Fibrous joints are held together by collagenous fibers, the same fibers that make up tendons and ligaments. These joints do not have a joint cavity. Sutures are immovable fibrous joints of the skull. Color in the suture illustrated on the page. A gomphosis is a fibrous joint in which a round peg is held into a socket. Gomphoses are represented by the teeth held into the maxilla or the mandible. Another fibrous joint is the syndesmosis. This joint is found between the distal radius and ulna (or tibia and fibula) and is semimovable. Color in the various fibrous joints.
CARTILAGINOUS JOINTS

Cartilaginous joints are bones held together by cartilage and do not have a joint cavity. If the joint is held together by hyaline cartilage it is known as a synchondrosis. If the cartilage is short then the joint is immovable. An example of this kind of joint is an epiphyseal plate. If the cartilage is a little longer then the joint is a semimovable joint. This is represented by the sternal-rib junction. A cartilaginous joint that is composed of fibrocartilage is known as a symphysis (symphyses plural). These are semimovable joints. Examples of symphyses are the pubic symphysis and intervertebral discs. Color the cartilaginous joints. Use different colors for the hyaline cartilage from the fibrocartilage.
SYNOVIAL JOINTS, BURSA, AND TENDON SHEATHS

Synovial joints are complex joints that are all freely movable. There are variations with the joints but all synovial joints consist of two bones enclosed by a joint capsule, articular cartilages, synovial membranes that secrete synovial fluid in the synovial cavity. Some synovial joints have fibrocartilage pads in the cavity called menisci (meniscus singular). Color the synovial joint and pay attention to the general structure of the joint. Color each part of the joint a different color.

MODIFIED SYNOVIAL STRUCTURES—BURSAE AND TENDON SHEATHS

There are structures in the body that consist of synovial membranes and fibrous capsules. These are not synovial joints but are associated with joints. A bursa is one such structure. It is a fluid-filled sac with an internal synovial membrane that cushions tendons as they pass over bones. The bursa occurs between the tendon and the bone. Another structure is a tendon sheath. It also is composed of a synovial membrane and fibrous sheath and it encloses tendons. The sheaths can provide lubrication to the tendon so it does not become irritated as it passes over bones or next to other tendons. Color in the layers of the bursa and the tendon sheaths.
SPECIFIC SYNOVIAL JOINTS

Synovial joints are classified by what kind of motion they have. **Gliding joints** move in one plane like two sheets of glass sliding across one another. **Hinge joints** have angular movement like a door hinge. **Rotating (pivot) joints** move like a wheel of a car around an axle. **Condyloid (ellipsoidal) joints** move like hinges in two directions. In these joints there is a convex surface and a concave surface. **Saddle joints** have two concave surfaces. They allow for greater movement than condyloid joints. **Ball and socket joints** allow for the greatest range of movement and are found in the shoulder and hip. Color the illustrations of these joints.
SPECIFIC SYNODOIAL JOINTS (CONTINUED)

a.

b.

c.

d.

e.

f.

g.

h.
SPECIFIC JOINTS

TEMPOROMANDIBULAR JOINT

Some joints of the body warrant special attention. The temporomandibular joint or jaw joint is both a gliding joint and a hinge joint. The condyle of the mandible articulates with the mandibular fossa of the temporal bone. An articular disc is found in the joint that decreases the stress on the joint. Ligaments (dense connective tissue that joins bone to bone) connect the mandible to the temporal bone.

Answer Key:

a. ---
b. ---
c. ---
d. ---
e. ---
f. ---
g. ---
h. ---
i. ---
The humeroscapular joint or shoulder joint is a ball-and-socket joint that connects the humerus to the glenoid fossa of the scapula. The joint is deepened by the glenoid labrum which is a fibrocartilage ring. There are numerous ligaments that connect the scapula to the humerus.

Another ball and socket joint is the acetabulofemoral joint. It also has an acetabular labrum and numerous ligaments that joint the femur to the hip.
TIBIOFEMORAL JOINT

The tibiofemoral joint is special in humans because it is the largest joint in the body and because it is particularly vulnerable to injury. The joint is stabilized by the patellar tendon, the medial and lateral collateral ligaments, the anterior and posterior cruciate ligaments and the medial and lateral menisci. Label the structures in the anterior view, with the patella in place and with it reflected, and color them in.
MOVEMENT AT JOINTS

There is a broad range of motion that occurs at joints. These motions should be referenced with the body in anatomical position. Flexion of a joint is a decrease in the joint angle from the body in anatomic position. When the elbow is bent the forearm is flexed. Most flexion takes place in a forward direction. The exception to this is the leg where flexion of the leg results in the bending of the knee. Extension of the joint is when the joint is returned to anatomic position. Hyperextension is a condition where the joint is extended beyond anatomic position. Looking up at the ceiling is hyperextension of the head.

Abduction occurs when the extremities or head are moved in the coronal plane, laterally from the body. Adduction is the return of the limbs to the body.

Rotation is the movement of part of the body in a circular pattern. Lateral rotation is the movement of the body in a lateral direction and medial rotation is in the opposite direction.