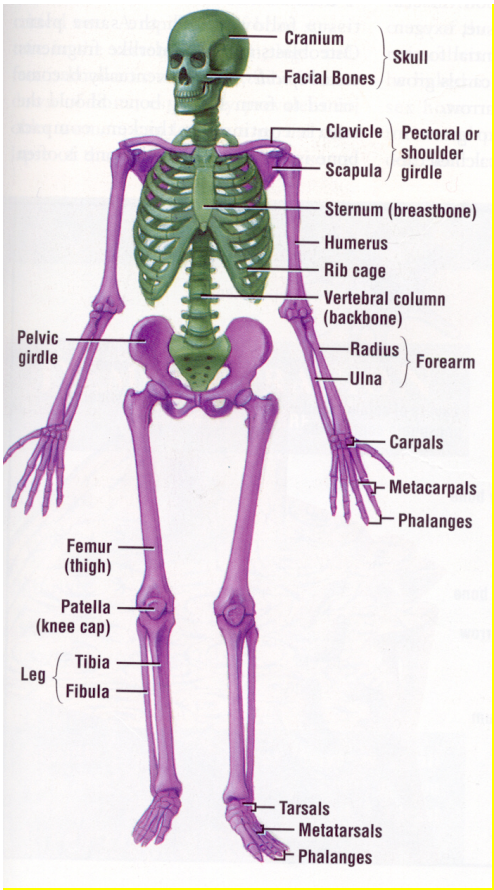
Support and Movement

An endoskeleton is a frame that gives our bodies shape. Cartilage is tough flexible tissue that protects the ends of bones from rubbing against each other. The axial skeleton is made up of the skull, backbone, and rib cage. The appendicular skeleton is made up of bones such as the bones of the arms and legs.

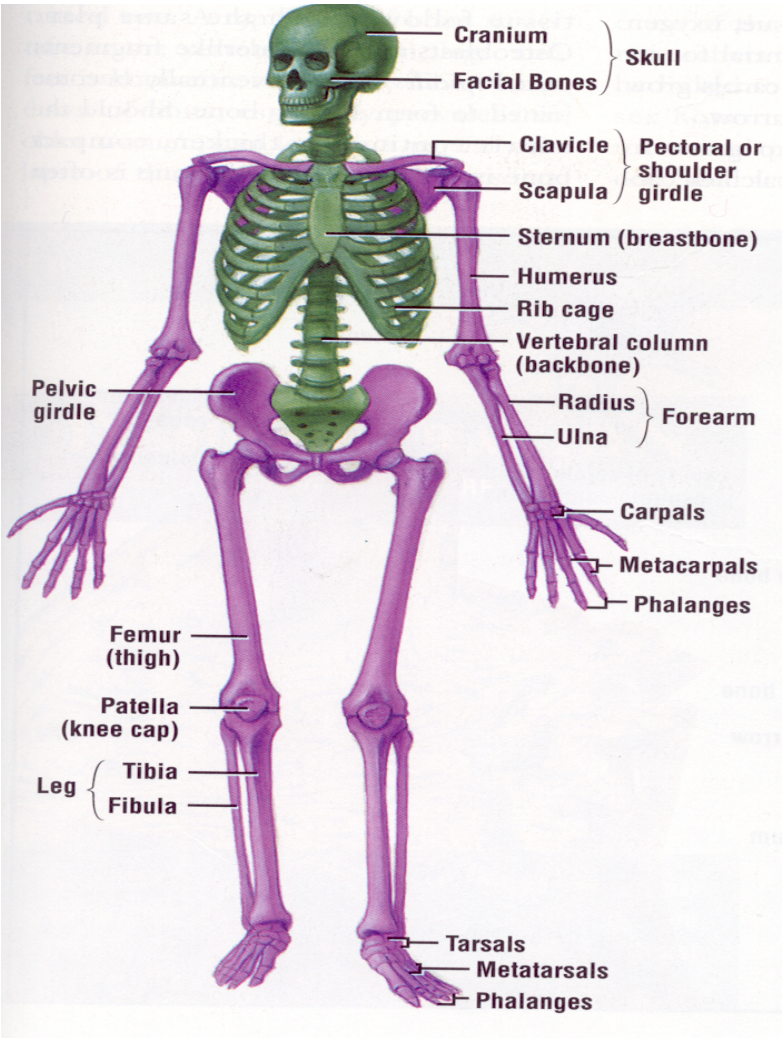


The skeleton has 5 main functions. 1. The skeleton supports and gives shape to the body. 2. The skeleton covers and protects organs such as the skull protecting the brain. 3. Bones work with muscles to allow movement. 4. Some bones make blood cells. 5. Bones store minerals such as calcium.

Questions 1-3 pg 345

Bones

https://askabiologist.asu.edu/sites/default/files/resources/coloring_pages/pdf/AAB_human_skeleton_anatomy_activity.pdf


Cranium
Facial Bones
Skull
Clavicle
Scapula
Pectoral or shoulder girdle
Sternum (breastbone)
Humerus
Rib cage
Vertebral column (backbone)
Pelvic girdle
Radius
Ulna
Forearm
Carpals
Metacarpals
Phalanges
Femur (thigh)
Patella (knee cap)
Leg
Tibia
Fibula
Tarsals
Metatarsals
Phalanges

p 345

Q 1- 3

p 345

Q 1- 3

1. What bones make up the axial skeleton?

The skull, rib cage and backbone.

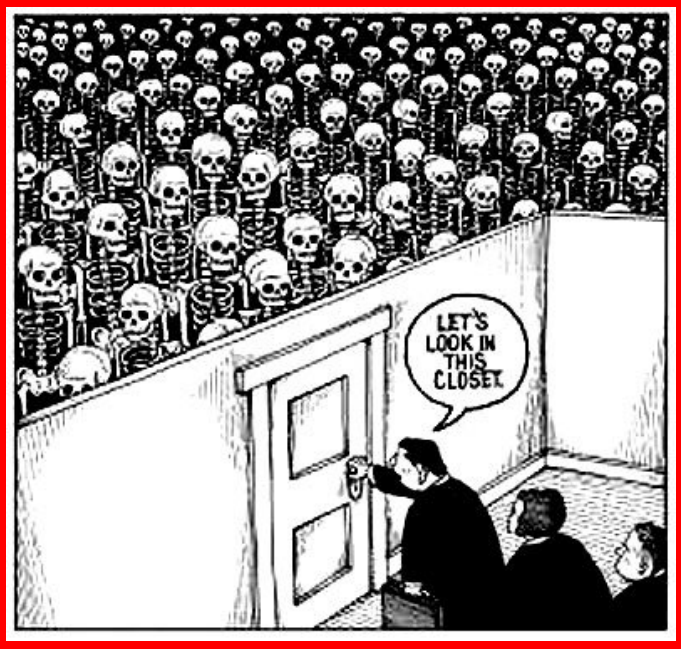
2. What are three functions of the skeletal system?

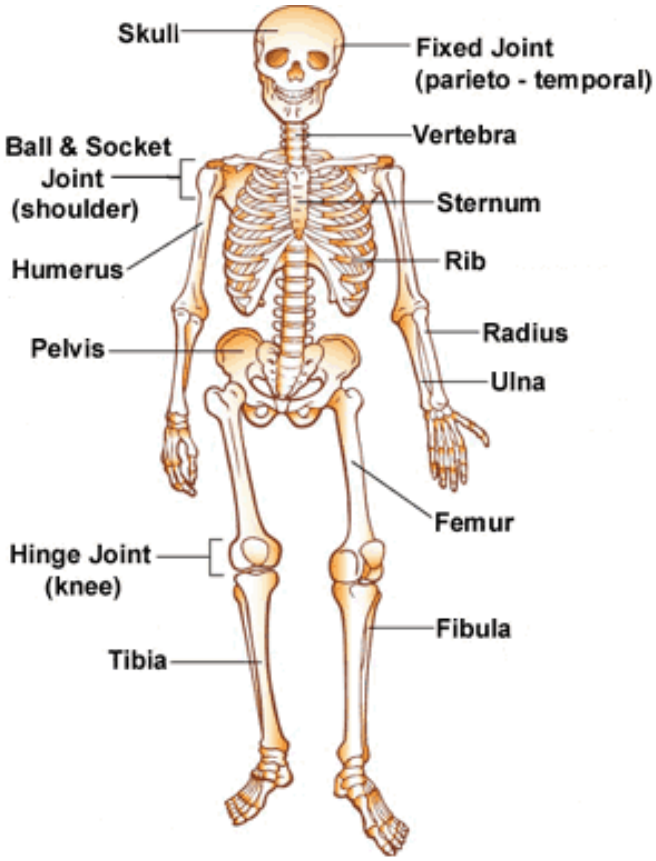
- supports your body and gives it shape
- covers and protects organs
- bones work with muscles to make movements possible
- make blood cells
- store minerals such as calcium and phosphorous

3. Discs of cartilage are found between the vertebrae. What function do you think the discs serve?

Cartilage is flexible and protects the bones from rubbing against each other

Skeletal Links




Skull
Fixed Joint
(parieto - temporal)
Vertebra
Ball & Socket
Joint
(shoulder)
Sternum
Humerus
Rib
Radius
Pelvis
Ulna
Femur
Hinge Joint
(knee)
Fibula
Tibia

How Do We Grow Hard Bones From Soft Tissue?
https://www.youtube.com/watch?v=YUZIo4yeovc

The Skeletal and Muscular System
https://www.youtube.com/watch?v=NP29ejPrOPE

http://www.dailymotion.com/video/x3jyupf

Bill Nye- Bone and muscles

Life size skeleton activity

Groups figure out the right placement of all the pieces of paper.

Label the following bones on the skeleton

Cranium

clavicle

scapula

sternum

vertebrae

ribs

humerus

ulna

radius

carpals

metacarpals

phalanges

pelvis

femur

patella

tibia

fibula

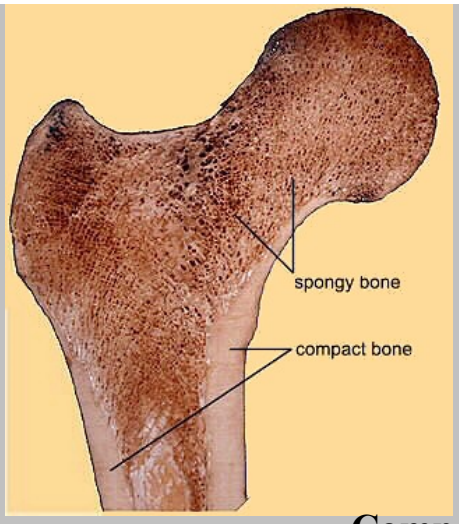
tarsals

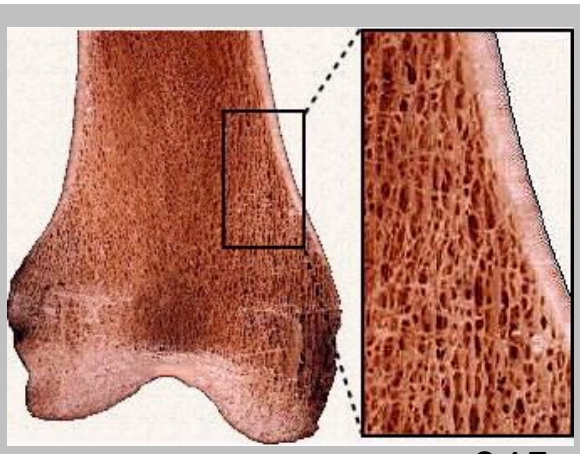
metatarsals

phalanges

The structure of Bone

Bones are made from living and non-living tissue. A tough membrane called the periosteum covers bones. It has blood vessels and supplies the bone with food and oxygen. Compact bone is made up of calcium and is very strong and hard. Milk products contain calcium and are good for bone. Spongy bone is found at the end of bones and it contains marrow, which can produce blood cells and store fat.





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1-3

Compact and Spongy bone

There are two basic structural types of bone, compact and spongy.
Compact bone forms the outer shell of all bone and also the shafts in long bones.
Spongy bone is found at the expanded heads of long bones and fills most irregular bones.

How bones form from fetus to adult

https://www.youtube.com/watch?v=p-3PuLXp9Wg

https://www.youtube.com/watch?v=RC2w_9DcY38

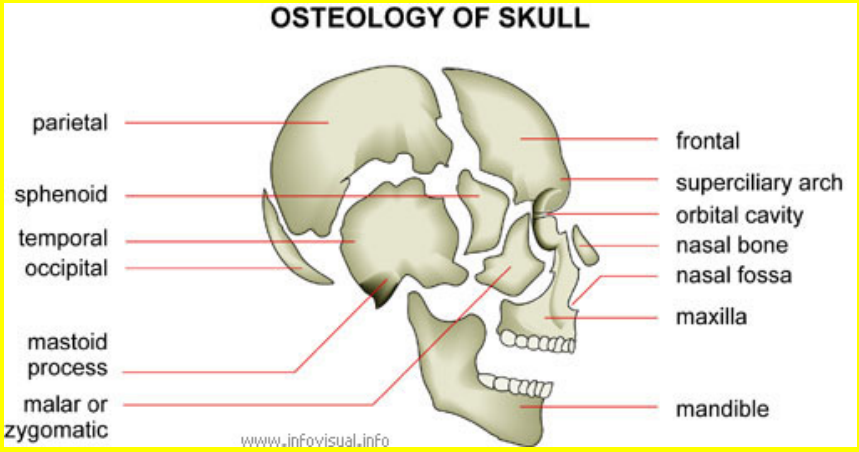
Bones at birth 300

as an adult you have 206

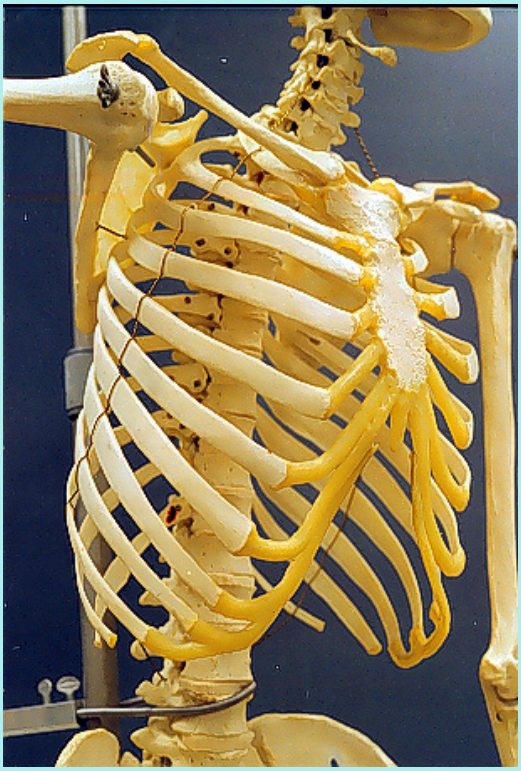
so many bones fuse together

Joints allow movement to occur.
Ligaments hold bones together.

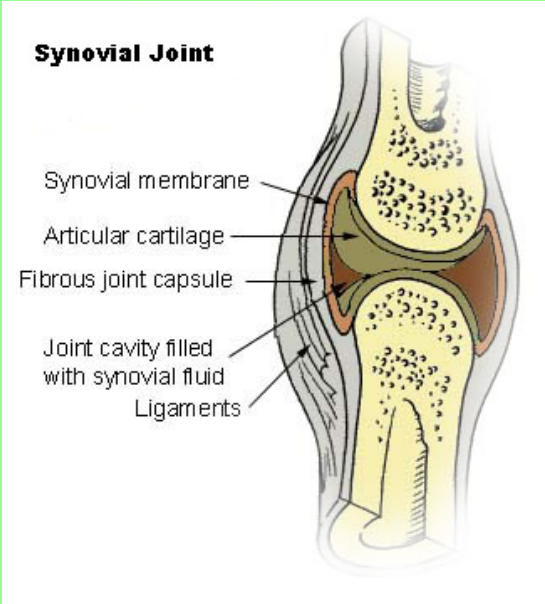
There are three (3) types of joints:
1. **Fixed joints -** such as the skull - bones are fused together



2. **Partially moveable joints** such as the ribs and sternum allow little movement.



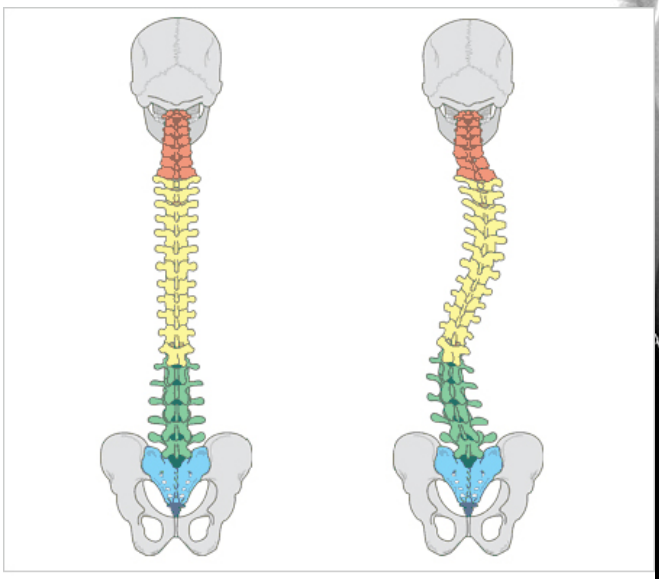
3. **Moveable joints**, such as the **hinge joints** of the lower and upper arm, and the leg and thigh. Also, **ball and socket joints** such as the upper arm and shoulder, **pivotal joints** such as the skull and the vertebrae, and **gliding joints** such as the wrist, are all moveable joints.



Bones form from cartilage. As a baby grows, bone cells replace cartilage and the bone becomes hard. If bone is under too much pressure they may break. Arthritis is another medical condition associated with bone. Movement of joints becomes very painful and difficult. Arthritis usually occurs as cartilage between bones is replaced by bone cells.

https://www.youtube.com/watch?v=fdgCRYV2a

Scoliosis is another medical condition in which the backbone has an unusual curve.



https://www.youtube.com/watch?v=gQTyP9WQj_I

Handout Section review 20-2

Questions p 351 #4-8

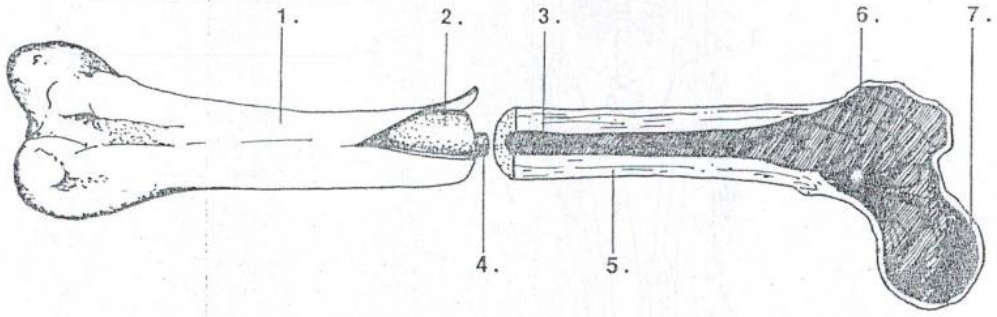
use page 346-351

Name _____ Class _____ Date _____

Chapter 20 Support and Movement Section Review 20-2

Bones

Part A: *Label the parts of long bones. Then write the name of the part next to its description.*



1. shaft
2. periosteum
3. blood vessel
4. yellow marrow
5. compact bone
6. spongy bone
7. red marrow

8. Hardest part of bone compact bone
9. Center of bones shaft
10. Has many spaces spongy bone
11. Thin, tough membrane covering a bone periosteum
12. Supply bone cells with blood blood vessels
13. Where new blood cells are made red marrow
14. Made up mostly of fat cells yellow marrow

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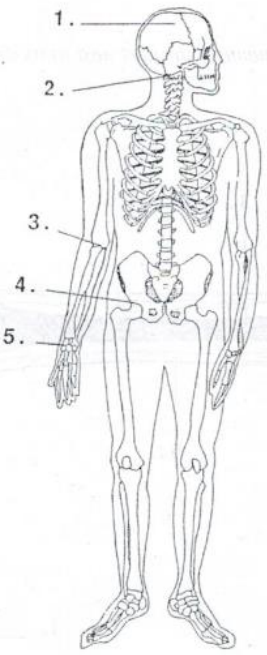
Chapter 20 Support and Movement Section Review 20-2 Bones (continued)

Part B: *Study the diagram showing 5 places in the human body where joints are located. Write the type of joint in the space provided.*



1. fixed
2. pivotal
3. hinged
4. ball & socket
5. gliding

Part C: *In the spaces provided, describe the type of movement for each joint shown in the diagram in part B.*

Joint 1 does not move
Joint 2 side to side & up and down
Joint 3 back and forth in one direction
Joint 4 moves in all directions
Joint 5 slide/glide along each other

Part D: *Read each of the statements about skeletal system problems. In the spaces provided, write which problem the statement describes. Use* ***scoliosis, arthritis,*** *or* ***fracture****.*

fracture 1. Usually results from injury
scoliosis 2. Disorder of the backbone
fracture 3. Partial or complete break in a bone
arthritis 4. Cartilage is destroyed and replaced with bone
arthritis 5. May be treated by joint replacement
scoliosis 6. Children usually wear a brace to correct problems

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Questions p 351 #4-8

4. Red bone marrow makes new blood cells

5. Hinged joint allows back and forth in one direction

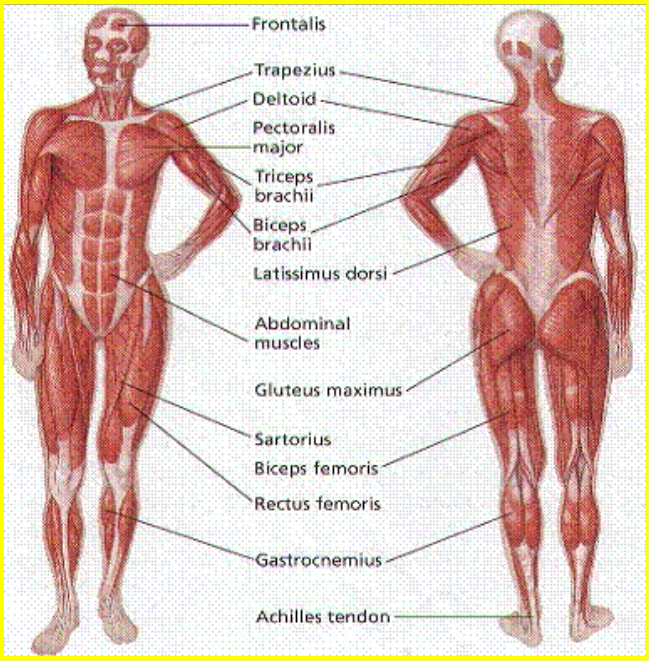
6. Bones start to form during the second and third month of developing baby.

7. Symptoms of arthritis inflamed joints, swelling, pain in joint areas

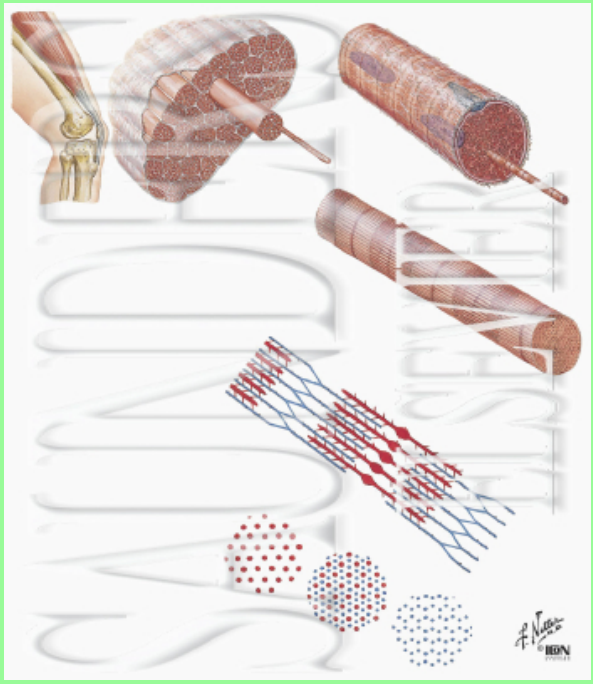
8. Joints in the fingers are hinged

Muscular System

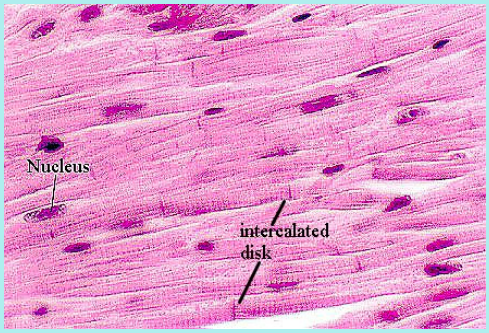
Muscles work together with bones to allow movement. There are more than 600 muscles in the human body.

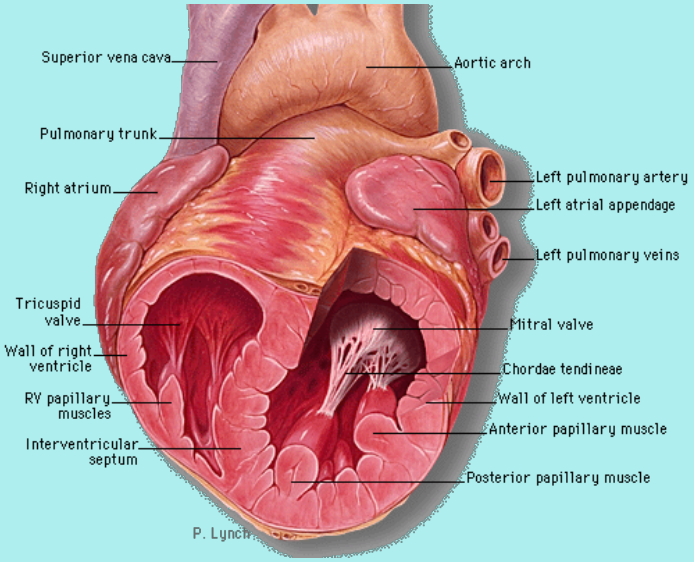


1. **<u>Skeletal muscle</u>** is attached to bone and allow movement. At moveable joints, skeletal muscle is attached to bone by tendons. **Tendons** are tough bands of elastic tissue. Skeletal muscle is under voluntary control and moves when a person wants it to.



2. **<u>Cardiac muscle</u>** pumps blood through the heart and the rest of the body. Cardiac muscle is involuntary.





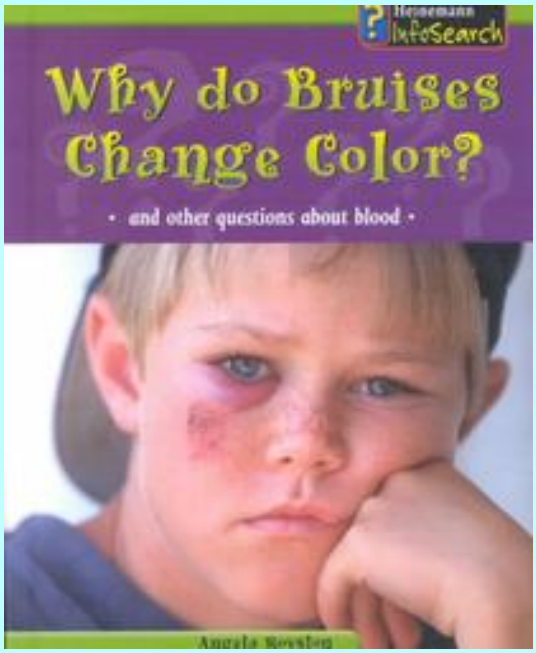
3. **Smooth muscle** is found in the walls of blood vessels, the stomach and other organs. They are involuntary muscles.

Muscle Action

Muscle cells change length as they contract and expand. This allows movement to occur. Muscles work in pairs to allow movement. For example, the bicep muscle bends the arm, and the triceps muscle straightens the arm. The bicep is a flexor muscle, and the triceps is an extensor muscle.

Muscle Problems

Muscle cramps may occur when muscle contract strongly and suddenly. Bruising and tearing of muscle cause a Charley horse. It may cause small blood vessels to rupture resulting in a bruise. Sore muscles can occur if a person does not exercise on a regular basis. A person should always do a good warm-up before they exercise. Muscular dystrophy is a disease of the skeletal muscle causing it to degenerate.



Section review 20-3 worksheet

Name _____ Class _____ Date _____

Chapter 20 Support and Movement Section Review 20-3

The Muscular System

Part A: *Complete Table 1. Place a check mark in the proper column to indicate which characteristic describes each type of muscle.*

Table 1 Types of Muscles

Characteristic	Skeletal Muscle	Smooth Muscle	Cardiac Muscle
1. Voluntary			
2. Attached to bones by tendons			
3. Found in the heart			
4. Found in the walls of blood vessels			
5. Moves bones			
6. Helps digest food			
7. Involuntary			
8. Pumps blood			
9. Under your control			
10. Cells branch and weave together			

Part B: *Name the kind of muscle that is being used. Write your answer in the spaces provided.*

_____ 1. Picking up a box

_____ 2. Helping blood move through your blood vessels

_____ 3. Pumping blood through the heart

_____ 4. Throwing a baseball

_____ 5. Pumping blood to all parts of the body

_____ 6. Pushing food down your food tube

Name _____

Chapter 20 Support and Movement Section Review 20-3 The Muscular System (continued)

Part C: *Study the diagrams of the arm muscles. Decide whether each statement is true or false. Write* ***true*** *if the statement is true. If the statement is false, correct the underlined word to make the statement true.*

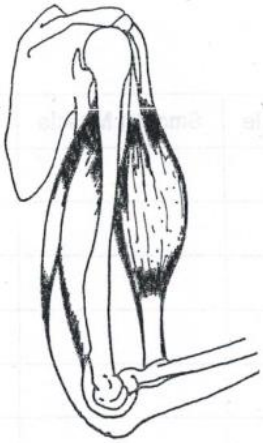


Figure A

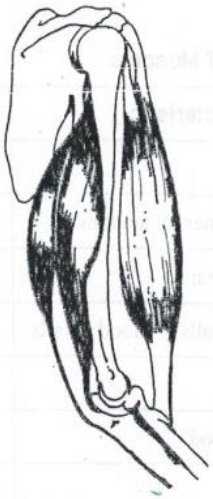


Figure B

_____ 1. In Figure A, the biceps is contracted.

_____ 2. In Figure B, the triceps is relaxed.

_____ 3. The triceps straightens the arm.

_____ 4. The biceps bends the arm.

_____ 5. The triceps is a flexor muscle.

_____ 6. In Figure A, the triceps is relaxed.

_____ 7. In Figure B, the triceps is contracted.

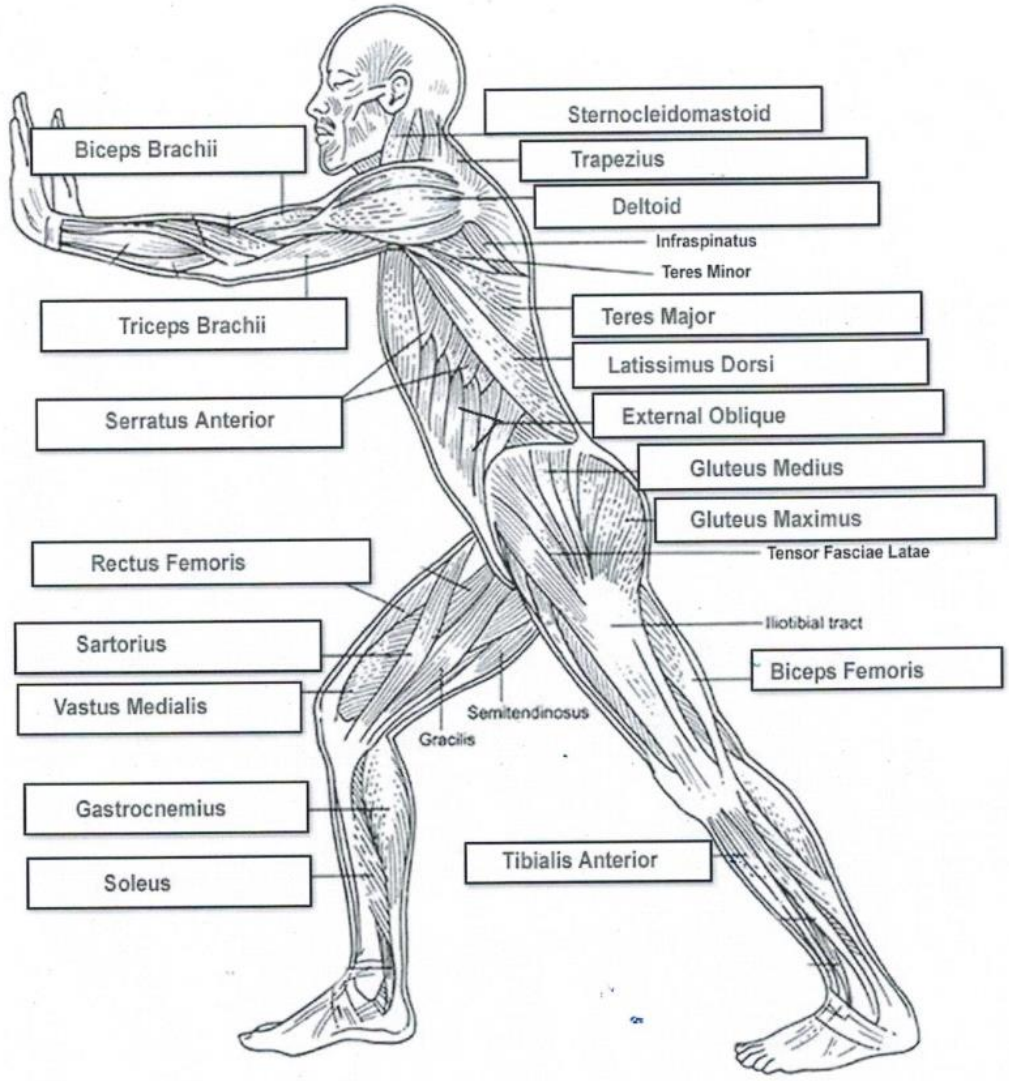
Part D: *In the space provided, write the name of the muscle problem described.*

_____ 1. Small tears in muscles

_____ 2. Disease in which skeletal muscles gradually are destroyed

_____ 3. Occurs when muscles contract suddenly and strongly

_____ 4. Bruise and tears in muscle causing bleeding

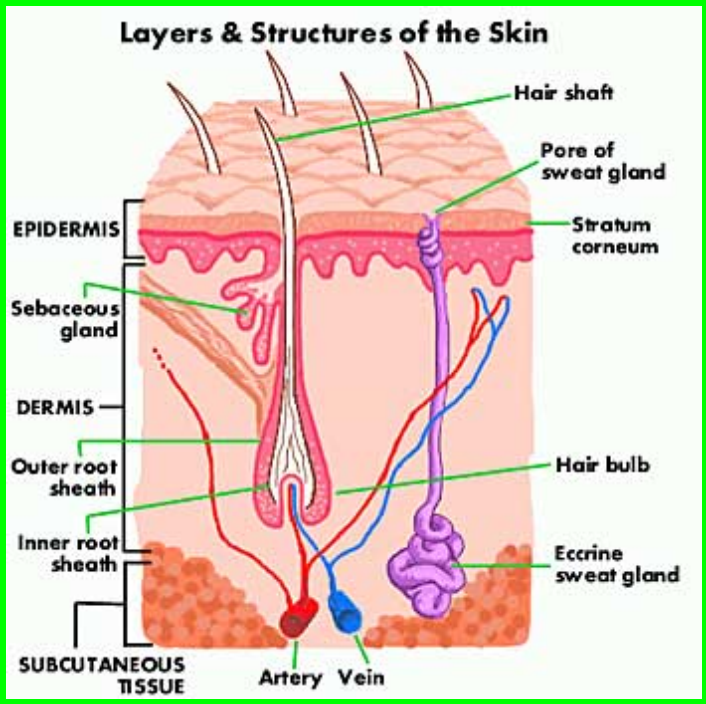

Biceps Brachii
Triceps Brachii
Serratus Anterior
Rectus Femoris
Sartorius
Vastus Medialis
Gastrocnemius
Soleus
Sternocleidomastoid
Trapezius
Deltoid
Infraspinatus
Teres Minor
Teres Major
Latissimus Dorsi
External Oblique
Gluteus Medius
Gluteus Maximus
Tensor Fasciae Latae
Iliotibial tract
Biceps Femoris
Semitendinosus
Gracilis
Tibialis Anterior

Muscle Fatigue Lab

muscle_fatigue_lab_1.pdf

The Skin is the largest organ in the body. The outer layer is made up of a dead layer of skin cells called the epidermis. The outer skin helps support and protects the body. It is waterproof and also helps to protect from invading microbes such as bacteria. Dead skin cells are constantly being replaced by new ones.

The inner skin is made up of living skin cells and is called the dermis. The dermis contains hair follicles, sweat glands, oil glands, muscle and nerve tissue, blood vessels, fat, and pores.



https://www.youtube.com/watch?v=Orumw-PyNjw

https://www.youtube.com/watch?v=EN-x-zXXVwQ

Section Review 20-4

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Vocabulary Review

Overall Review

Test Tuesday - Bones, Muscles and skin

* look over all section review sheets

*review all notes

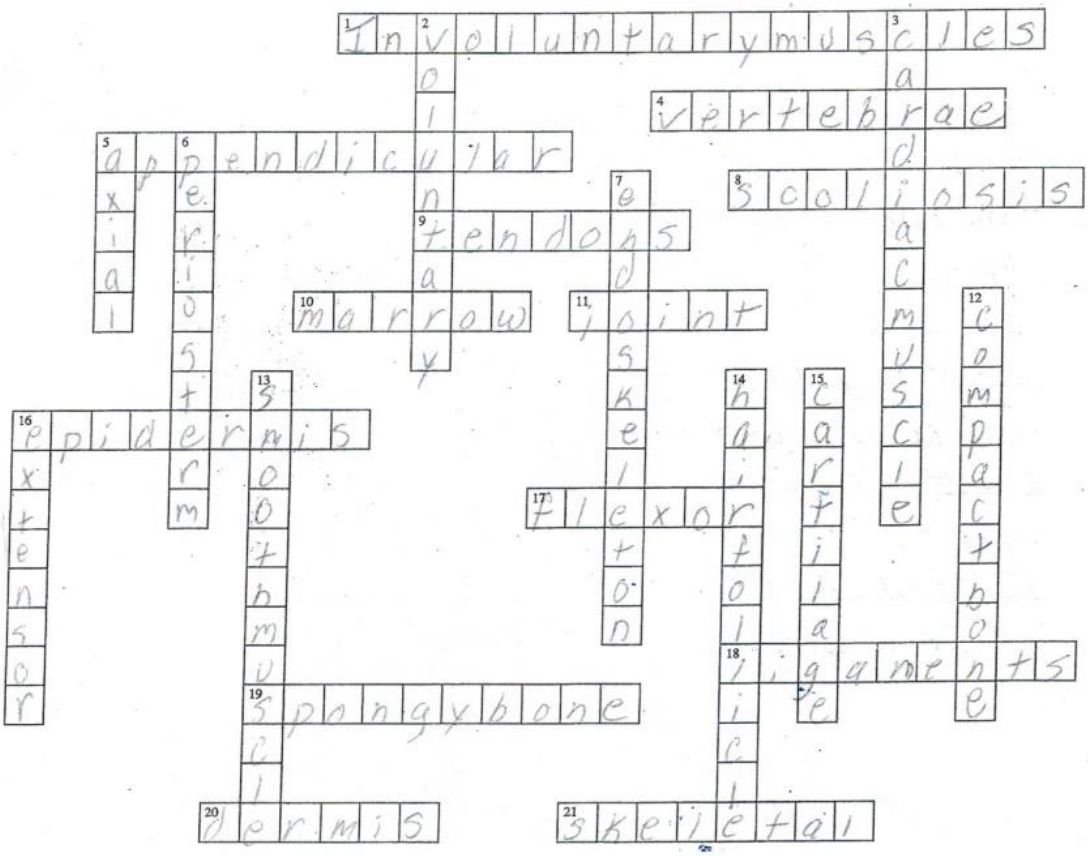
* know 10 bones of the body (words will be provided)

* know 5 muscles of the body (words will be provided)

Name Answer Key Class Biology 113 Date _____

Chapter 20 Support and Movement — Vocabulary Review

Read each statement below. Find the matching number on the crossword puzzle grid. Then fill in the correct term.



Across

1. Another name for smooth muscles (2 wds.)
4. Small bones of the backbone
5. Main part of skeleton that includes the shoulder
8. Disorder of the backbone
9. Attach muscles to bones
10. Where blood cells are made
11. Place where two or more bones meet
16. Outer layer of the skin
17. Muscle that bends a joint
18. Connect bones to each other
19. Makes up the ends of bone (2 wds.)
20. Inner layer of the skin
21. Another name for voluntary muscles

Down

2. Muscles that can be controlled
3. Another name for heart muscle
5. Main part of skeleton that includes the skull
6. Thin membrane covering a bone
7. Internal skeleton
12. Hardest part of a bone (2 wds.)
13. Found in the stomach walls (2 wds.)
14. Found in the dermis (2 wds.)
15. Gives the nose and ears their shape
16. Muscle that straightens a joint

Vocabulary Review

Matching

1. axial
2. periosteum
3. joint
4. extensor
5. endoskeleton
6. red marrow
7. voluntary
8. follicle

Applying definition

1. **epidermis** - outer skin, **dermis**- inner skin
2. **flexor** - bend and **extensor** - straighten arm
3. **ligament** - bone to bone, **tendons** - bone to muscle
4. **bone** - hard, **cartilage** -soft and elastic
5. **skeletal muscle** - control

   involuntary muscle - no control
6. axial skeleton- skull, ribs and backbone

   appendicular skeleton - legs, arms, hands, etc
7. spongy bone - spaces compact bone- no spaces
8. smooth muscles - organs

   cardiac muscle - heart
9. endoskeleton - inner - humans

   exoskeleton - outer - insects

true and false

1. false - red marrow
2. true
3. true
4. false - over 600 muscles
5. true
6. false - ball and joint socket
7. false - cartilage
8. true

Understanding a diagram

1. collarbone - clavicle
2. radius, ulna
3. cranium (skull) mandible(jaw)
4. femur

Critical thinking

1. You would have a straight legged walk.
2. The lungs, heart, liver are protected.
3. Ribs rise, stretch and expand.
4. There would be no movement.
5. You could be injured, or do extreme damage to the body.

Attachments

muscle_fatigue_lab_1.pdf