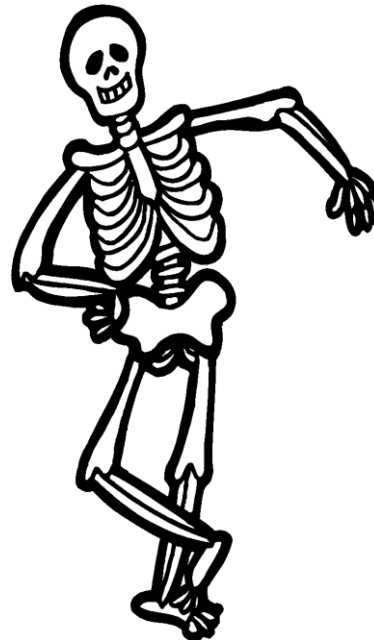


1.1.1 Distinguish anatomically between the axial and appendicular skeleton

- Activity: Skeleton Observation
Consider the following definitions from the *Collins Concise Dictionary Plus*:
 - Axis: a real or imaginary line about which an object, form, composition, or geometrical construction is symmetrical.
 - Append: to add as a supplement; to attach; hang on.

How does this relate to your observations of the skeleton? List the features you believe would be classified as axial and appendicular skeleton.

1.1.1 Distinguish anatomically between the axial and appendicular skeleton



1.1.1 Distinguish anatomically between the axial and appendicular skeleton

- The skeleton can be thought of as 2 main divisions.
 - The axial skeleton as the name implies, consisting of those parts near the skeletal axis (the skull, the vertebral column, the ribs and sternum).
 - The appendicular skeleton, consisting of the upper and lower extremities, the pelvic bone with the exception of the sacrum), and the shoulder girdle.
 - (Solomon and Davis, 1987)

1.1.2 Distinguish between the axial and appendicular skeleton in terms of function

- Activity: Skeleton Observation

Consider what may be the primary function of the axial skeleton. How does this dictate its structure?

Consider what may be the primary function of the appendicular skeleton. How does this dictate its structure.

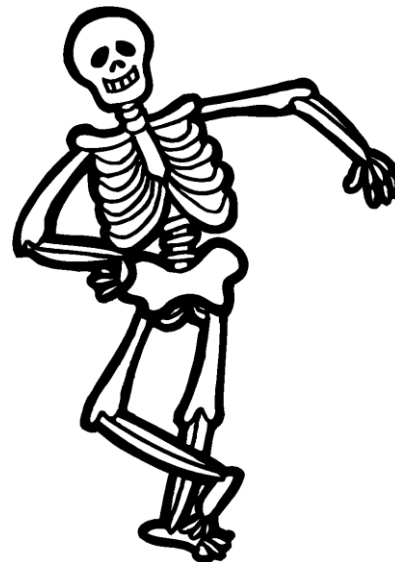
1.1.2 Distinguish between the axial and appendicular skeleton in terms of function

Some important functions of the human skeleton include:

- Attachment = attachment points for muscles.
- Protection = for various body organs.
- Movement = attachment of muscles with bones acting as levers.
- Support = organs and tissues require structure I.e scaffolding.
- Blood cell formation = red and white blood cells.
- Mineral Reservoir e.g. phosphorus and calcium

1.1.2 Distinguish between the axial and appendicular skeleton in terms of function

- Which of these functions apply to the axial and appendicular skeletons? Discuss and justify your response.



1.1.2 Distinguish between the axial and appendicular skeleton in terms of function

- Axial Skeleton = protection
 - E.g. Skull, ribs & sternum, vertebral column.
- Appendicular = attachment, movement, support, blood cell formation & movement reservoir.

1.1.3 State the four types of bone.

- Long
- Short
- Flat
- Irregular

Complete activities in the *Applied Anatomy*₁ handout on page 3.

1.1.4 Draw and annotate the structure of a long bone.

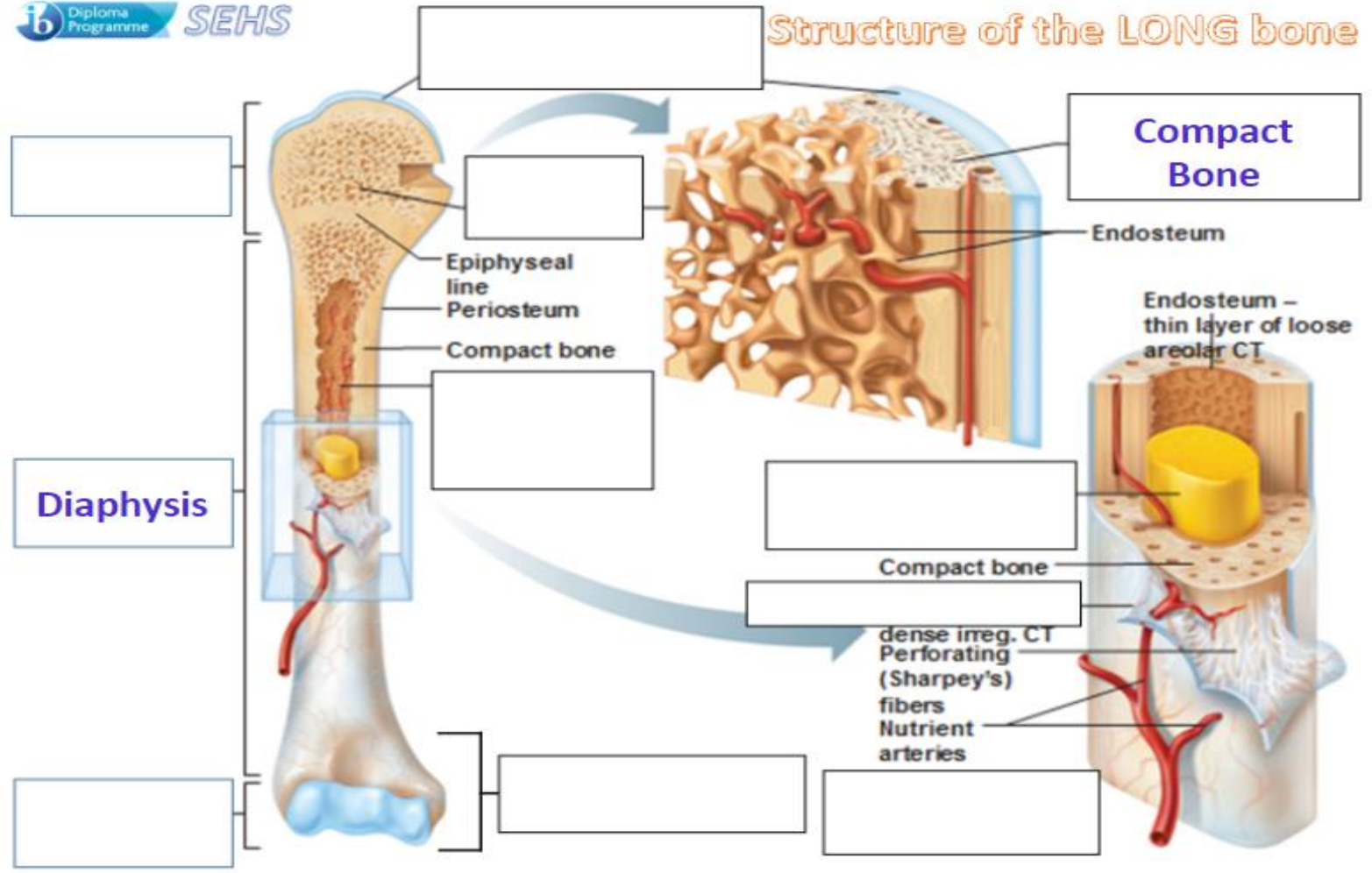
Structure of the bone includes:

- Diaphysis (compact bone) = a long shaft covered by a membrane called the periosteum.
- Epiphysis (spongy bone) = two end portions each covered by articular cartilage.
- Articular cartilage = reduce friction and absorb shock.
- Bone marrow cavity = contains bone marrow
- Blood vessel = supply oxygenated blood.
- Periosteum = membrane for protection

1.1.4 Draw and annotate the structure of a long bone.



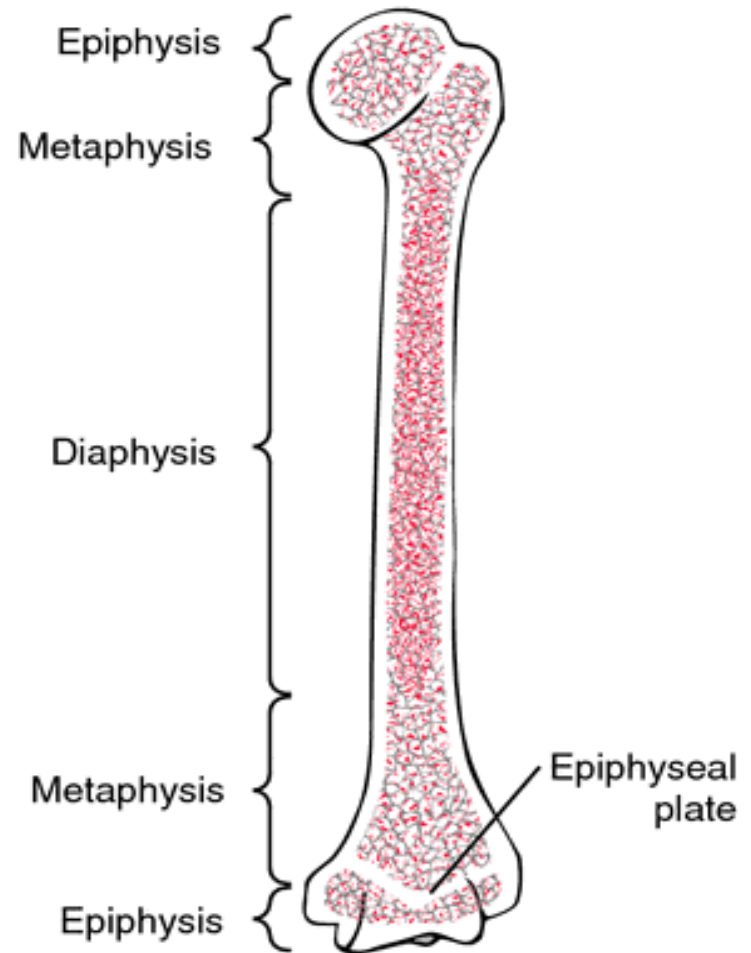
Structure of the LONG bone



1.1.4 Draw and annotate the structure of a long bone.

Diaphysis

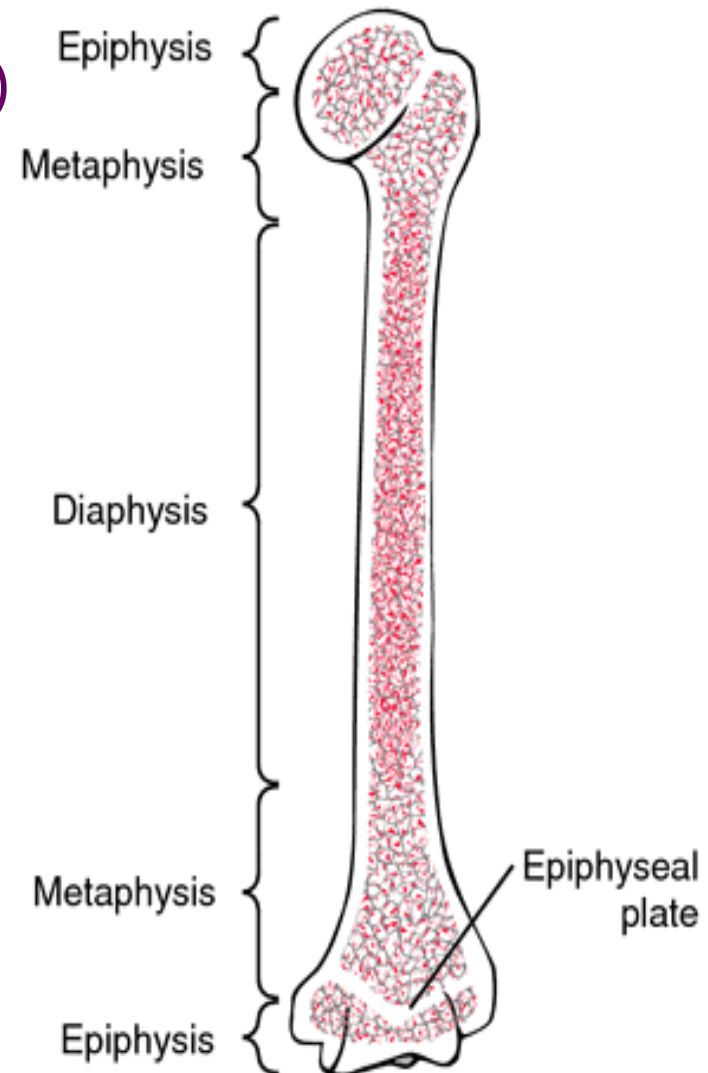
- Shaft/midsection of a long bone consisting of mostly compact/hard bone.
- Compact bone is relatively solid and dense.
- Has few spaces and is also found in the outer layer of most other types of bones.



1.1.4 Draw and annotate the structure of a long bone.

EPIPHYSIS (Proximal & Distal)

- Made up of cancellous or spongy bone.
- Cancellous/Spongy bone has an irregular latticework structure (like honeycomb) where there are many spaces.
- It is also found in short, flat and irregular bones.
- Red marrow is stored there, blood cell production occurs here.



1.1.4 Draw and annotate the structure of a long bone.

Topic 1 Anatomy

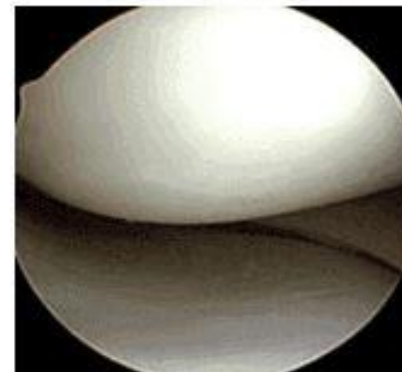
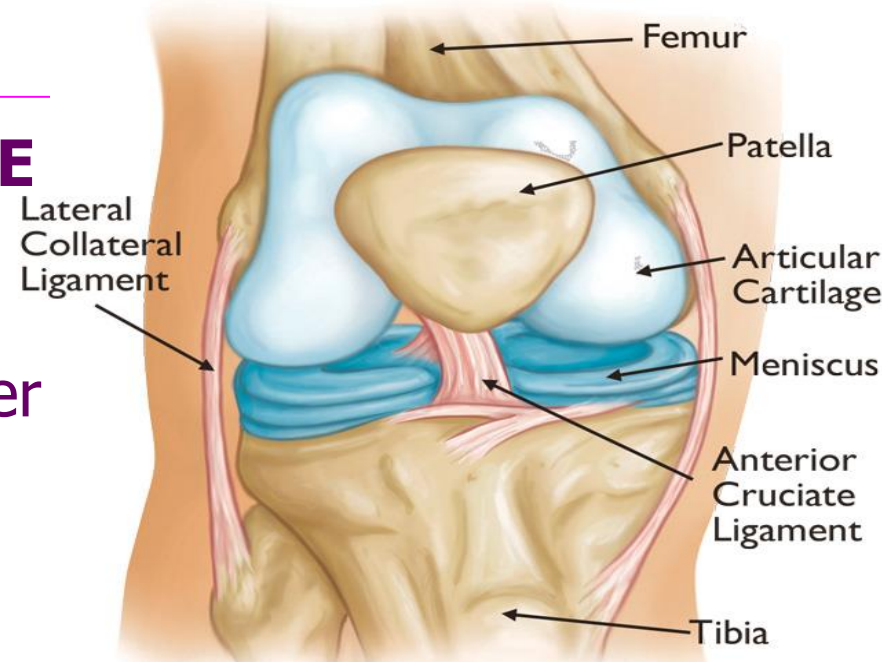
Sub-topics

1. The Skeletal System

2. The Muscular System

ARTICULAR CARTILAGE

- Thin layer covers the ends of the bone where they articulate with other bones to form joints.
- Main functions are to reduce friction between the bones and absorb shock.
- Red marrow is stored there, blood cell production occurs here.



Articular Cartilage
Normal



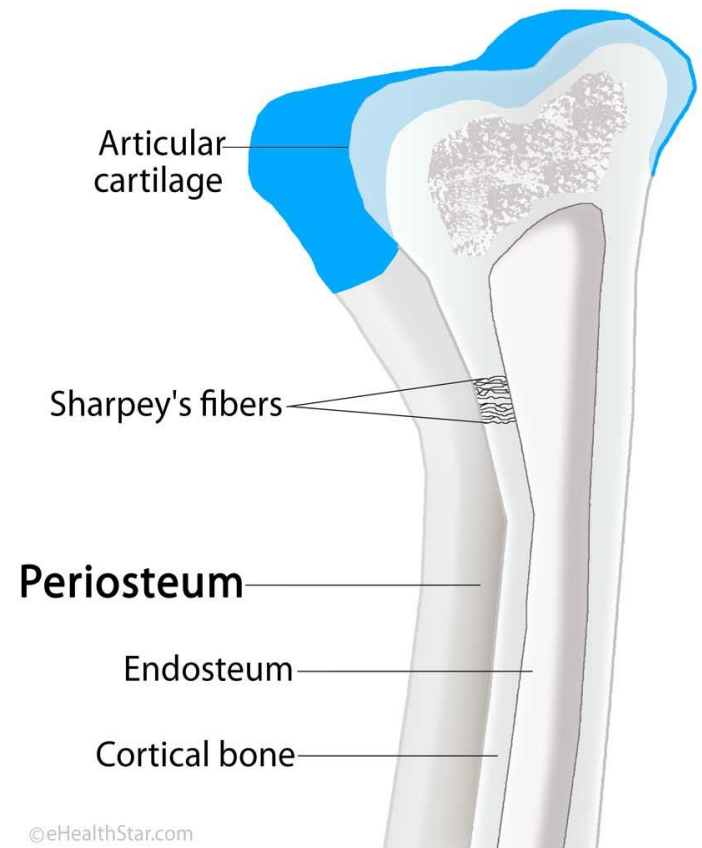
Articular Cartilage
Damaged

1.1.4 Draw and annotate the structure of a long bone.

PERIOSTEUM

- The area of the bone not covered by cartilage but instead by a thin, shiny white membrane.
- This forms the outer lining of the bone and is important for bone growth, repair, nutrition and attachment of ligaments and tendons.

THE PERIOSTEUM

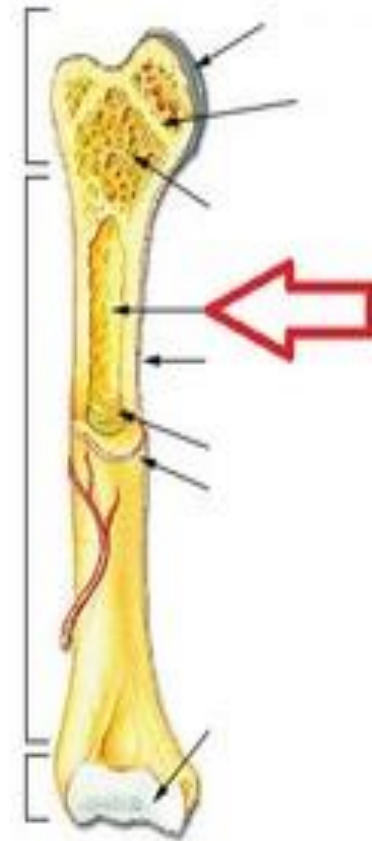


1.1.4 Draw and annotate the structure of a long bone.

MEDULLARY (MARROW) CAVITY

- Space within the diaphysis where yellow bone marrow is stored.
- There is a small opening in the diaphysis called the nutrient foramen.
- Blood vessels pass through here, enter the medullary cavity and provide the marrow and compact bone with blood and nutrients.

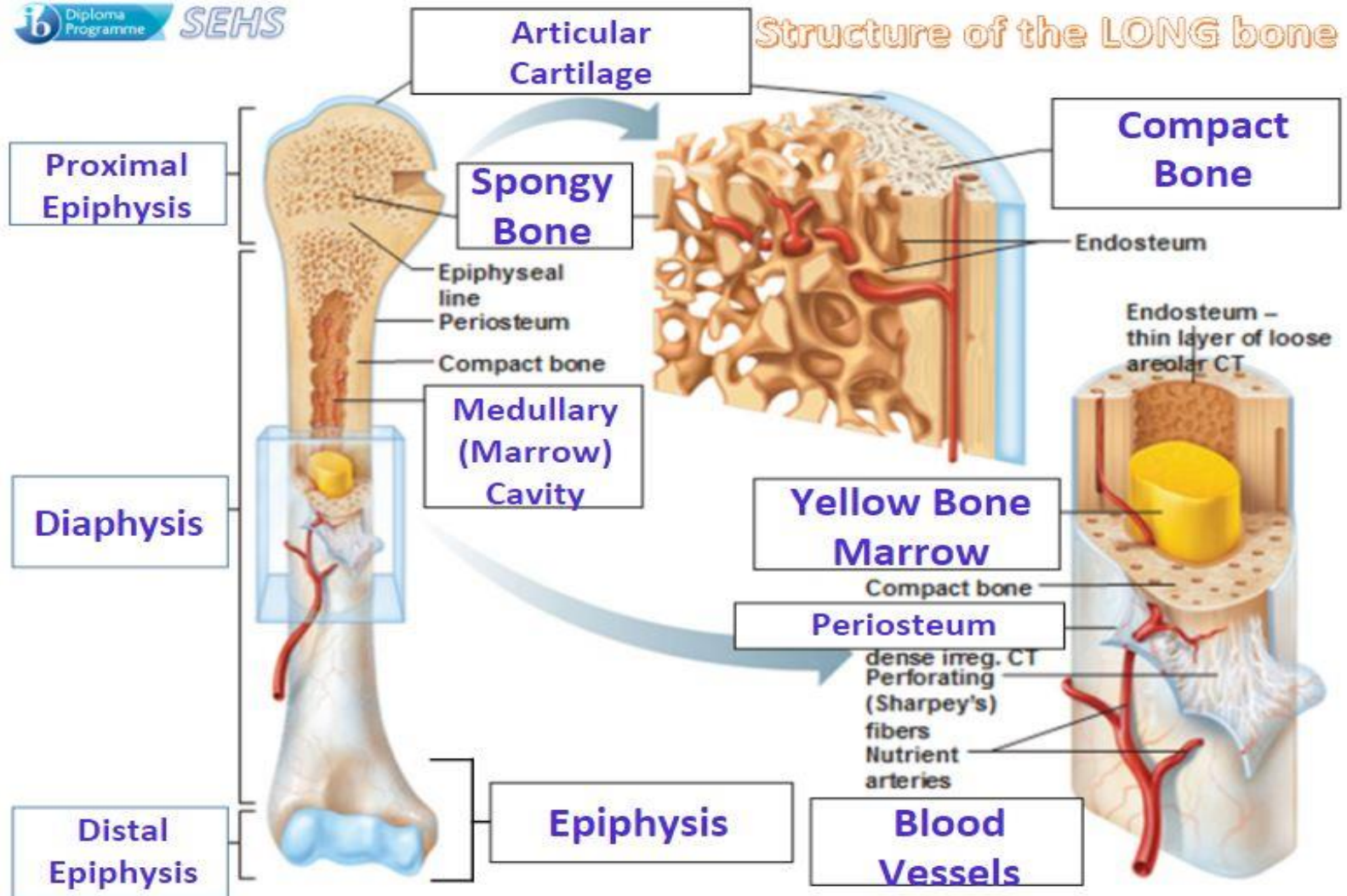
Long Bone



1.1.4 Draw and annotate the structure of a long bone.



Structure of the LONG bone



1.1.5 Apply anatomical terms to the location of bones

- Superior is a term used to describe a place that is toward the upper part of the body. For example the skull is superior to the shoulders. Superior can also be used to mean above.
- When the lower part of the body (or below is referred to, the term inferior is used. For example, the knees are inferior to the shoulders.

1.1.5 Apply anatomical terms to the location of bones

- Proximal means closer to the centre of the body. For example, the shoulder is proximal to the hand.
- Distal means away from the centre of the body. For example, the hand is distal in relation to the head.

1.1.5 Apply anatomical terms to the location of bones

- Lateral means towards the side of the body or away from the middle imaginary body line (the midline). For example, the humerus is lateral to the sternum
- Medial is used to describe the position of a part of the body located towards the midline. For example, coccyx is medial to the carpals.

1.1.5 Apply anatomical terms to the location of bones

- Anterior is used to describe the front or towards the front of the body. For example, the sternum is anterior to the vertebrae.
- Posterior is used to describe the back of the body. For example, the vertebral column is posterior to the sternum.

1.1.5 Apply anatomical terms to the location of bones

Activity:

Give 3 examples of the usage of the following terms in relation to bones:

e.g. "the knee bone's _____ to the scapula."

- Inferior/Superior
- Proximal/Distal
- Medial/Lateral
- Posterior/Anterior

1.1.5 Apply anatomical terms to the location of bones

Axial bones to know and identify/locate:

1.1.5 Apply anatomical terms to the location of bones

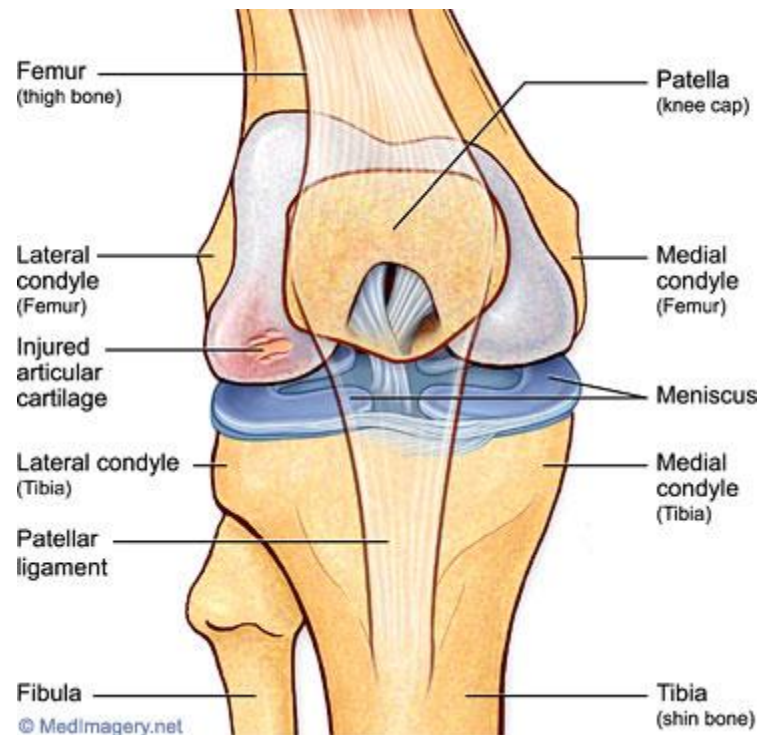
Appendicular bones to know and identify/locate:

1.1.6 Outline the function of connective tissue

- Cartilage is a hard, strong connective tissue that provides support for some soft tissues and forms a sliding area for joints so that bones can move easily.
- During fetal cartilage forms most of the skeleton. It is gradually replaced by bone. In a mature individual it is found mainly at the end of bones, in the nose, trachea, and in association with the ribs and vertebrae.

1.1.6 Outline the function of connective tissue

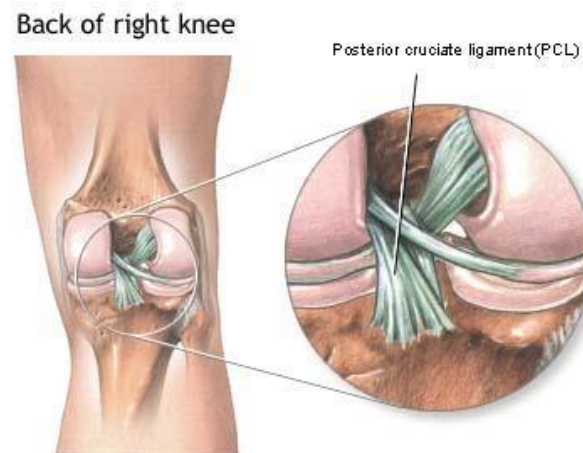
Cartilage



1.1.6 Outline the function of connective tissue

- A ligament is a band of tough fibrous connective tissue that connects one bone to another, serving to support and strengthen a joint.

(Solomon & Davis)



1.1.6 Outline the function of connective tissue

- Tendons connect muscles to bones. They are specialised skeletal structures that generally transmit muscular pull to bones.

(Solomon & Davis)



1.1.6 Outline the function of connective tissue

Discuss the role played by cartilage, ligaments and tendons citing examples from specific joints.

1.1.7 Define the term joint/ 1.1.8 Distinguish between the different types of joint in relation to movement permitted.

- A joint is where two bones meet.
- Joints can be classified as:
 - Fibrous
 - Cartilaginous
 - Synovial

1.1.9 Outline the features of a synovial joint.

- Features of a synovial joint include:
 - Articular cartilage
 - Synovial membrane
 - Synovial fluid
 - Bursae
 - Ligaments
 - Articular capsule

1.1.10 List the different types of synovial joint

- The types of synovial joint are:
 - Ball and socket
 - Hinge
 - Pivot
 - Gliding
 - Condyloid
 - Saddle