

SNS COLLEGE OF PHYSIOTHERAPY

**Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Coimbatore– 641035**

COURSE NAME: ANATOMY II

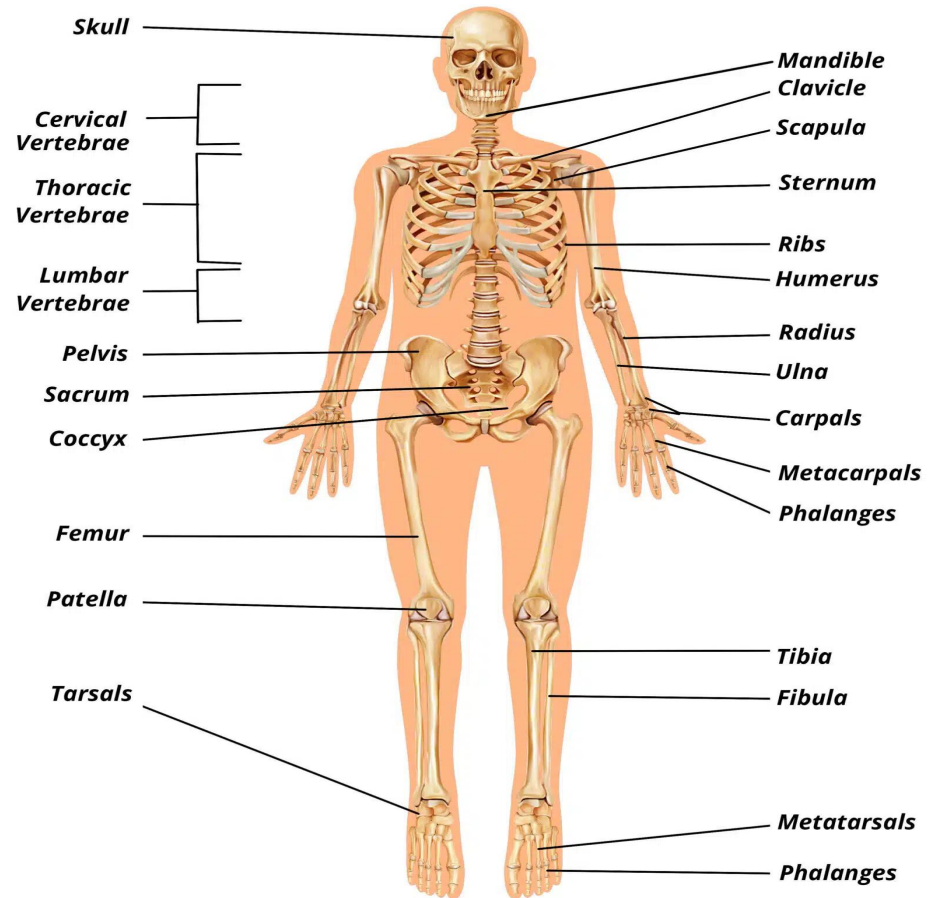
SUBJECT CODE: 6273

TOPIC: BONE AND ITS CLASSIFICATION

Introduction to the Skeletal System

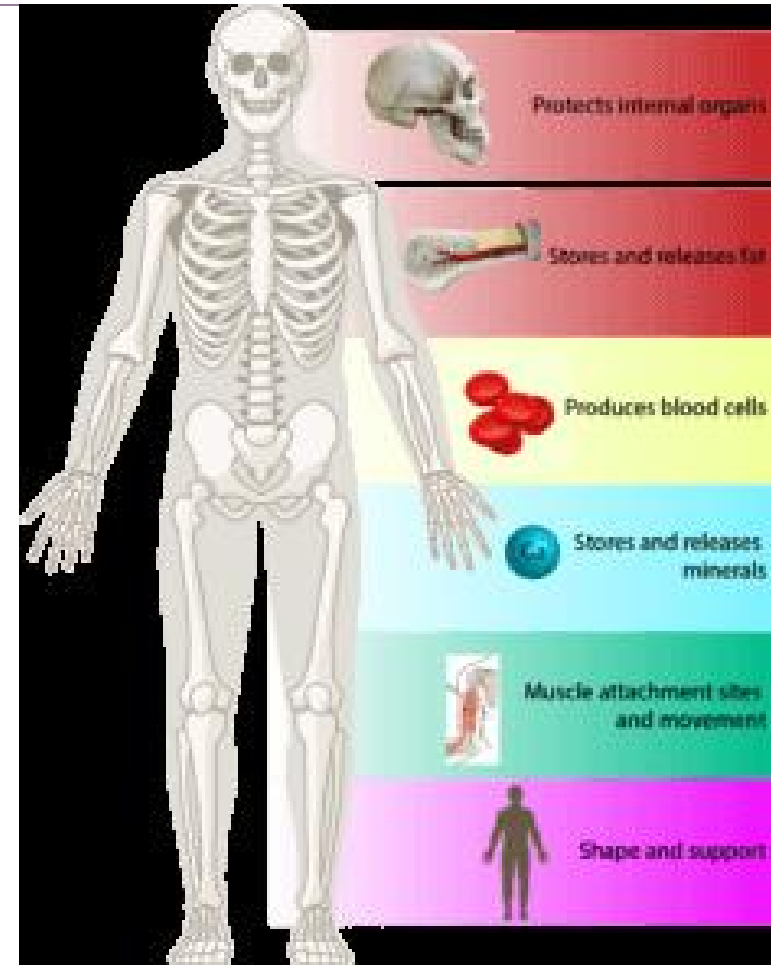
The Skeletal System

- The skeletal system forms the framework of the body
- Provides support, protection, movement, mineral storage, and blood cell formation.
- Adult human body has 206 bones.



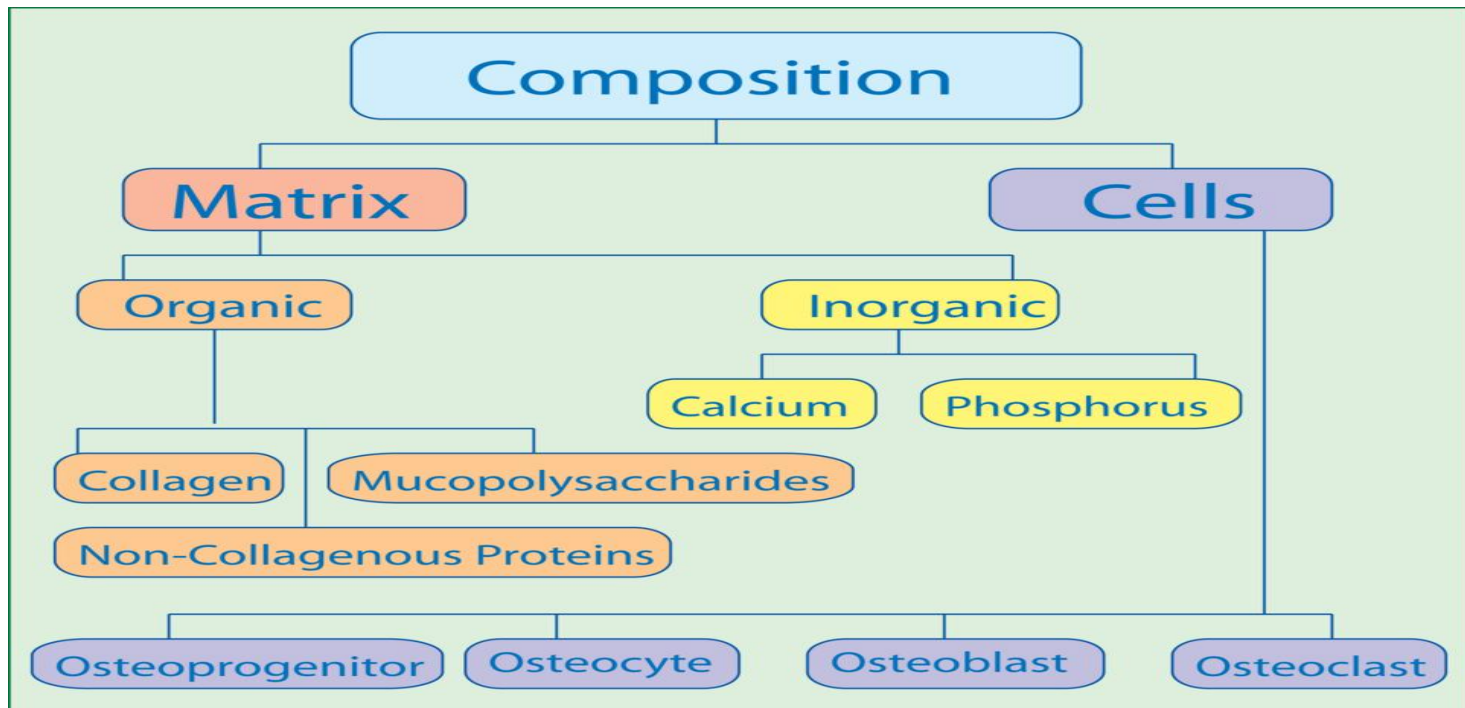
Functions of Bones

- Support
- Protection of vital organs
- Movement (with muscles)
- Mineral storage (Calcium, Phosphorus)
- Hematopoiesis (blood cell production)
- Fat storage in yellow marrow



Bone Composition

- Organic components: collagen fibers
- Inorganic components: calcium phosphate

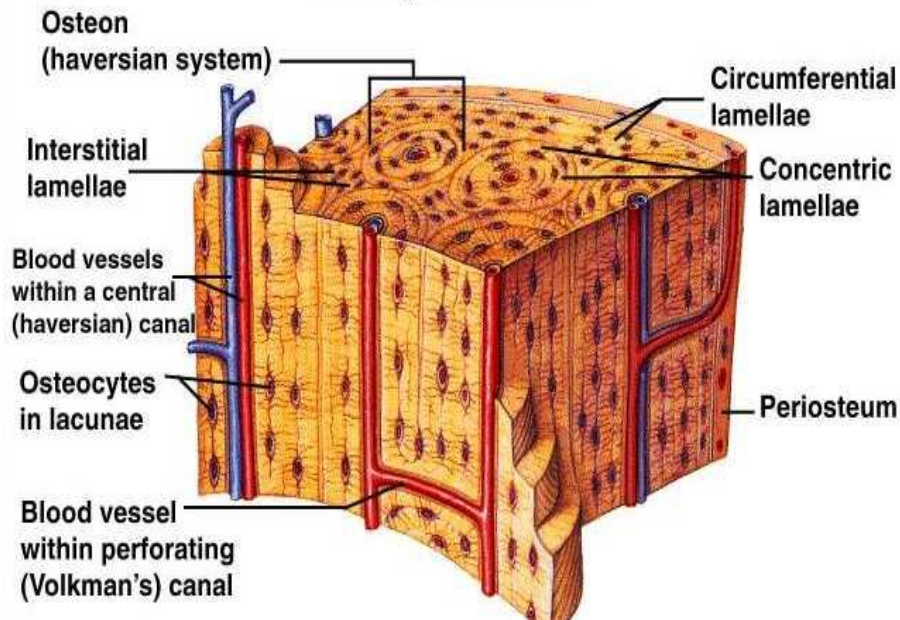


Types of bone tissue

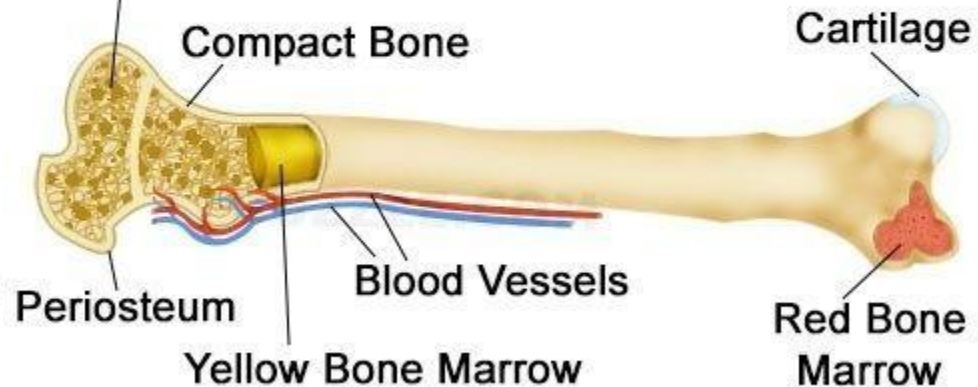
➤ Compact bone

➤ Spongy bone

Compact Bone



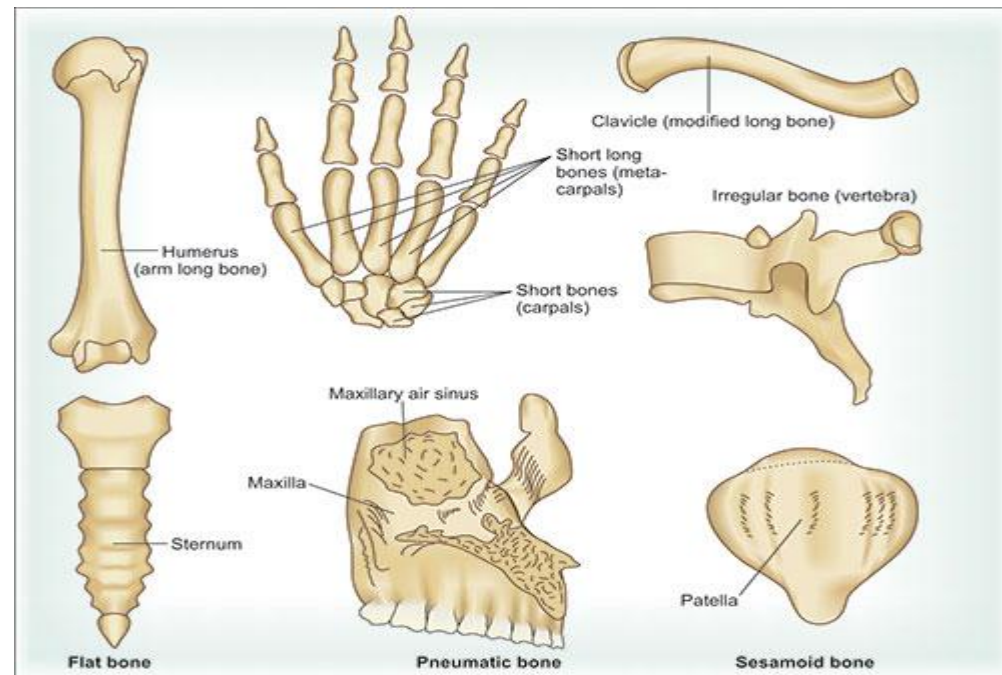
Spongy Bone



Classification of Bones

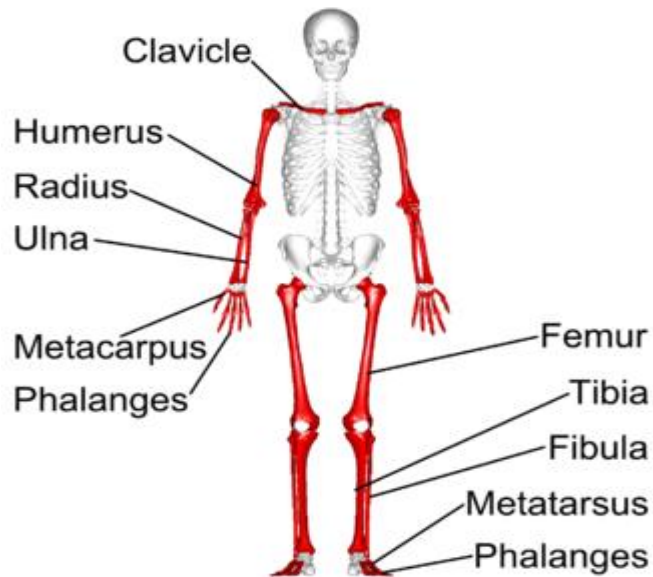
Bones can be classified by:

1. Shape
2. Location (axial vs appendicular)
3. Development (primary vs secondary ossification)

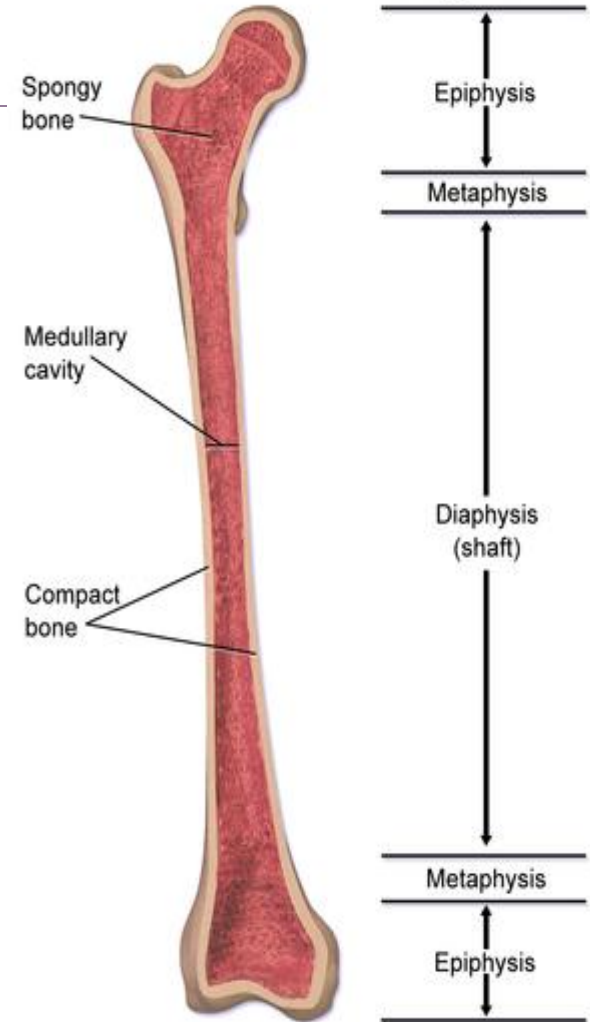


Long Bones

- Longer than they are wide
- Have a shaft (diaphysis) and two ends (epiphyses)
- Examples: Femur, Humerus, Tibia, Ulna

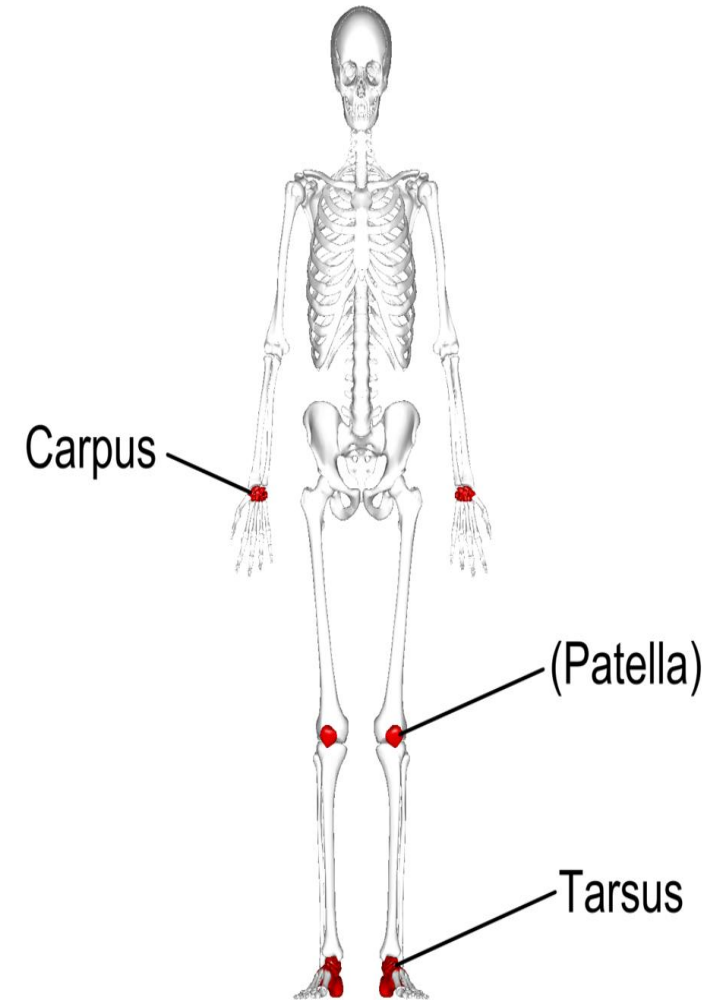


Structure of a Long Bone



Short Bones

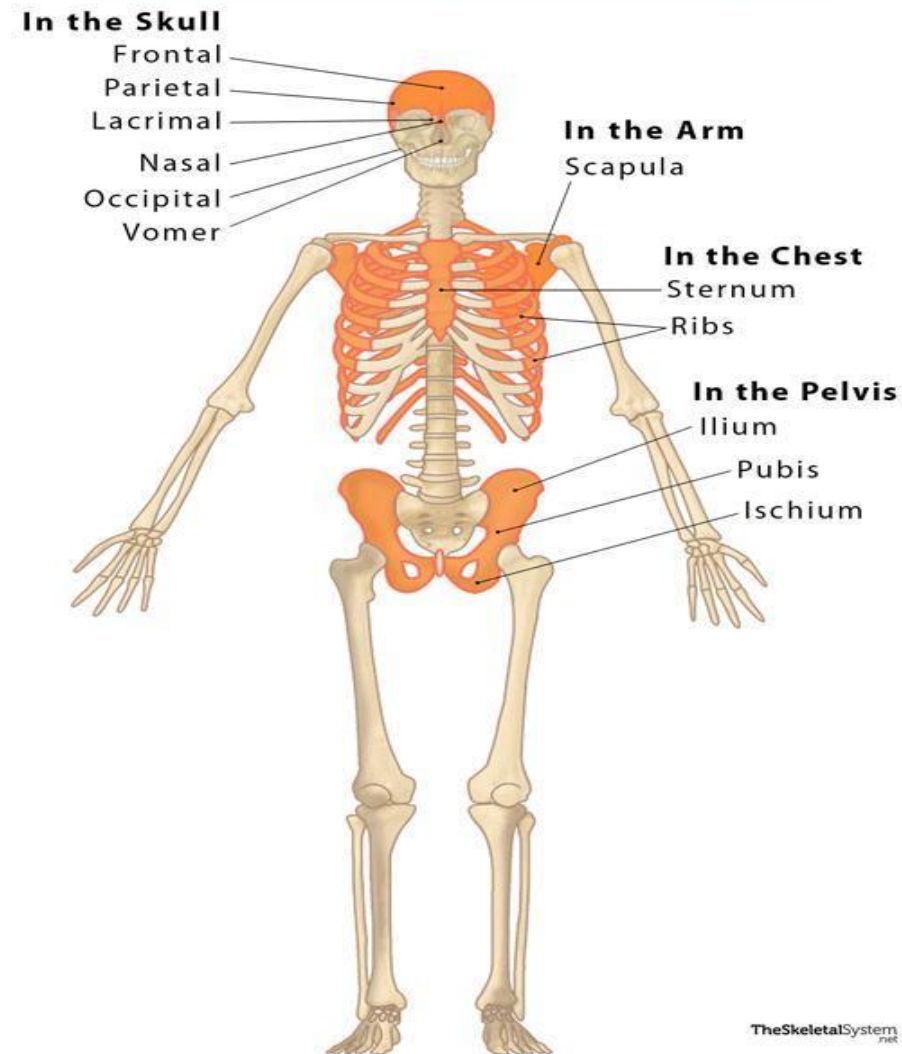
- Cube-shaped
- Provide stability with limited movement
- Examples: Carpals (wrist), Tarsals (ankle)



Flat Bones

- Thin, flattened, often curved
- Provide protection and surface for muscle attachment
- Examples: Skull bones, Ribs, Scapula, Sternum

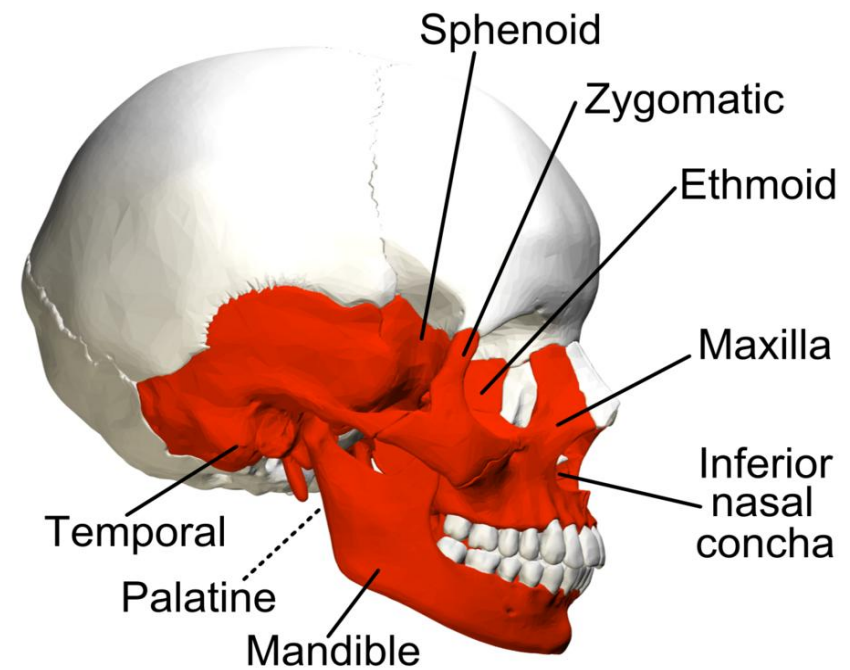
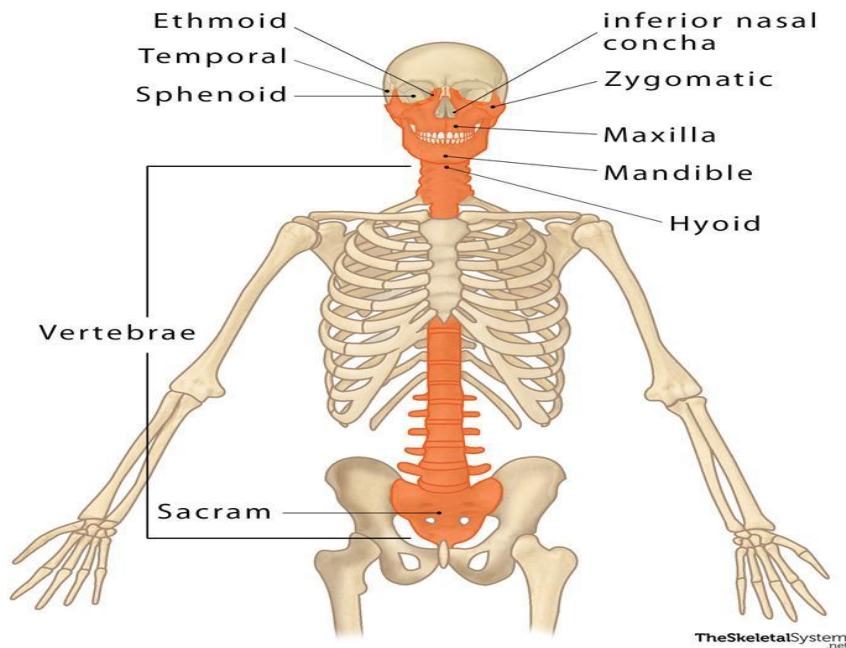
Examples of Flat Bone



Irregular Bones

- Complex shapes
- Examples: Vertebrae, Hip bones (pelvis), Sphenoid bone

Irregular Bones



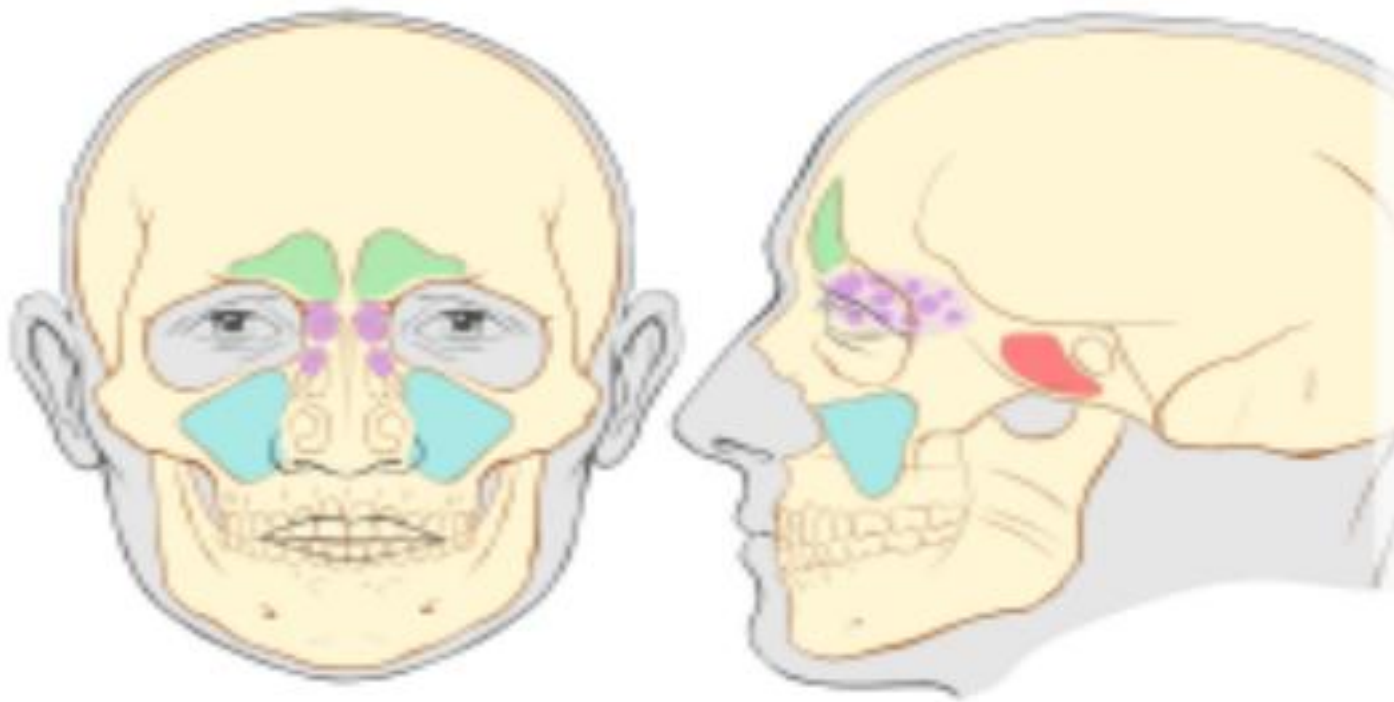
Sesamoid Bone

- Small, round bones embedded in tendons
- Reduce friction and modify pressure
- Example: Patella (kneecap)



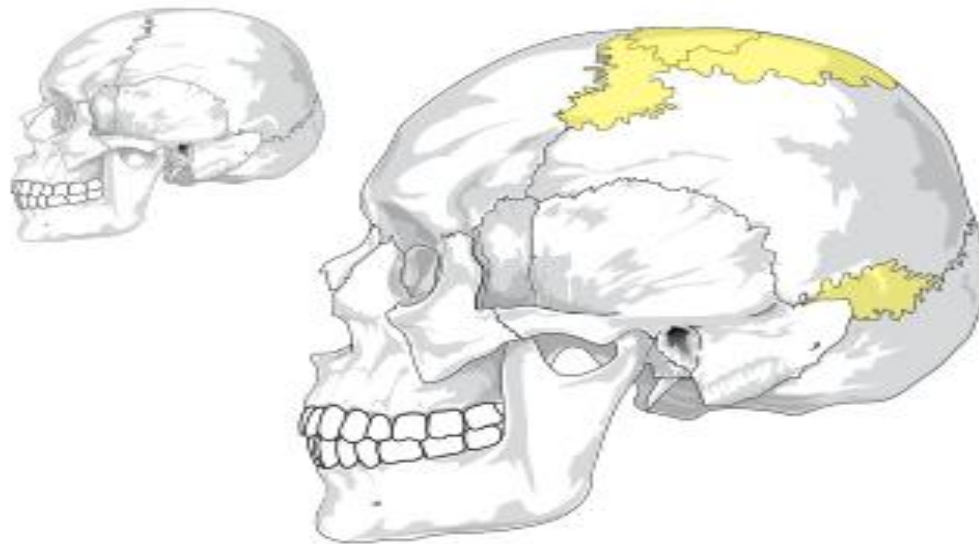
Pneumatic Bones

- Bones containing air-filled spaces
- Examples: Frontal, Maxilla, Ethmoid (skull bones)



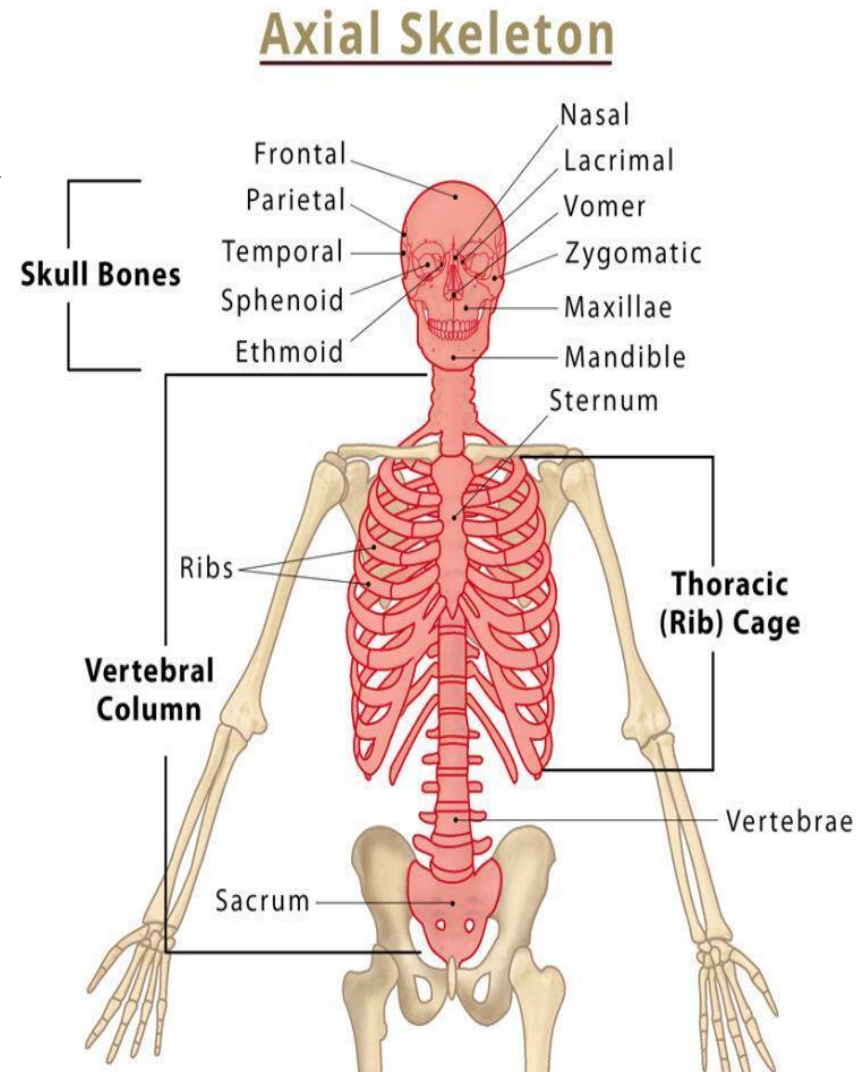
Accessory (Supernumerary) Bones

- Extra bones that may develop
- Examples: Wormian bones in skull sutures, Accessory navicular bone



Axial Skeleton

- 80 bones
- Includes:
- Skull
- Vertebral column
- Rib cage
- Function: Protection of vital organs



Appendicular Skeleton

➤ 126 bones

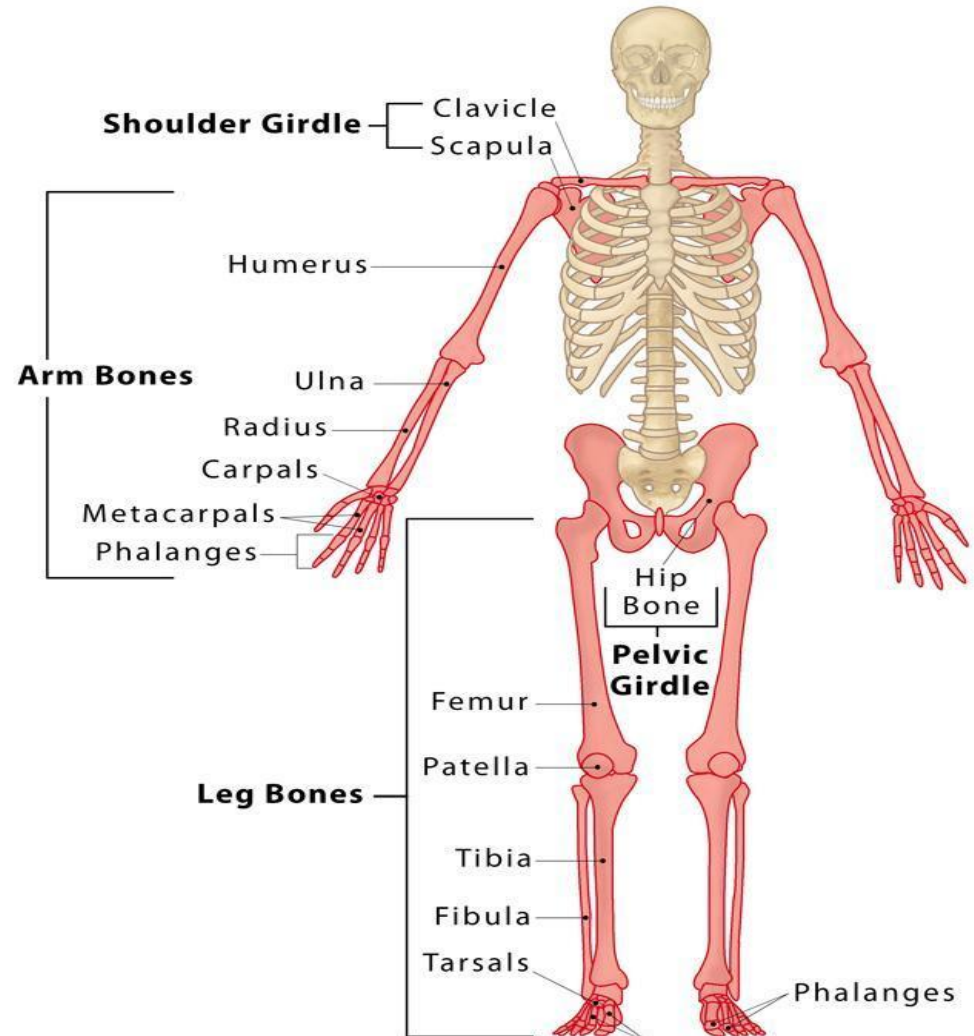
Includes:

➤ Upper limbs

➤ Lower limbs

➤ Shoulder and pelvic girdles

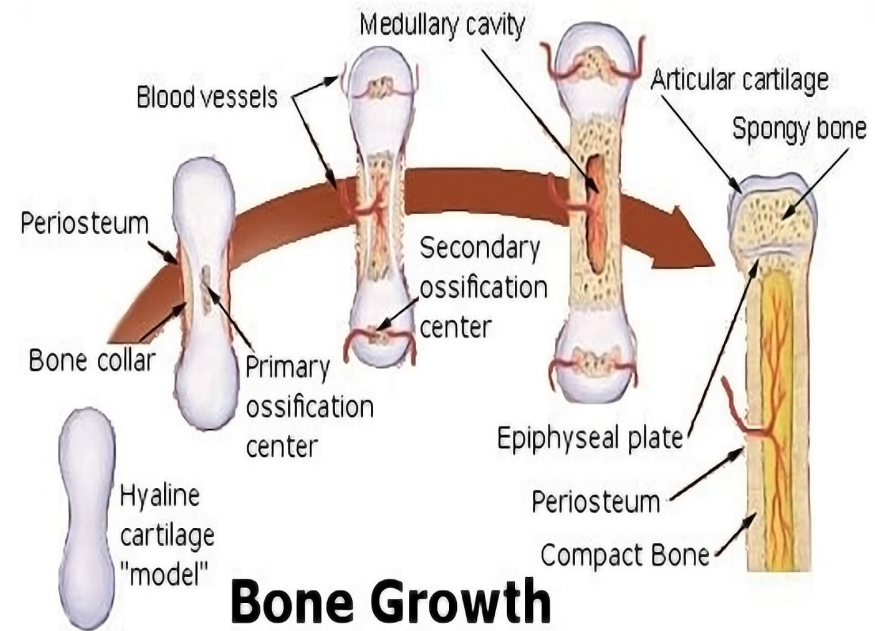
Appendicular Skeleton



Types of Ossification

PRIMARY OSSIFICATION:

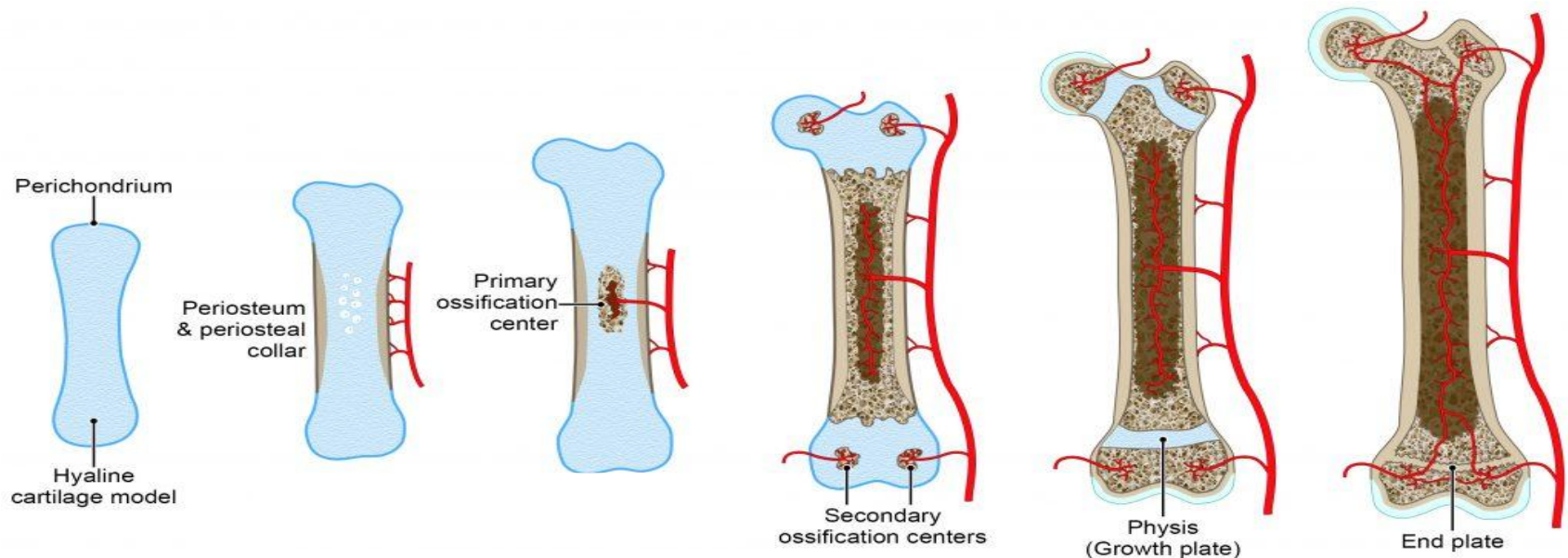
- 1. Intramembranous Ossification
Forms flat bones (skull, clavicle)
- 2. Endochondral Ossification
Forms long bones (femur, humerus)



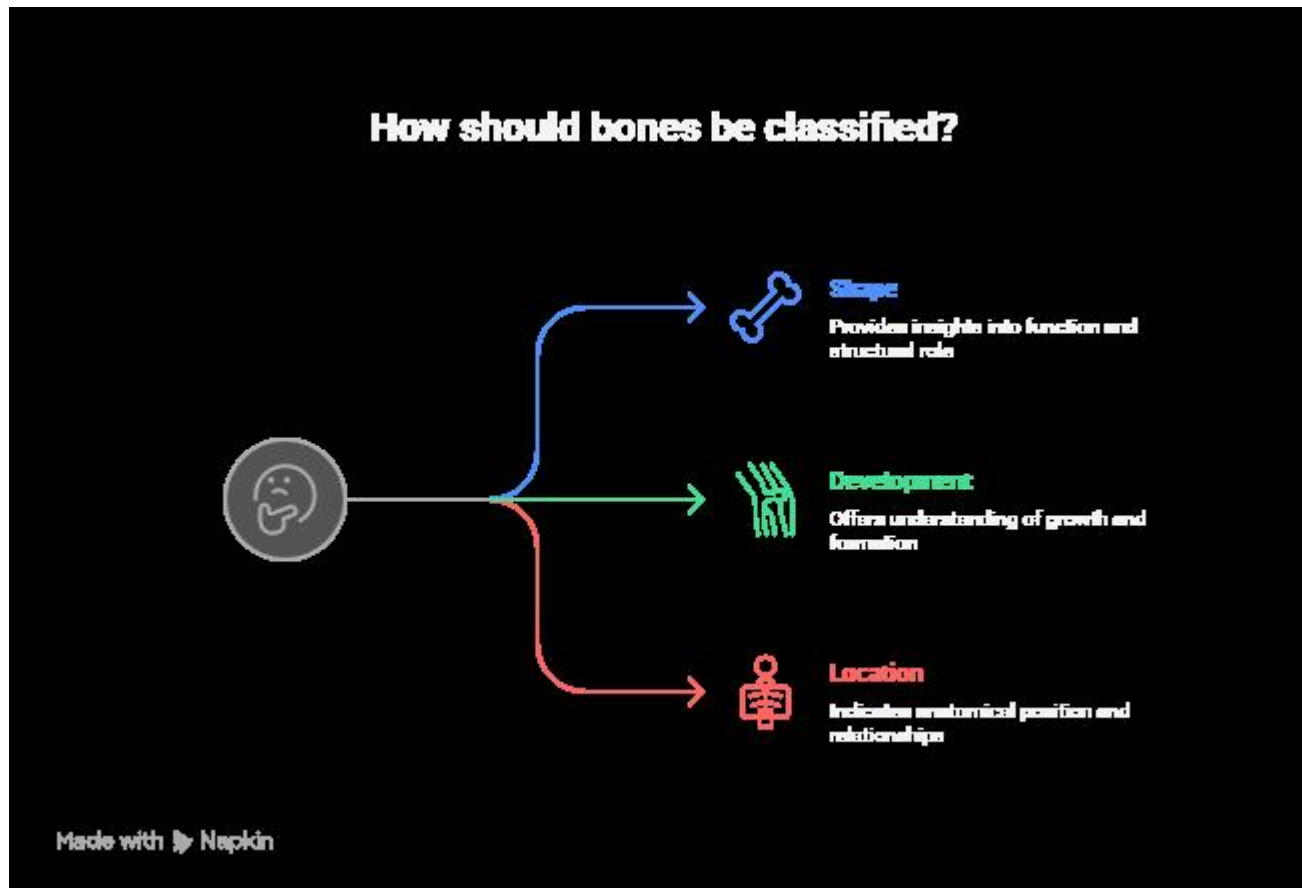
Growth of Bones

SECONDARY OSSIFICATION:

- Occurs at epiphyseal plate
- Influenced by hormones (GH, thyroid hormone, sex hormones)



Summary



In class assessment

1. Define a bone. What are its primary functions in the human body?
2. Name the two major types of bone tissue and write one key difference between them.
3. Classify bones based on shape and give one example for each type.
4. What are long bones? Mention two examples and their major features.
5. Differentiate between flat bones and irregular bones with examples.

In class assessment

6. What are sesamoid bones? Give an example and state their purpose.
7. Explain pneumatic bones and name one bone that belongs to this category.
8. What is the structure of a typical long bone? Label: diaphysis, epiphysis, metaphysis.
9. State the difference between axial and appendicular skeletons with two examples each.
10. Describe the functional classification of bones (weight-bearing, protection, movement) with suitable examples.

Thank you

