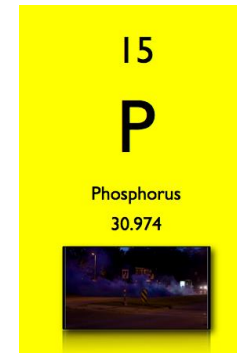
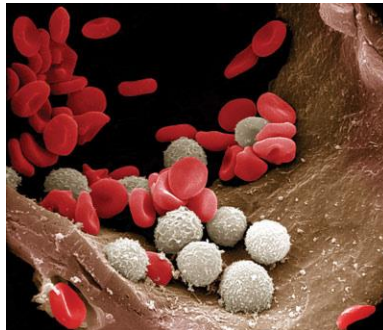
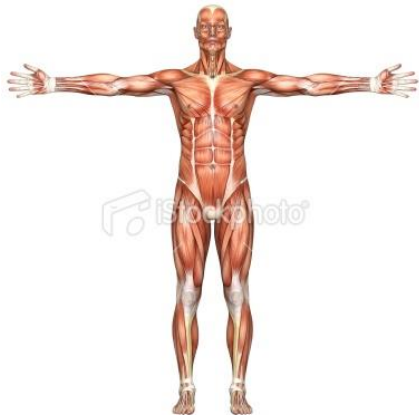
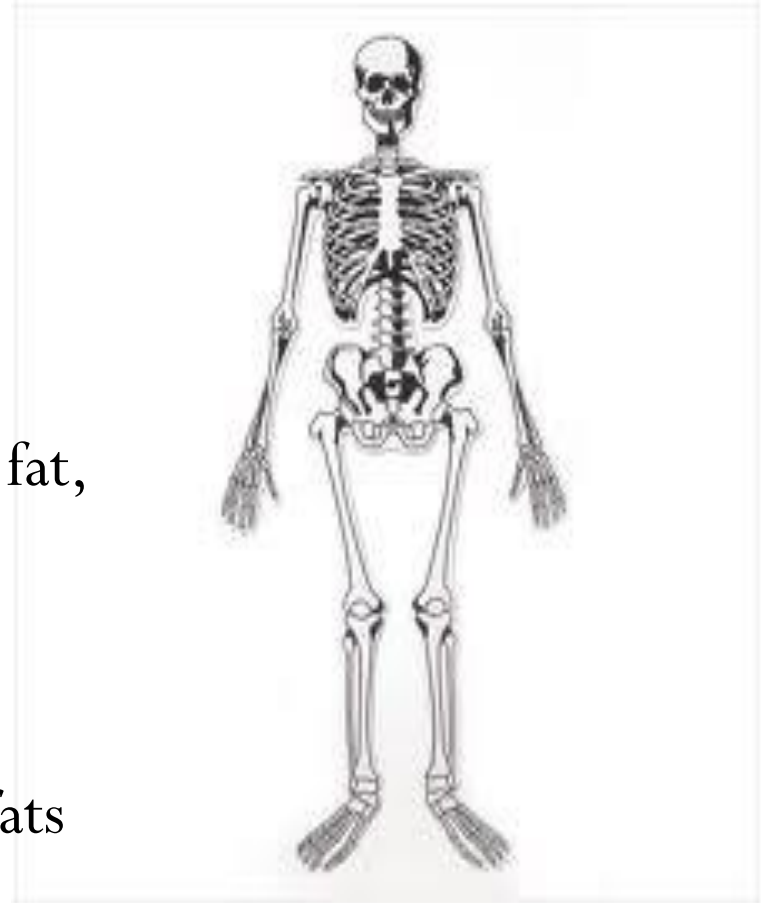


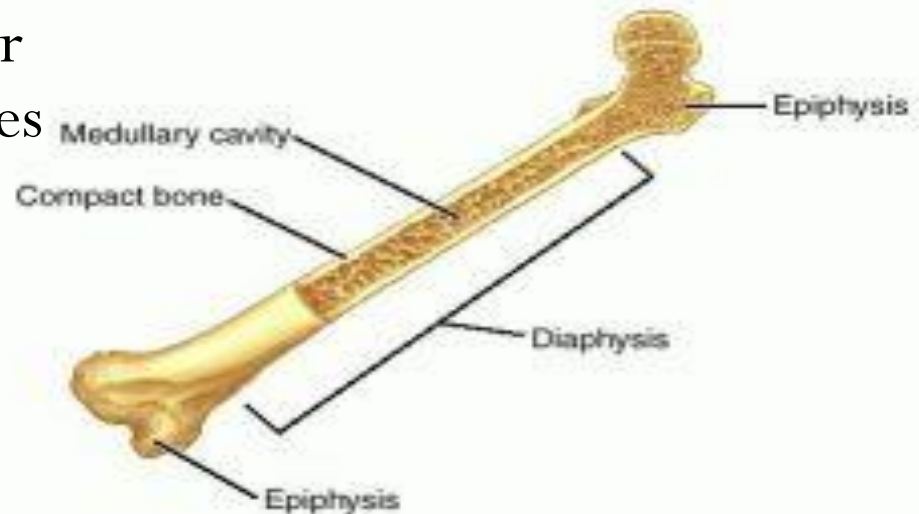
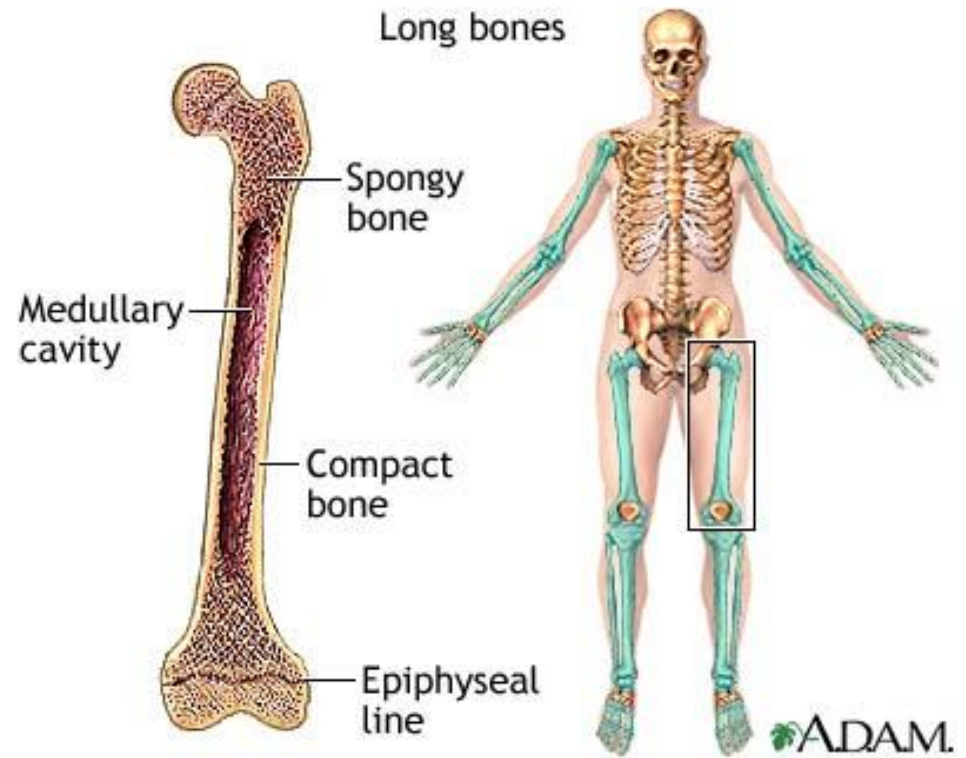
7:4 Skeletal System

- Made of organs called bones
- Adult has 206 bones
- Serves as framework for muscles, fat, and skin
- Protects internal structures
- Produces blood cells
- Stores calcium, phosphorus, and fats



Long Bones

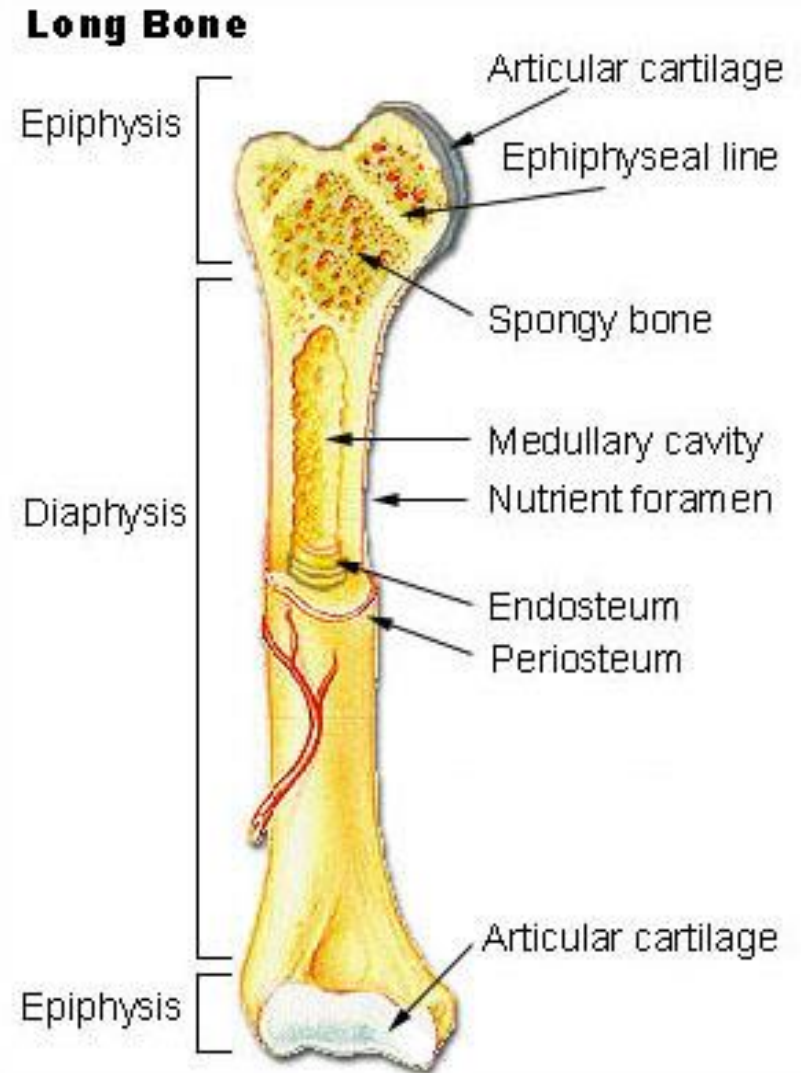
- Bones of the extremities
- Diaphysis – long shaft
- Epiphysis – Proximal/Distal extremities of long shaft
- Medullary canal – cavity in diaphysis
- Yellow marrow – fills the MC and works as storage for fat cells and forms leukocytes (white blood cells)

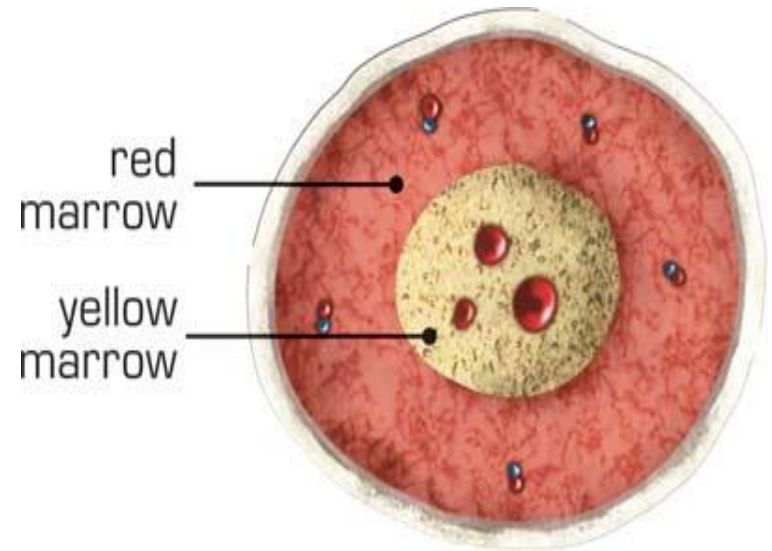
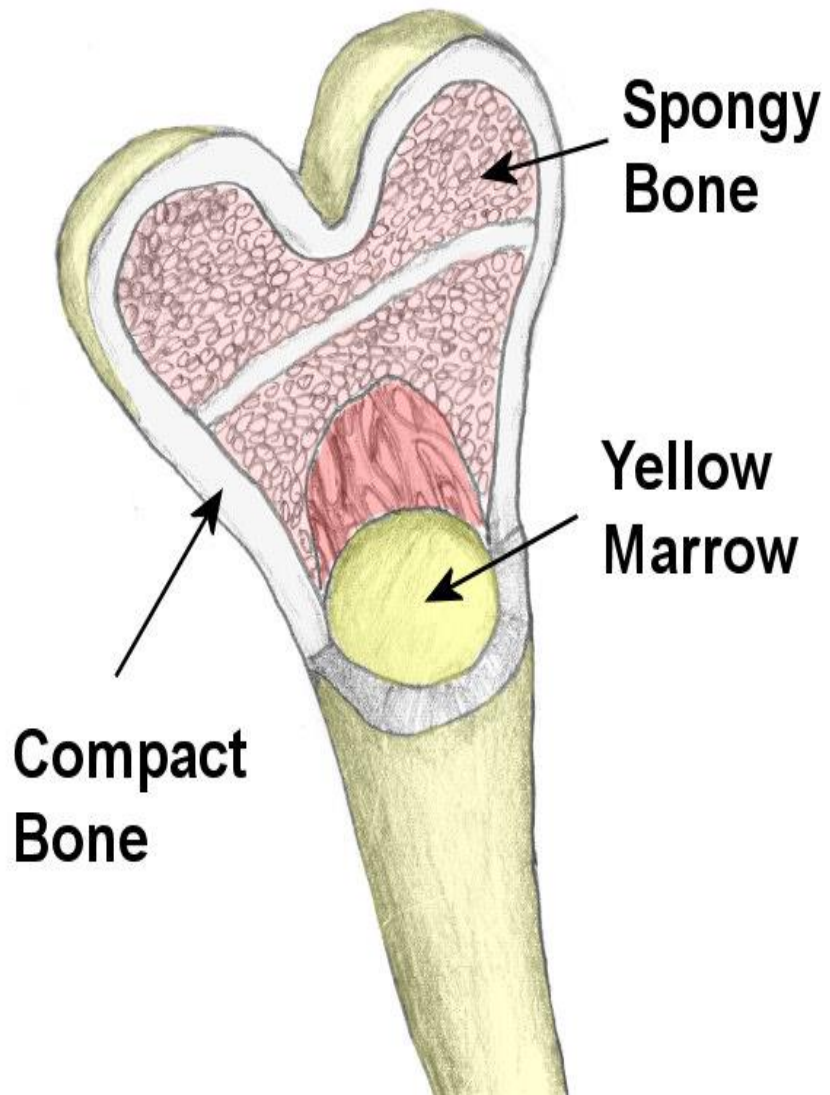


Long Bones

(continued)

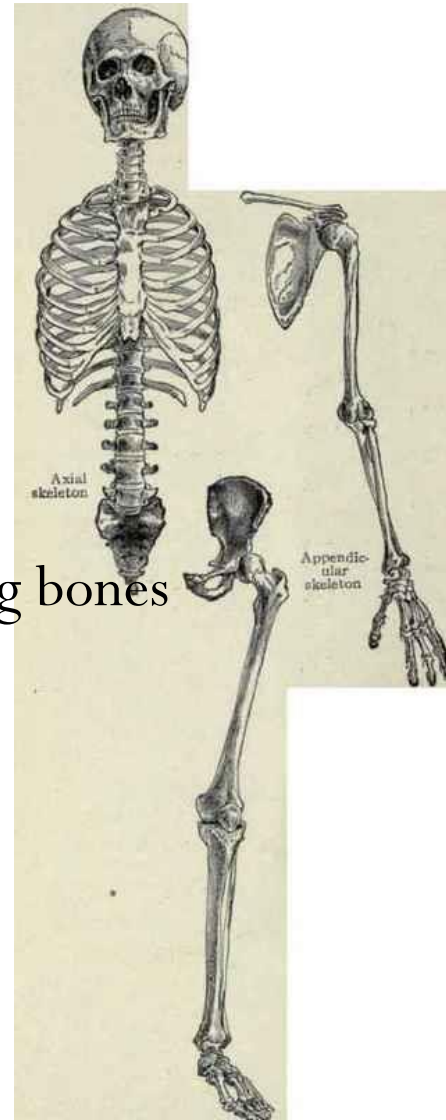
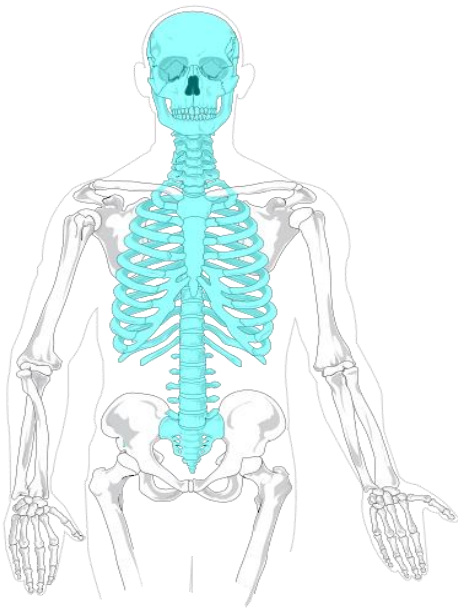
- Endosteum – membrane the lines the MC and holds YM.
- Red marrow – found in certain bones: Vert, ribs, sternum, cranium, & proximal ends of humerus and femur.
- Periosteum
- Articular cartilage





Skeleton

- Axial section
 - Main trunk of body
 - Skull, spinal column, ribs, and sternum
- Appendicular section
 - Extremities
 - Shoulder girdle, arm bones, pelvic girdle, and leg bones



Organization of the Skeleton

Axial Skeleton

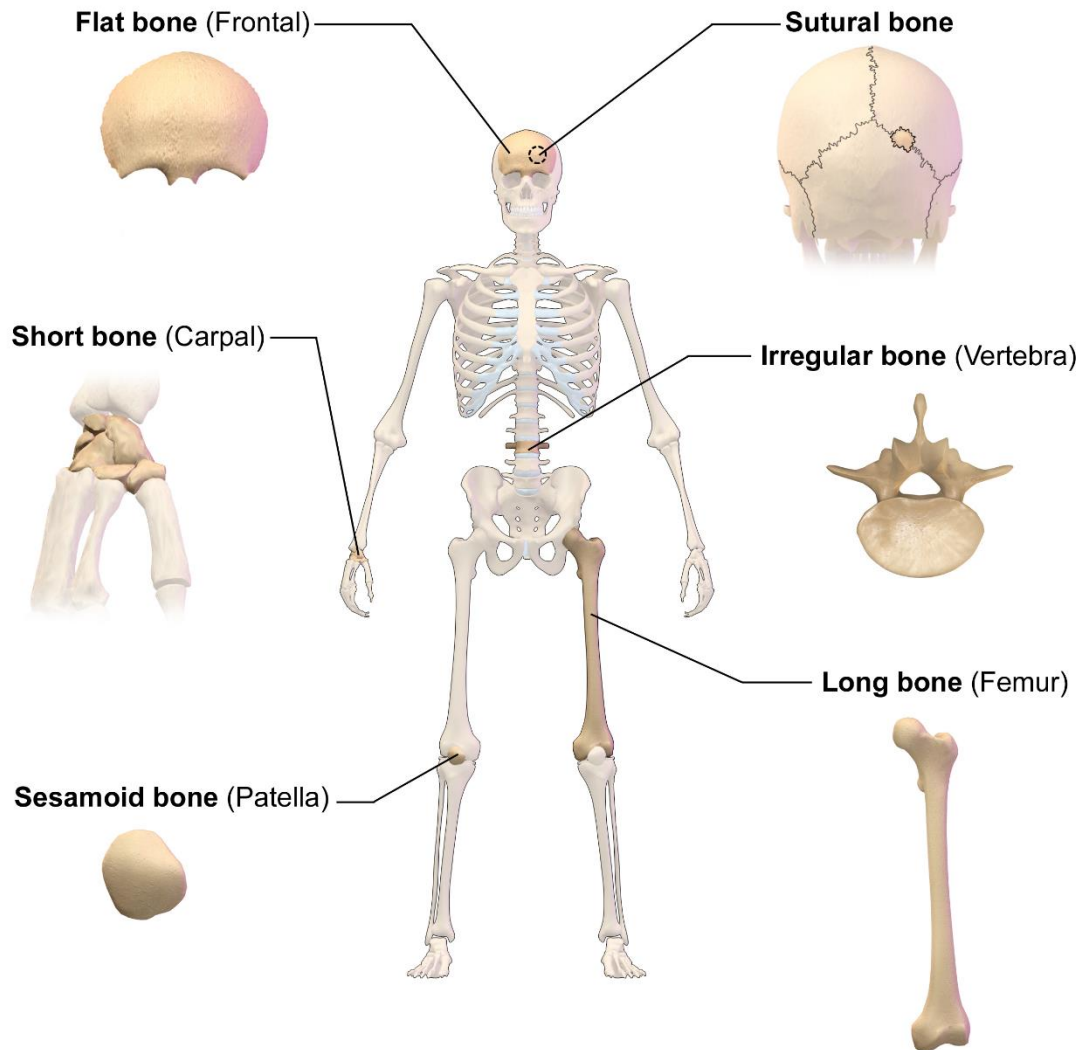


Axial Skeleton is the “**blue**”

Appendicular Skeleton



Appendicular Skeleton is the “**purple**”



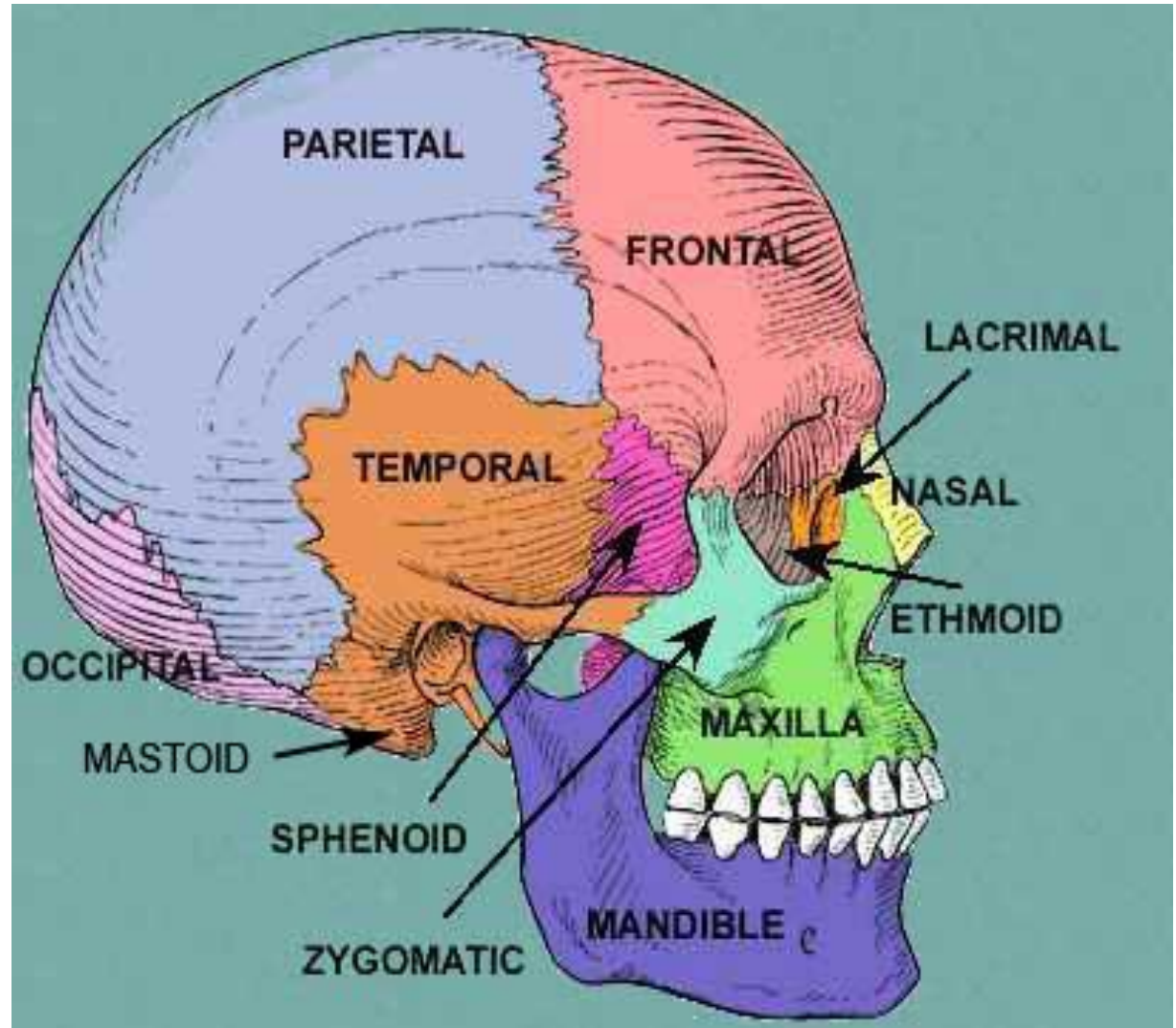
Classification of Bones by Shape

https://www.youtube.com/watch?v=X7qrSHk_rQ

Skull

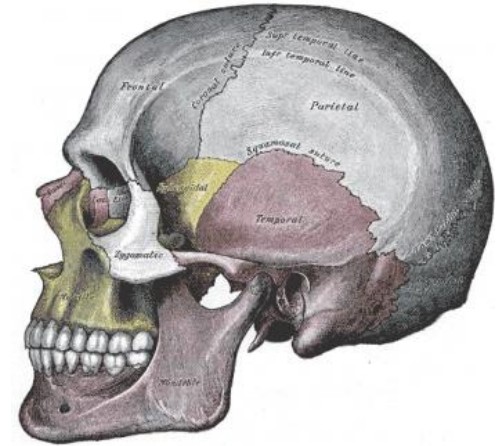
Composed of:

- Cranial and facial bones
- Sutures
- Sinuses
- Foramina



Skull

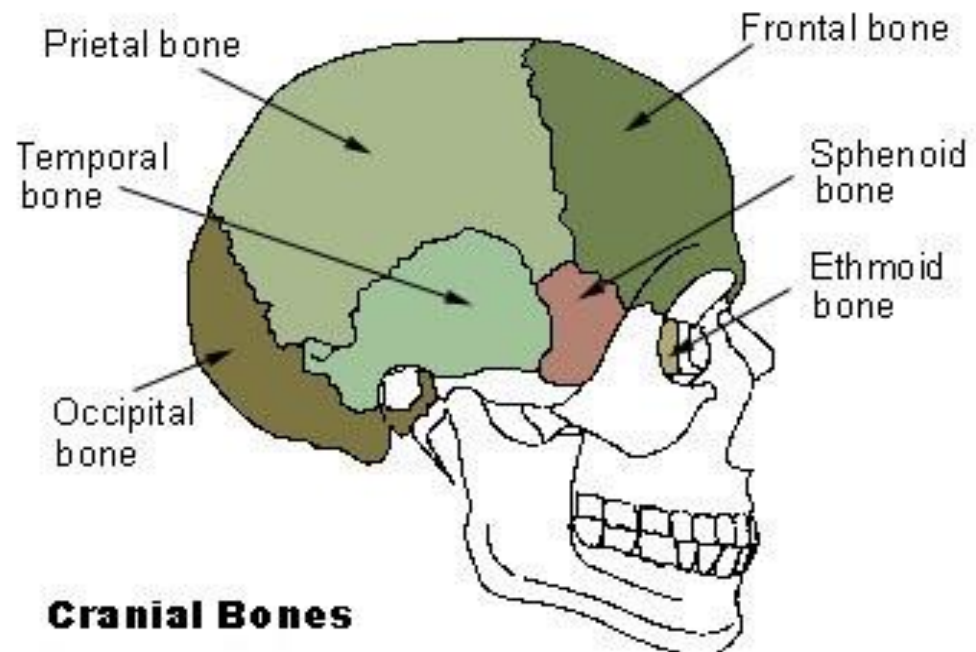
- **Cranium** – spherical structure that surrounds and protects the brain.



Composed of:

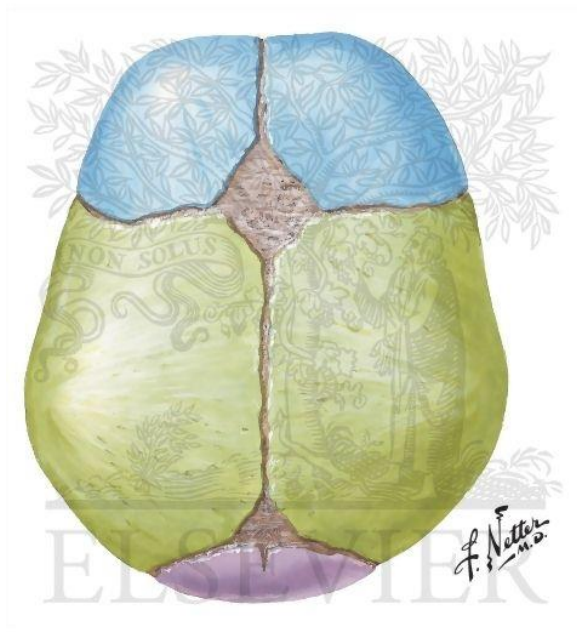
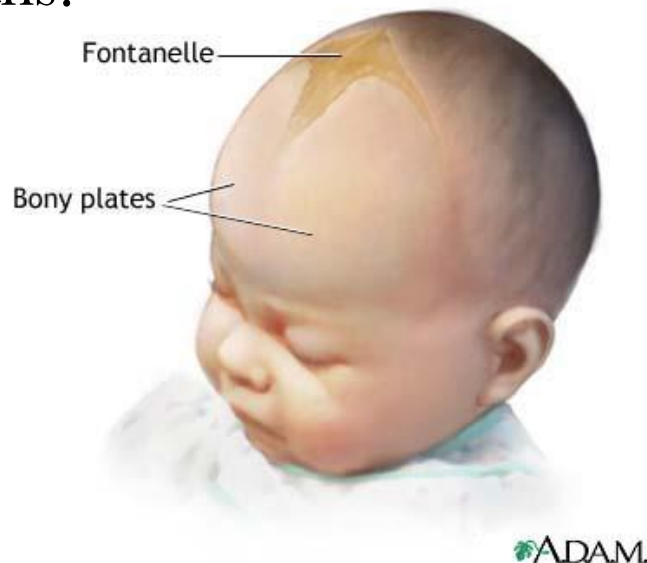
- **Cranial** and facial bones
- 8 cranial bones:
 - 1 frontal
 - 2 parietal
 - 2 temporal
 - 1 occipital
 - 1 ethmoid
 - 1 sphenoid

8 Bones



Skull

- Cranium is not solid at birth
- **Fontanelles** – “**soft spots**” – allow for enlargement of the skull as brain growth occurs.
- **Fontanelles** – made of membrane & cartilage.
- **Fontanelles** – turn into solid bone by approximately 18 months.



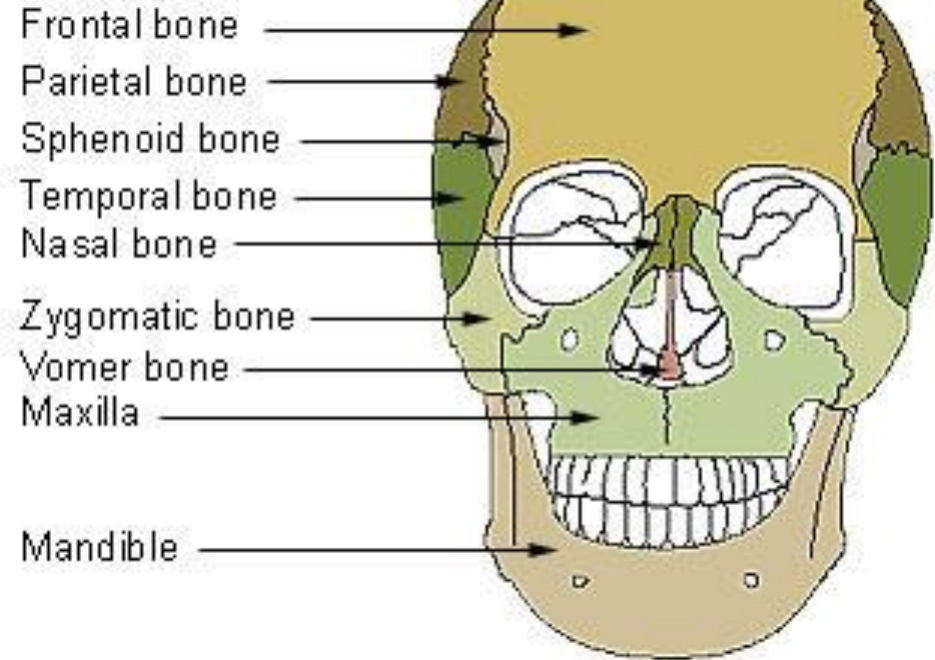
Skull

Composed of:

- Cranial and **facial** bones
- 14 bones of skull that form facial features
- Mandible (1)—lower jaw
- Maxilla (2)—upper jaw
- Zygomatic (2)—cheek
- Nasal (5)—upper part of nose
- Lacrimal (2)—inner aspect of eye
- Palatine (2)—hard palate (roof of mouth)

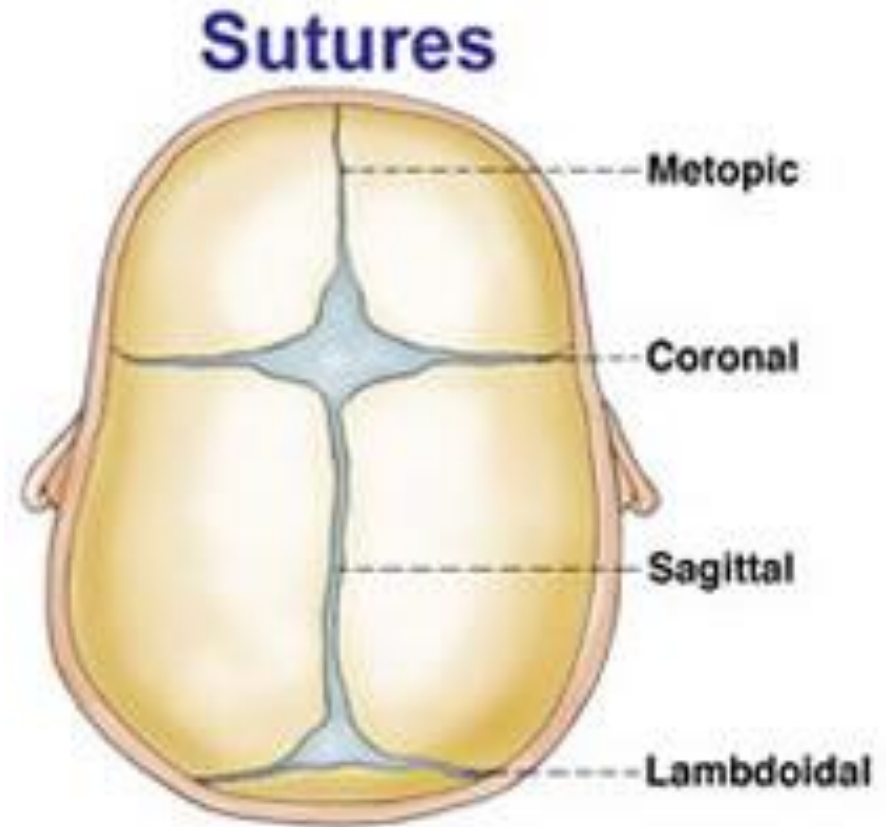
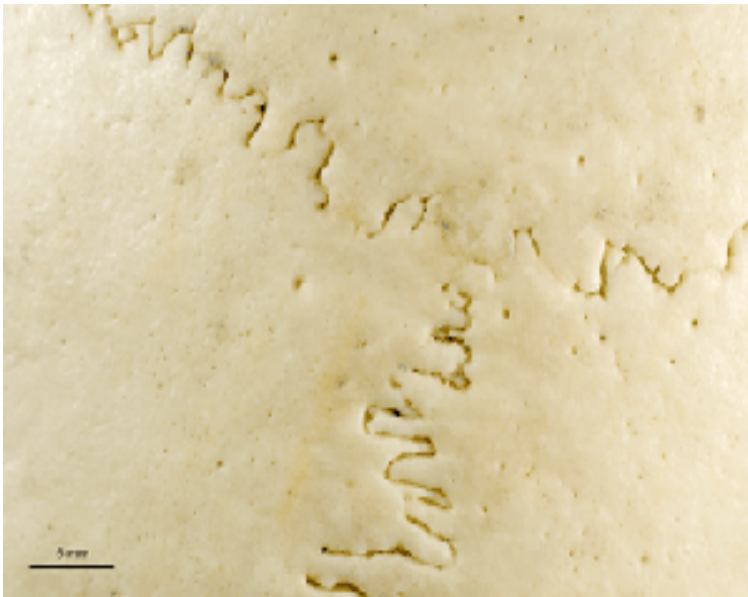
14 Bones

Facial Bones



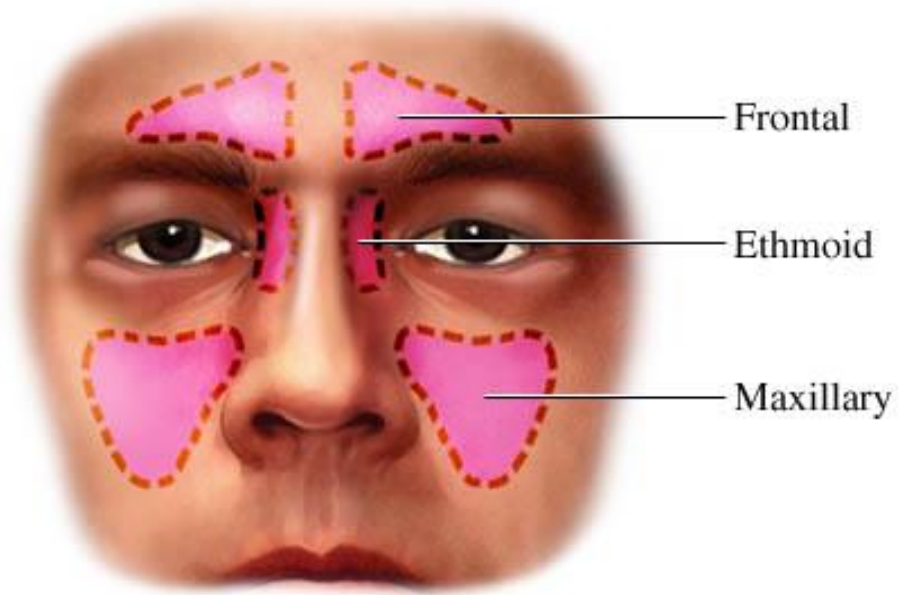
Skull

Sutures — areas where cranial bones have joined together.

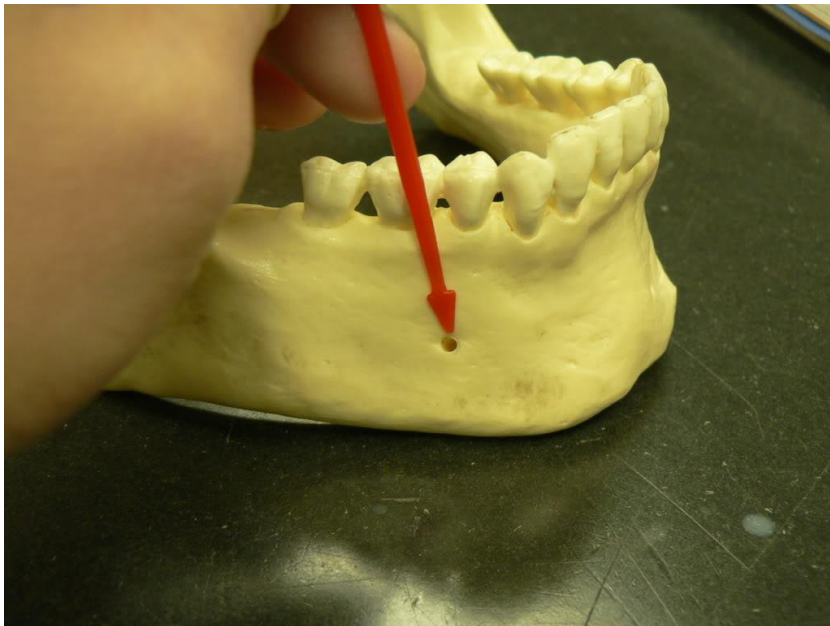


Skull

Sinuses — air spaces in the bones of the skull that act as resonating chambers for the voice.



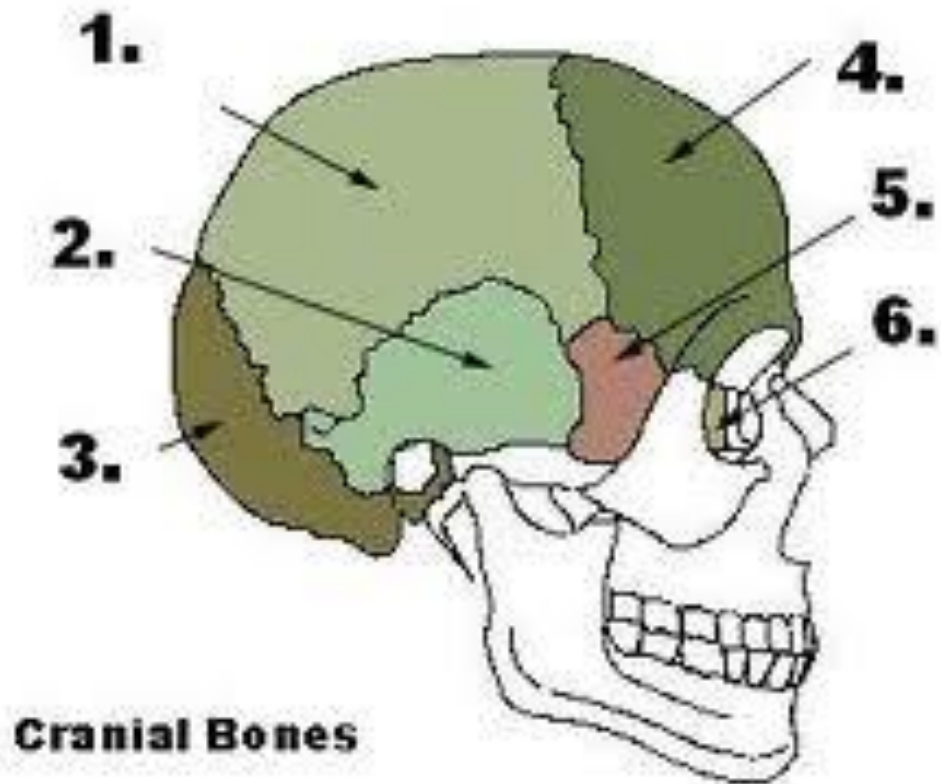
Mental Foramen



Foramina — openings in the bones that allow nerves and blood vessels to enter or leave the bone.

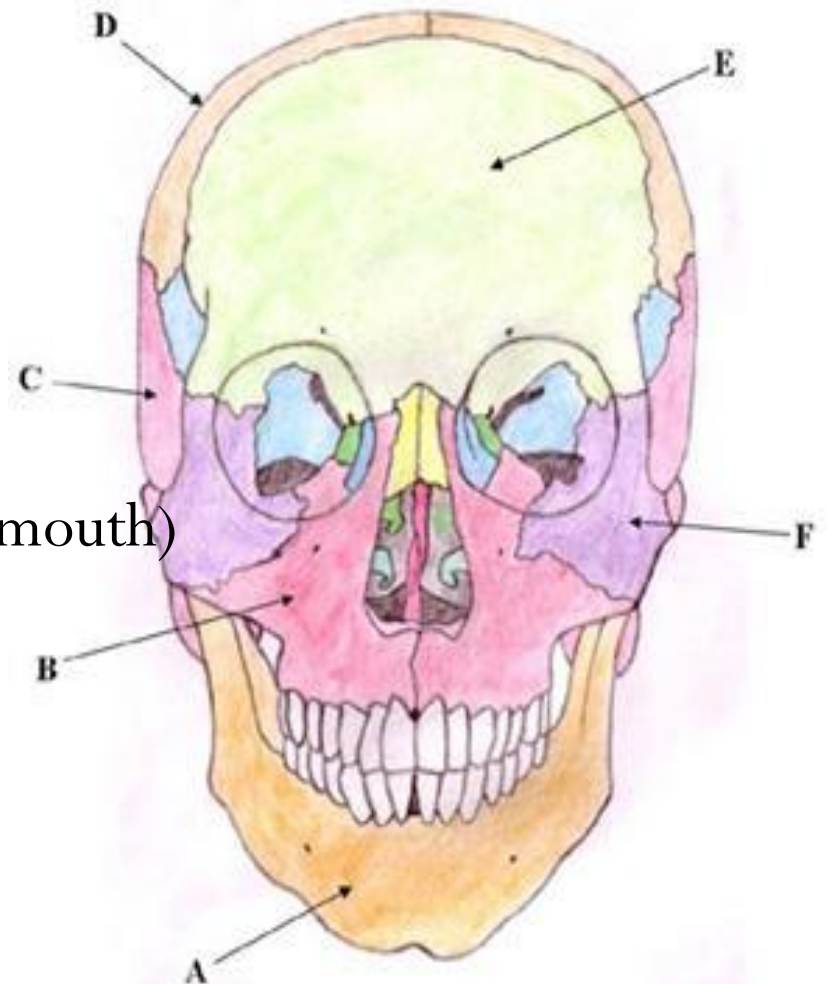
Cranial Bones

- Eight bones of skull that surround and protect the brain
- Frontal
- Parietal (2)
- Temporal (2)
- Occipital
- Sphenoid
- Ethmoid



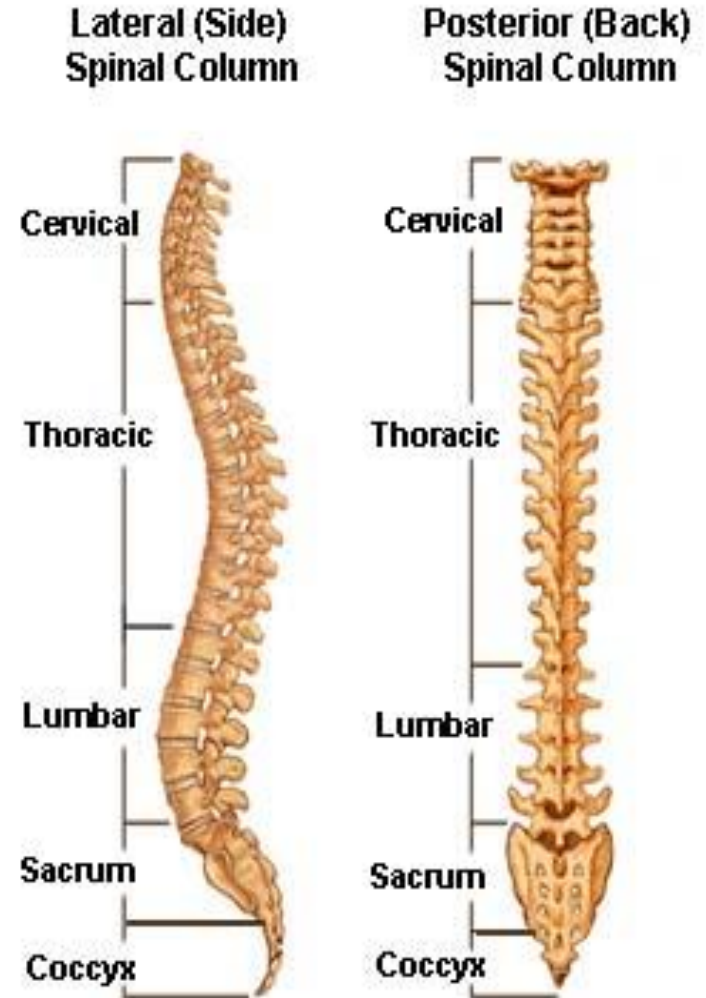
Facial Bones

- 14 bones of skull that form facial features
- Mandible—lower jaw
- Maxilla (2)—upper jaw
- Zygomatic (2)—cheek
- Nasal (5)—upper part of nose
- Lacrimal (2)—inner aspect of eye
- Palatine (2)—hard palate (roof of mouth)



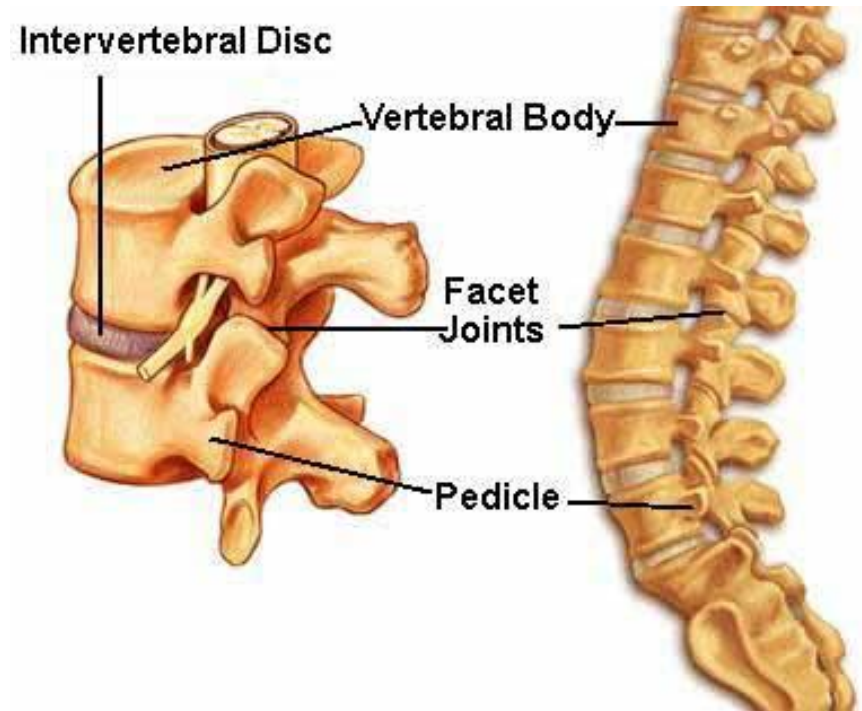
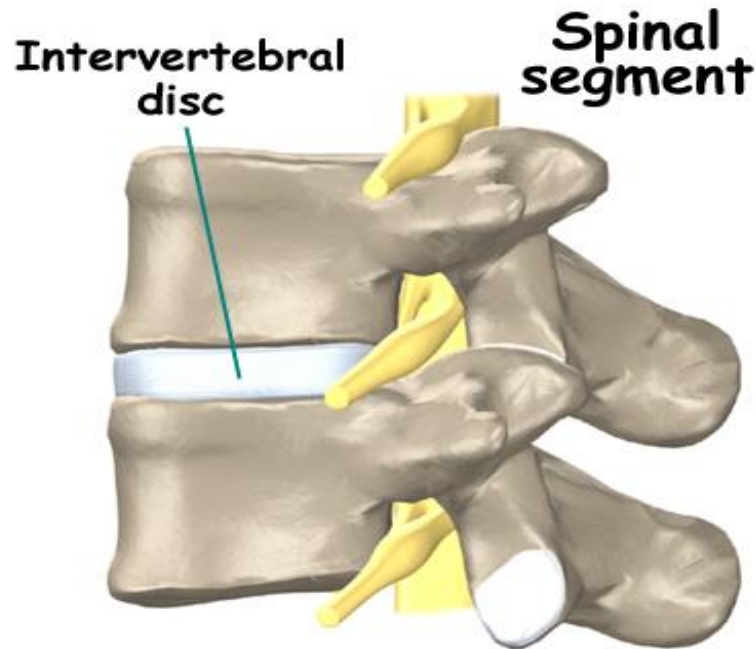
Spinal Column (Vertebrae)

- Spinal column—26 bones
- Protects the spinal cord and provides support for head and trunk
- Cervical (7)—neck
- Thoracic (12)—chest, attach to ribs
- Lumbar (5)—waist
- Sacrum (1)—back of pelvic girdle
- Coccyx (1)—tailbone



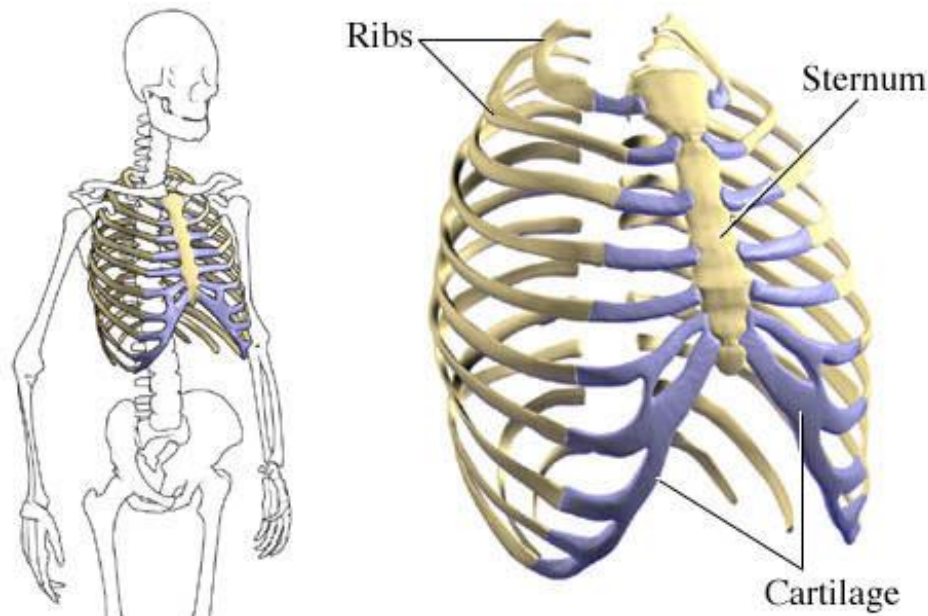
Intervertebral Disks

- Pads of cartilage separating vertebrae
- Act as shock absorbers
- Permit bending and twisting movements



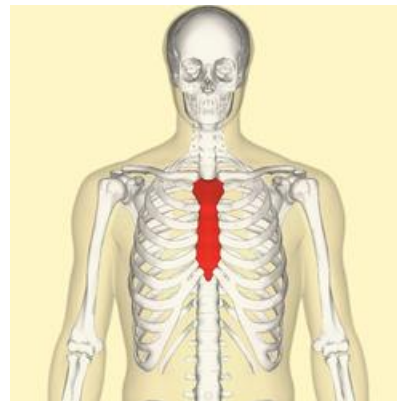
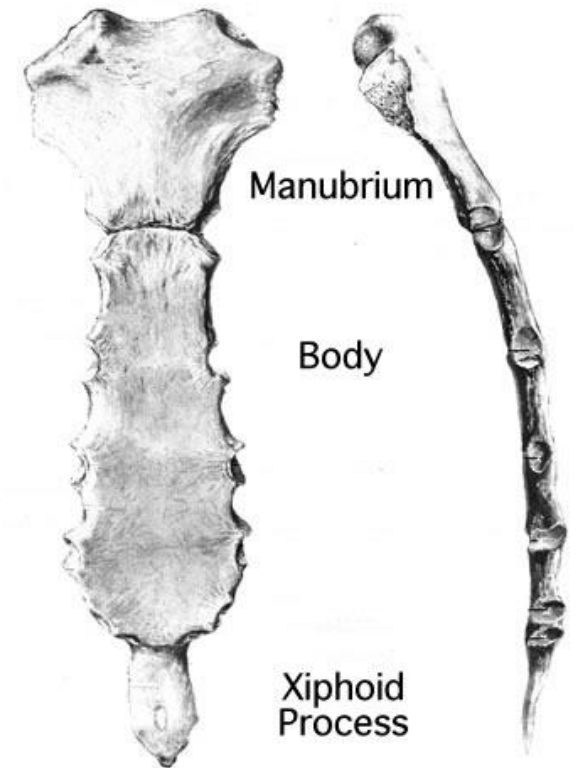
Ribs (costae)

- 12 pairs of long slender bones
- Attach to thoracic vertebrae
- True ribs—first 7 pairs; attach to sternum
- False ribs—last 5 pairs (1st three pair attach to the cartilage of the rib above; last two pairs are called floating ribs)



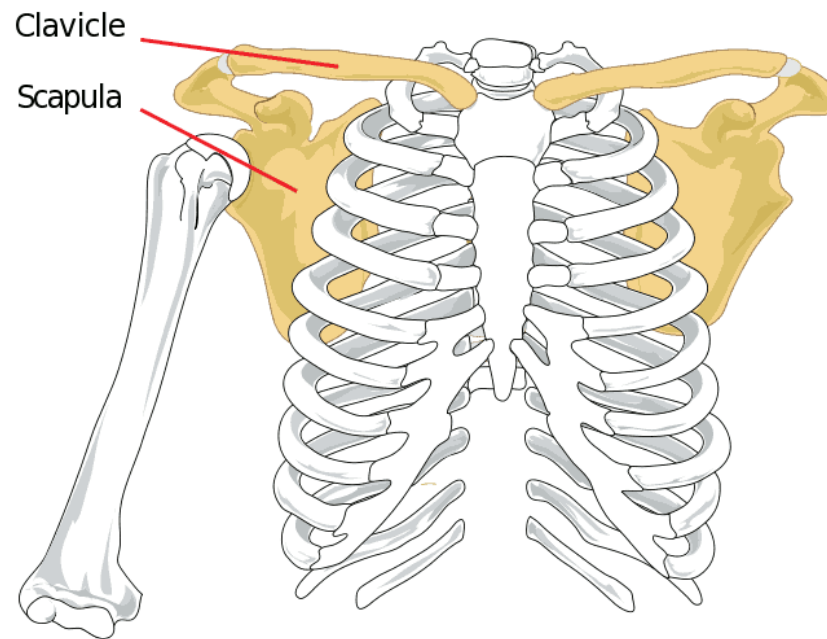
Sternum (breastbone)

- Last bone of the axial skeleton.
- Consists of 3 parts
(manubrium – upper region)
(gladiolus – body)
(xiphoid process – cartilage at the bottom)
- Two clavicles attach
- Ribs attach with cartilage



Shoulder or Pectoral Girdle

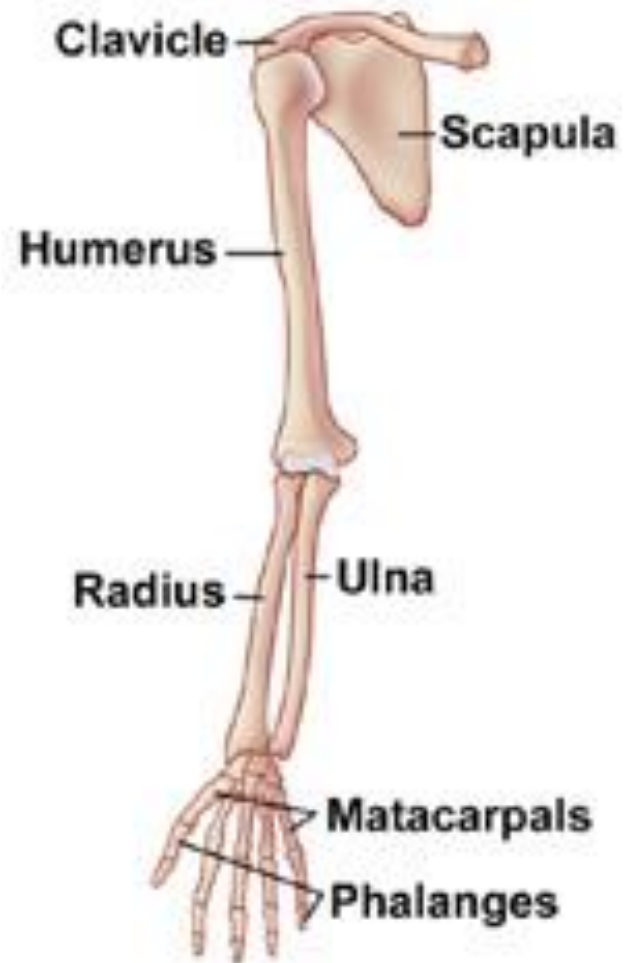
- 2 clavicles (collarbones)
- 2 scapula (shoulder bones)
- Upper arm bones attach to scapula



Front view

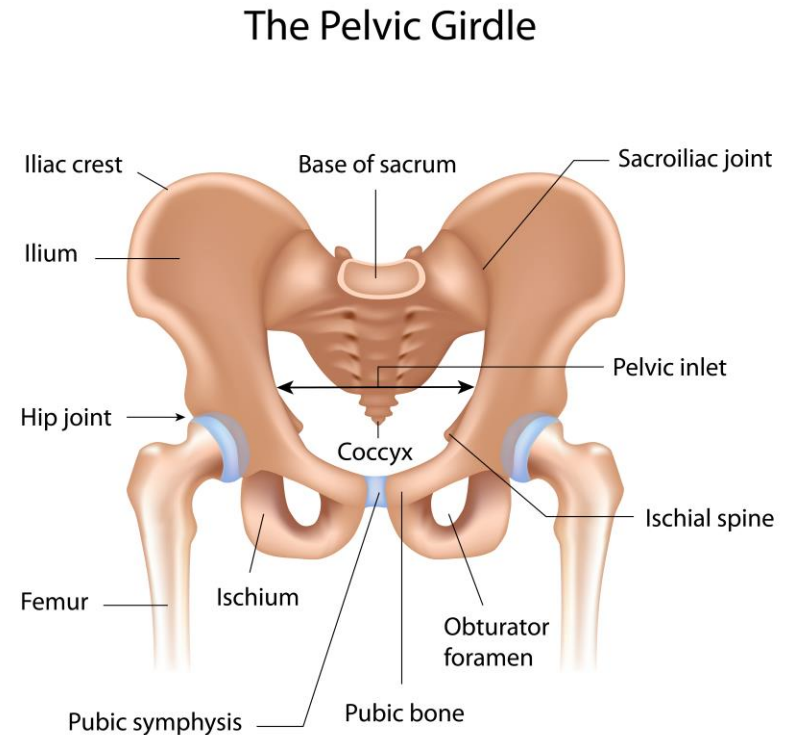
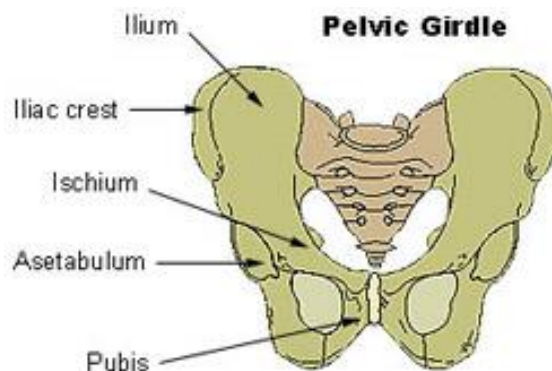
Bones of the Arm

- Humerus
- Radius
- Ulna
- Carpals
- Metacarpals
- Phalanges



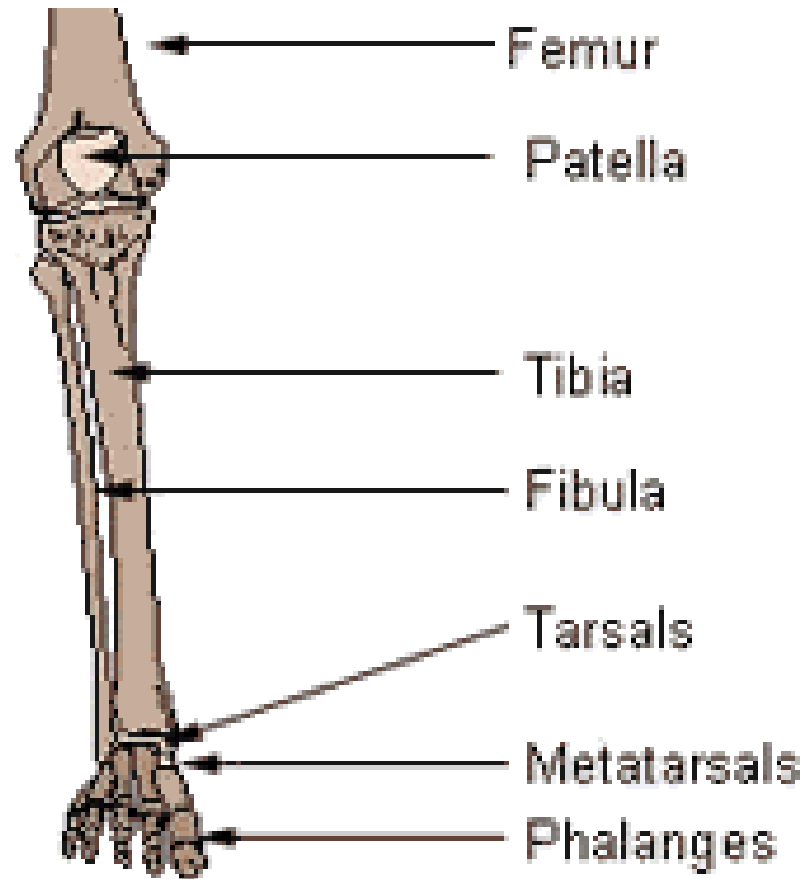
Bones of Pelvic Girdle

- Consists of 2 os coxae (coxal or hip bones)
- Symphysis pubis
- Ilium
- Ischium
- Pubis
- Acetabula
- Obturator foramen

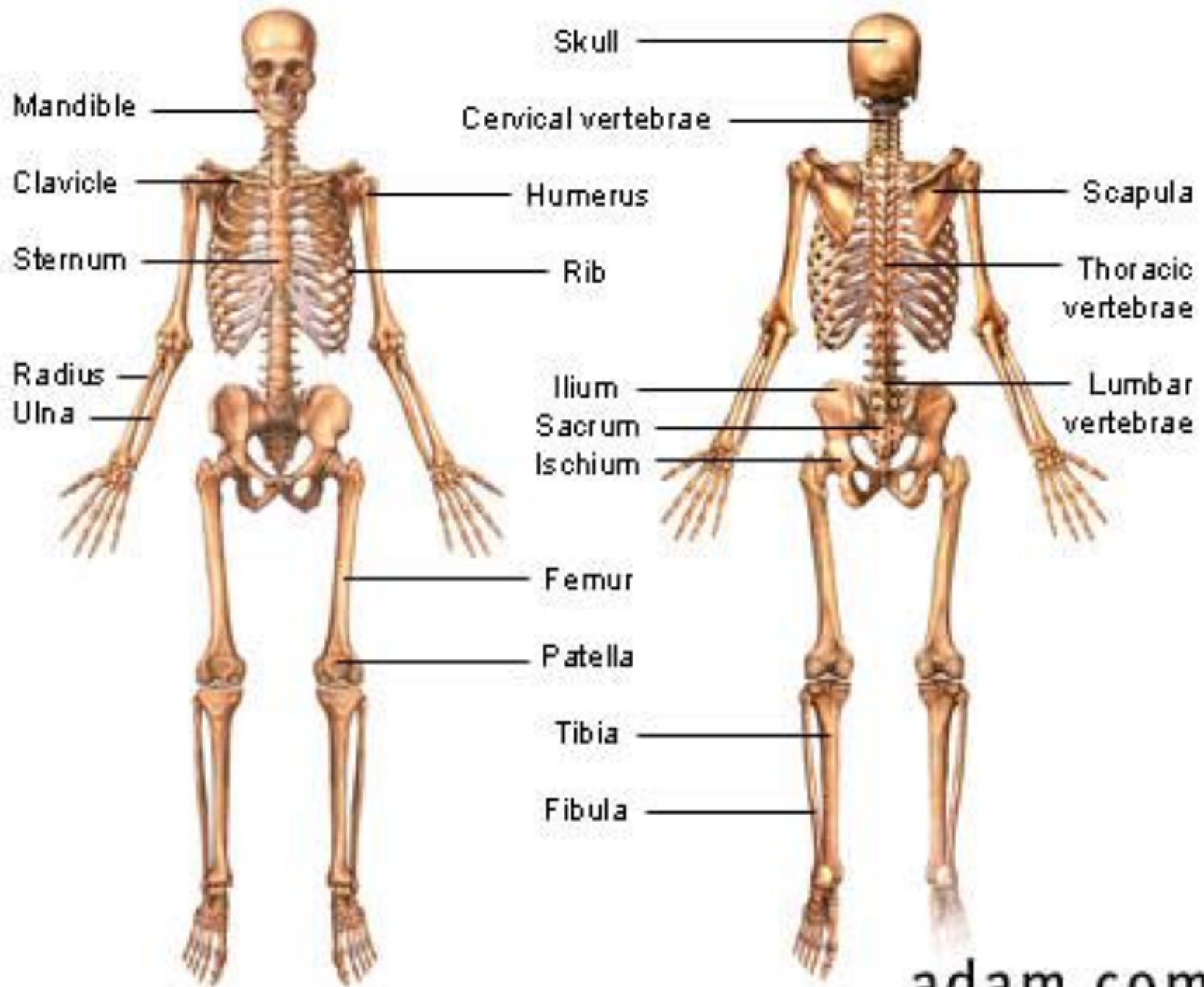


Bones of the Legs

- Femur
- Patella
- Tibia
- Fibula
- Tarsals
- Metatarsals
- Phalanges



<http://training.seer.cancer.gov/anatomy/skeletal/divisions/appendicular.html>



Joints

- Where two or more bones join
- Ligaments
- Three types of joints
 - Diarthrosis or synovial
 - Amphiarthrosis
 - Synarthrosis

Diseases and Abnormal Conditions

- Arthritis
- Bursitis
- Fractures
- Dislocation
- Sprain
- Osteomyelitis

(continues)

Diseases and Abnormal Conditions

(continued)

- Osteoporosis
- Ruptured disk
- Abnormal curvature of spine
 - Kyphosis
 - Scoliosis
 - Lordosis