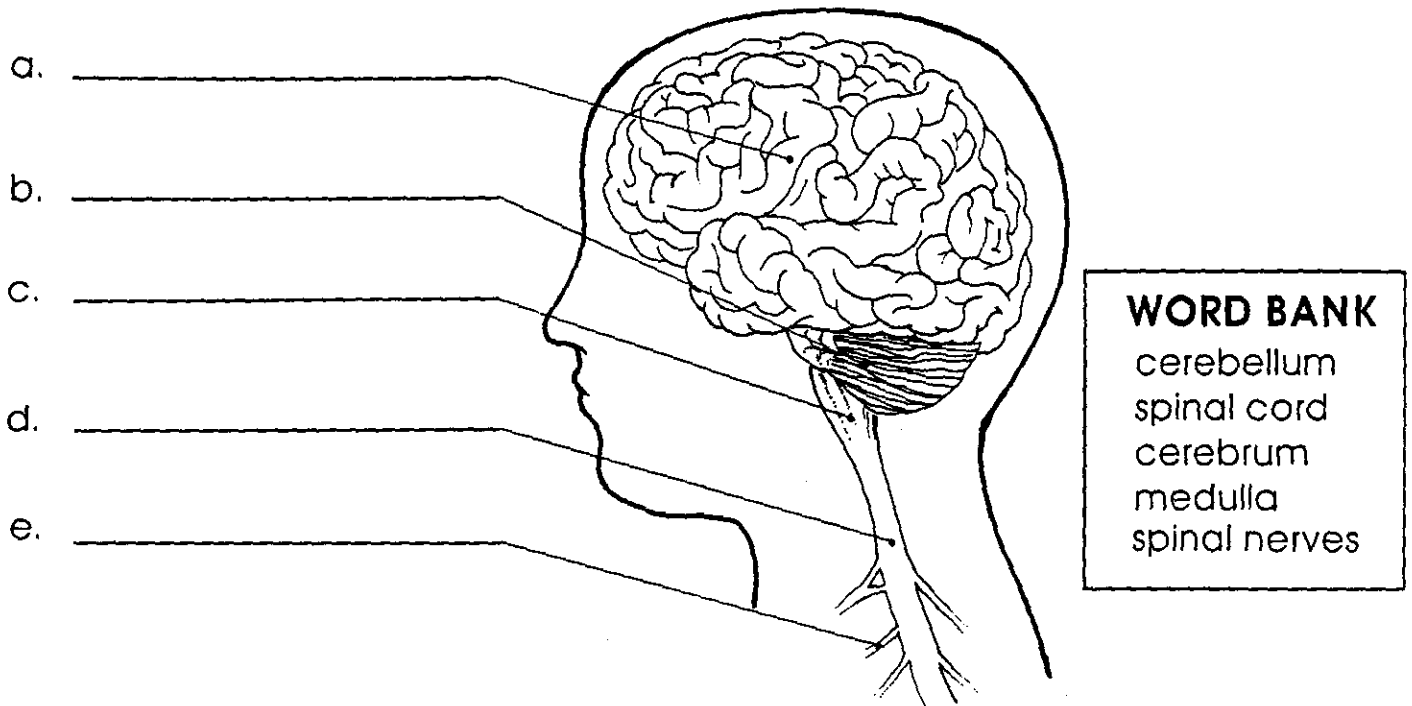
Label the parts of a neuron.



# Nervous System Functions

Name \_\_\_\_\_

Label the parts of the nervous system.



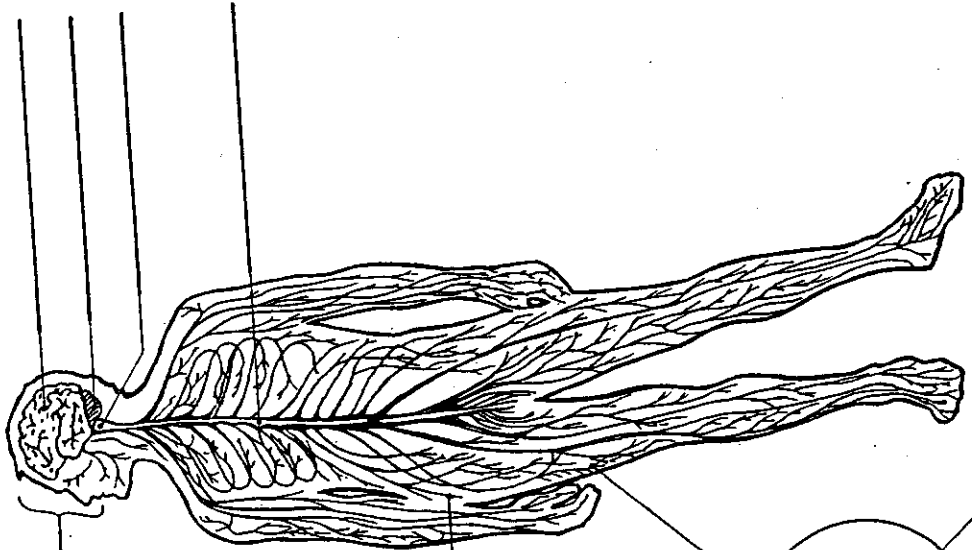
Complete the chart by writing the function of each nervous system part next to its name.

Nervous System	
Part	Function
a. _____	
b. _____	
c. _____	
d. _____	
e. _____	

Name \_\_\_\_\_

### Your Central Nervous System

Label the parts of your central nervous system.



#### WORD BANK

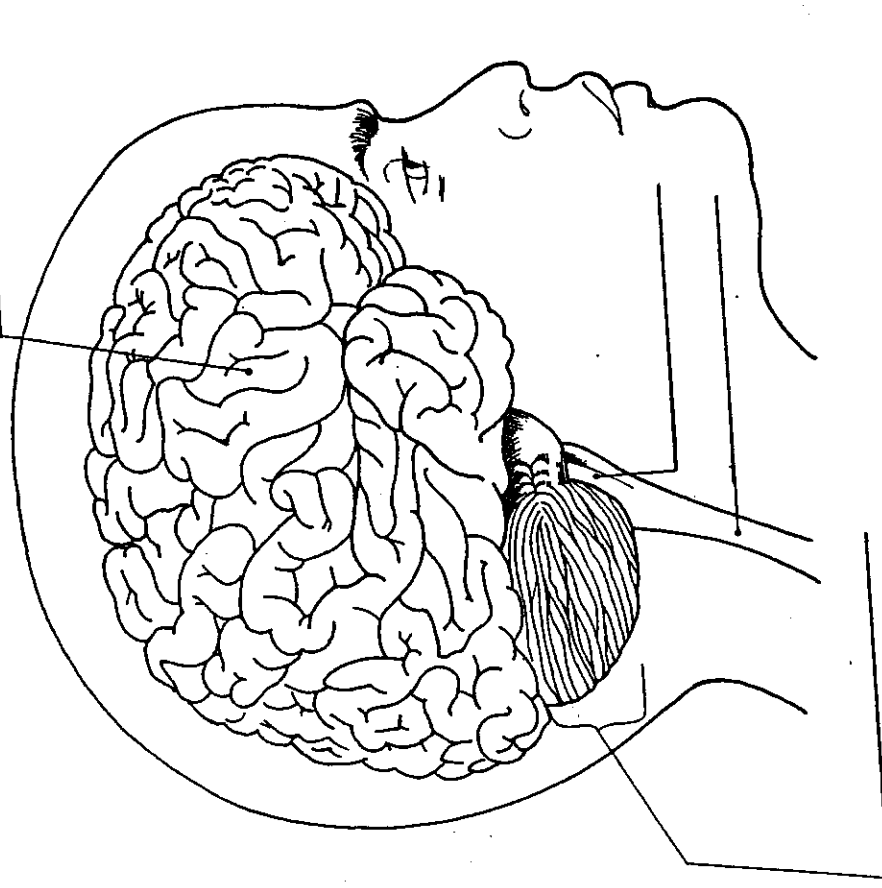
spinal cord  
cerebellum  
nerves  
brain stem

brain  
cerebrum  
nerve cell

Name \_\_\_\_\_

### Exploring Your Brain

Label the parts of your brain.



#### WORD BANK

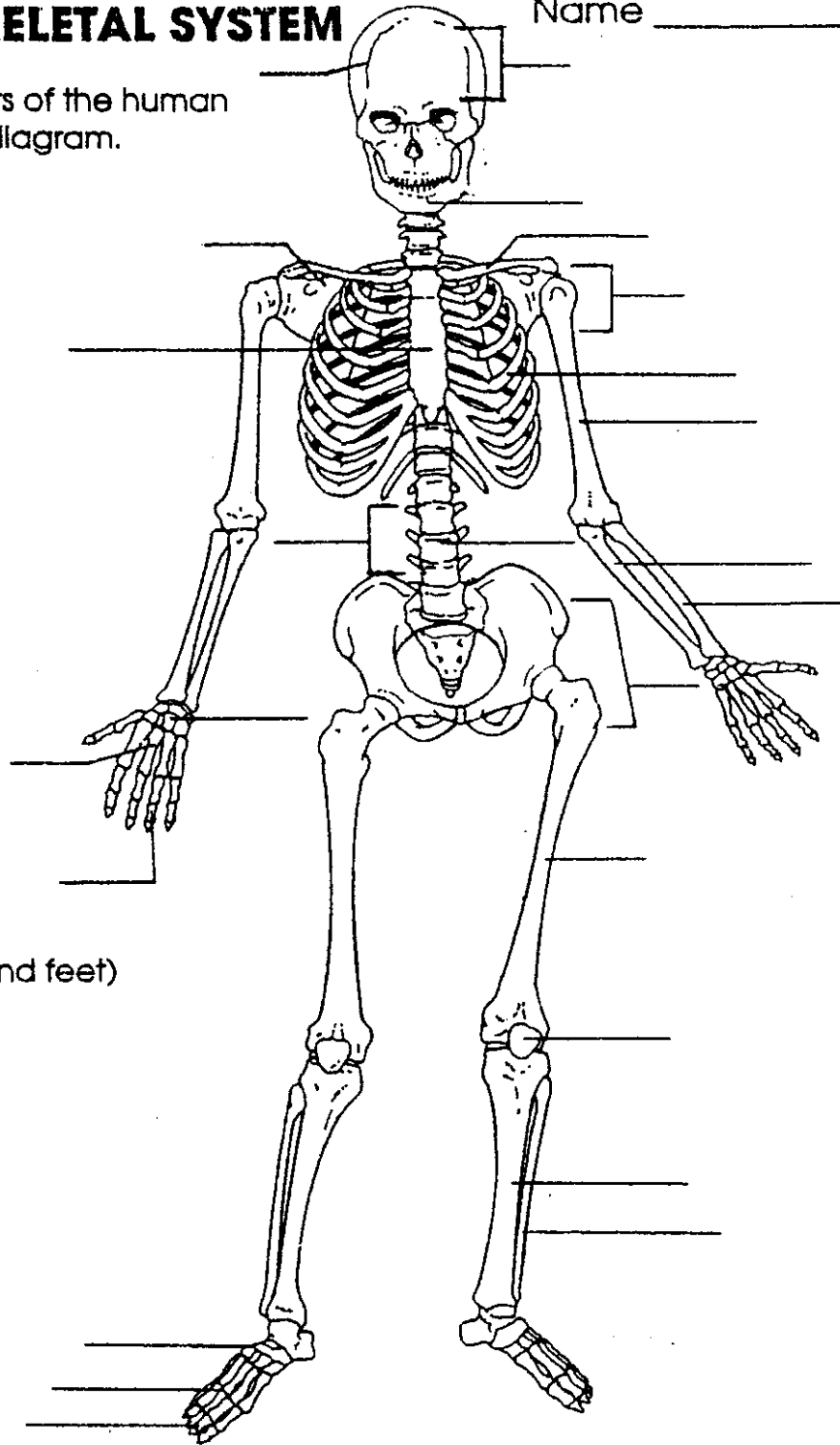
cerebrum  
spinal cord  
cerebellum  
brain stem

# THE HUMAN SKELETAL SYSTEM

Name \_\_\_\_\_

Label the following parts of the human skeletal system on the diagram.

- a. skull
- b. cranium
- c. mandible
- d. clavicle
- e. pectoral girdle
- f. scapula
- g. sternum
- h. ribs
- i. humerus
- j. vertebrae
- k. vertebral column
- l. pelvic girdle
- m. radius
- n. ulna
- o. carpals
- p. metacarpals
- q. phalanges  
(on both hands and feet)
- r. femur
- s. patella
- t. tibia
- u. fibula
- v. tarsals
- w. metatarsals



Label each of the four types of movable joints shown below.

