

# UNIT 4 - SKELETAL SYSTEM

## ACTIVITY - The Articulations Worksheet

Name \_\_\_\_\_ Period \_\_\_\_\_

1. Define an articulation.
  
2. Describe the three (3) classes of joints **based on structure**.
  - a.
  - b.
  - c.
  
3. Describe the three (3) classes of joints **based on function**.
  - a.
  - b.
  - c.
  
4. A Fibrous joint is a(n) (movable / immovable) joint and may be one of three types. List them.
  - a.
  - b.
  - c.
  
5. A cartilaginous joint is a(n) (immovable / slightly movable) joint and may be one of two types. List them and give an example of each type.
  - a.
  - b.
  
6. Fill in the following table.

NAME	DEGREE OF MOVEMENT	CHARACTERISTICS	EXAMPLES
Fibrous Joint		No joint cavity Fibrous cartilage or bone tissue grows between the articulating surfaces	Sutures of the skull Teeth Epiphyseal Plate
Cartilaginous Joint	Slightly Movable	Connected by _____	
Synovial Joints	Freely Movable	Has joint cavity Synovial fluid	

8. What structural features of synovial joints make them more freely movable than other types of joints?

9. Match the parts of a synovial joint with the descriptions below.

- |                        |                       |
|------------------------|-----------------------|
| A. Articular cartilage | SF. Synovial fluid    |
| F. Fibrous capsule     | SM. Synovial membrane |
| L. Ligaments           |                       |

- \_\_\_\_\_ a. Hyaline cartilage that covers ends of articulating bones.  
\_\_\_\_\_ b. Lubricates joint and nourishes articular cartilage; consistency of uncooked egg white.  
\_\_\_\_\_ c. Inner layer of the synovial capsule; secretes synovial fluid  
\_\_\_\_\_ d. Fibers that bind bones together  
\_\_\_\_\_ e. Together these form the articular capsule (2 answers)

10. Describe the structure, function, and location of the following structures.

a. Menisci

b. Bursae

11. Perform the action described. Then write in the name of the type of movement.

- a. Describe a cone with your arm as if you are winding up to pitch a ball. The movement is called \_\_\_\_\_.
- b. Stand in anatomical position (palms forward). Turn your palms backward. This action is called \_\_\_\_\_.
- c. Move your fingers from "fingers together" to fingers apart" position. This action is \_\_\_\_\_ of the fingers.
- d. Raise your shoulders, as if to shrug them. This movement is called \_\_\_\_\_ of the shoulders.
- e. Stand on your toes. This action at the ankle joint is called \_\_\_\_\_.
- f. Grasp a ball in your hand. Your fingers are performing the type of movement called \_\_\_\_\_.

12. Choose the type of synovial joint that fits the following description. (Answers may be used more than once.)

- |                    |           |
|--------------------|-----------|
| B. Ball-and-socket | H. Hinge  |
| E. Ellipsoidal     | P. Pivot  |
| G. Gliding         | S. Saddle |

- \_\_\_\_\_ a. Monaxial joint; only rotation possible
- \_\_\_\_\_ b. Joint between carpal and metacarpal of the thumb joint
- \_\_\_\_\_ c. Shoulder and hip joints
- \_\_\_\_\_ d. Spool-like surface articulated with concave surface
- \_\_\_\_\_ e. Monaxial joint; only flexion and extension possible
- \_\_\_\_\_ f. Biaxial joints (two answers)

13. Matching:

- |                                          |                    |
|------------------------------------------|--------------------|
| _____ 1. Radius and carpals              | a. Ball and Socket |
| _____ 2. Body of one vertebra to another | b. Hinge           |
| _____ 3. Temporal to sphenoid bone       | c. Gliding         |
| _____ 4. Talus to calcaneus              | d. Syndesmosis     |
| _____ 5. Distal tibia to fibula          | e. Symphysis       |
| _____ 6. First rib to sternum            | f. Suture          |
| _____ 7. Carpal and pollex joint         | g. Pivot           |
| _____ 8. Atlas on dens of axis           | h. Saddle          |
| _____ 9. Femur to acetabulum             | i. Ellipsoidal     |
| _____ 10. Interphalangeal joints         | j. Synchondrosis   |

14. Compare the shoulder, hip, and knee joints by completing this exercise.

- a. Which of these joints has the widest range of motion?
- b. Which has the most limited range of motion?
- c. Which is most stable and so is rarely dislocated?
- d. Which is least stable?

15. Define Rheumatism.

16. Define Arthritis

17. List three forms of arthritis. Give the causes and symptoms of each form.

TYPE	CAUSE	SYMPTOMS

18. What is the difference between a sprained ankle and a strained shoulder?

19. An acute chronic inflammation of a bursa is called \_\_\_\_\_.  
How is it caused?

20. Define dislocation. What are the symptoms of dislocation?

## WORKSHEET - Articulations - KEY

1. An articulation is a point or contact between bones, between cartilage and bones, or between teeth and bones. Factors that determine the degree of movement at joints are: The fit at the point of contact, the shape of the articulating bones, the flexibility of the connective tissue ligaments, and the position of ligaments, muscles and tendons.
2. Fibrous - no joint cavity and the bones are held together by fibrous connective tissue  
Cartilaginous - no joint cavity and the bones are held together by cartilage  
Synovial - there is a joint cavity and the bones forming the joint are united by a surrounding articular capsule
3. Fibrous - an immovable joint  
Cartilaginous - a slightly movable joint  
Synovial - a freely movable joint
4. immovable
  - a. Suture
  - b. Gomphoses
  - c. Sychondrosis
5. slightly movable
  - a. Syndesmosis
  - b. Symphysis
6. Synarthrotic, none  
cartilage, Vertebrae or Pubic Symphysis  
Diarthrotic, shoulder, elbow, wrist, fingers, hips, knees, ankle, toes
8. The space between the articulating bones and the absence of tissue between these bones (which might restrict movement) make the joints more freely moveable.
9. a. A b. SF c. SM d. L e. SM,F
10. a. Pads of fibrocartilage that lie between the articular surfaces of the bones and are attached to the fibrous capsule.  
b. Fluid-filled sacs that cushion the movement of one body part over another.
11. a. circumduction d. elevation  
b. pronation e. plantar flexion  
c. abduction f. flexion
12. a. P b. S c. B d. H e. H f. E,S
13. 1,i 2,e 3,f 4,c 5,d 6,j 7,h 8,g 9,a 10,b

14.    a. shoulder                      b. knee  
       c. hip                             d. knee
15.    Any painful state of the supporting structures of the body. This includes the bones, ligaments, joints, tendons, and muscles.
16.    A form of rheumatism in which the joints have become inflamed.
17.    Rheumatoid arthritis -- an autoimmune disease where the body attacks its own tissues, in this case its own cartilage and joint linings. Symptoms are inflammation of the joint, swelling, pain, and loss of function.

Osteoarthritis -- results from a combination of aging, irritation of the joints, and wear and abrasion. Symptoms are pain and restriction of joint movement caused by spurs.

Gouty arthritis -- caused by sodium urate crystals that are deposited in the soft tissues of the joints. The crystals irritate the cartilage, causing inflammation, swelling, and acute pain. The ends of the articulating bones can fuse and the joint becomes immovable.

18.    Sprain -- forcible wrenching or twisting of a joint  
       Strain -- overstretching of a muscle
19.    Bursitis. Trauma, an acute or chronic infection, rheumatoid arthritis, repeated excessive friction
20.    Displacement of a bone from a joint with tearing of ligaments, tendon, and articular capsules.