SKELETAL SYSTEM --ARTICULATIONS

ARTICULATIONS OR JOINTS

**INTRODUCTION**:

The skeleton consists of bones connected at joints, or articulations, and is subdivided into two divisions. The axial skeleton includes those bones that lie around the body’s center of gravity, and the appendicular skeleton includes the bones of the limb.

Some types of joints are: *fixed or immovable* joints (Synarthroses) where fibrous connective tissues tightly bind the articulating bones; *cartilaginous joints* where a mass of cartilage (either hyaline cartilage—Synchondrosis, or fibrocartilage (Symphoses) joins bones; and *freely movable joints* where a flexible joint capsule allows a wide range of movement. Joint capsules (synovial capsules) are composed of ligaments and other connective structures and are lined with a lubricating synovial membrane. Synovial joints are categorized by the way the articulating bones fit together. Freely movable joints include gliding joints, hinge joints, pivot joints, ellipsoidal joints, saddle joints, and ball-and-socket joints.

**PURPOSE:**

Students will be able to:

1. List the three classes of joints.

2. Give the characteristics of each class of joints.

3. Identify and name the types of joints in each class.

4. Describe the types of movements possible at each joint.

**PROCEDURE:**

1. Sutures – Skull (Immovable Joints): Examine the skull and note the articulations between the bones. Answer questions 1- 3 on the data sheet.

II. Fibrocartilage Joints—Amphiarthroses:

1. a. Symphoses: Locate and examine the symphysis pubis. Complete questions 4 & 5 on the data sheet.
2. b. Locate the intervertebral discs. Answer question 6 on the data sheet.

III. Hyaline cartilage Joints—Synchondrosis: Hyaline cartilage connects the ribs to the sternum. Examine the ribs of the skeleton. Distinguish between true ribs, false ribs, and floating ribs. Record your answer on number 7 of the data sheet.

IV. Synovial Joints:

1. 1. Hinge Joints—examine the knee joint. Answer question 8 on the data sheet.

2. Elbow—examine the elbow. Answer question 9 & 10 on the data sheet.

1. Pivot Joints—1. Locate the joint between the first two cervical vertebrae, the atlas and the axis. Answer question 11 on the data sheet. 2. Look at the proximal end of radius. In question 12 describe the bone markings that permit rotation at this joint.
2. Gliding Joints—Note the flat surfaces of the carpal bones. These surfaces allow a sliding action. Gliding joints are also found at the sacrum, at the scapula, at the clavicles, and between the tarsal bones. Answer questions 13 & 14 on the data sheet.
3. Ellipsoidal Joints—observe the distal end of radius. An oval condyle fits into an oval fossa, which allows movement in two planes. This arrangement is also found on the occipital bone and the atlas. Describe the bone markings on the occipital bone and atlas at their ellipsoidal joints.

E. Saddle Joints--Trapezium of wrist and the proximal end of the first metacarpal.

Answer question 16 on the data sheet.

1. Ball-and-socket joints—examine the articulations at the hip and shoulder joints.

Answer questions 17-18 on the data sheet.

**STUDENT DATA SHEET Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Locate and name the sutures of the skull. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What bones are held together at each suture?

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3. Give the characteristics of this type of joint.

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4. What bones are connected at the symphysis pubis?

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5. Give the characteristics of the symphysis pubis joint?

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6. What type of cartilage is found between the vertebrae and what are these cartilage pads commonly called? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Name the bone to which the true ribs are attached \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. What are the names of the three bones articulating to form the knee joint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. What are the names of the two bones articulating to form the elbow joint?

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10. Describe the types of movements possible at hinge joints.

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11. Describe the shape of the atlas and axis that permits the rotation type of movement?

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12. Describe the shape of the proximal end of the radius that permits rotation.

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13. Describe the type of movement possible at gliding joints. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Name 5 locations where gliding joints are found. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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15.Describe the bone markings on the occipital bone and the atlas at their ellipsoidal joints.

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16. What is the advantage of a saddle joint over the ellipsoidal joint since they allow the same type of

movement? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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17. What bones articulate to form the hip joint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. Name the bones that form the ball-and-socket joint of the shoulder. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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19. What types of motions are possible at a ball-and-socket joint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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