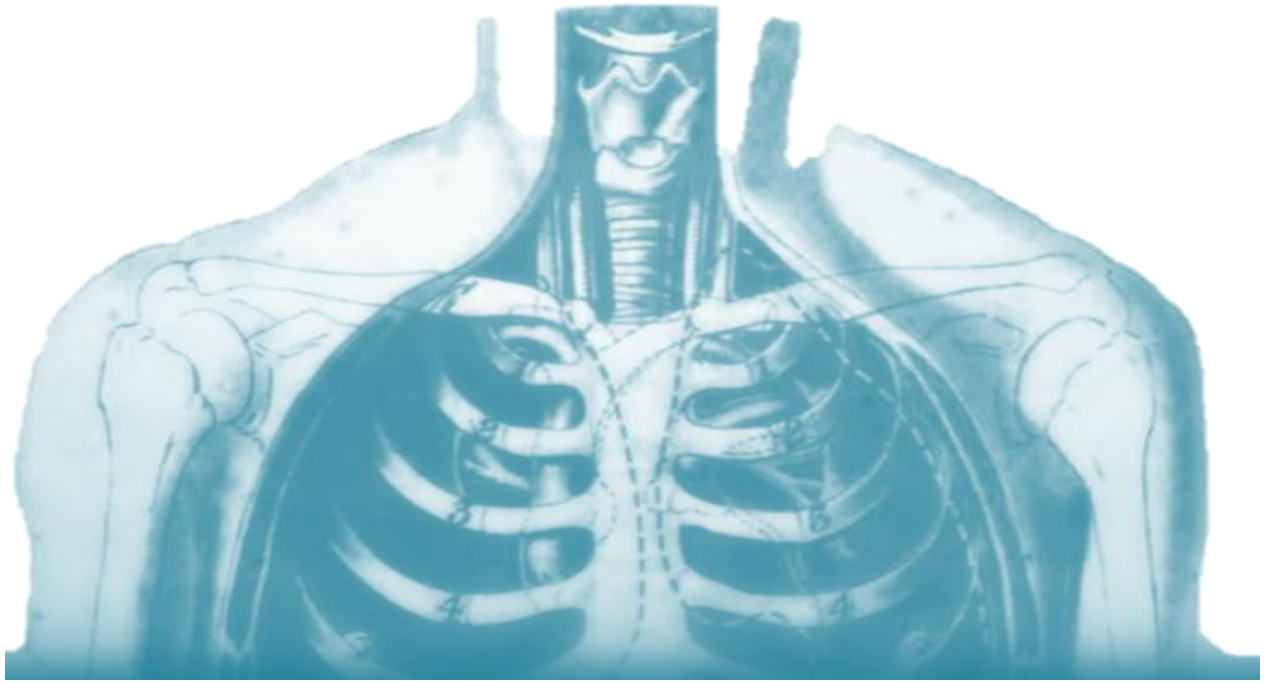
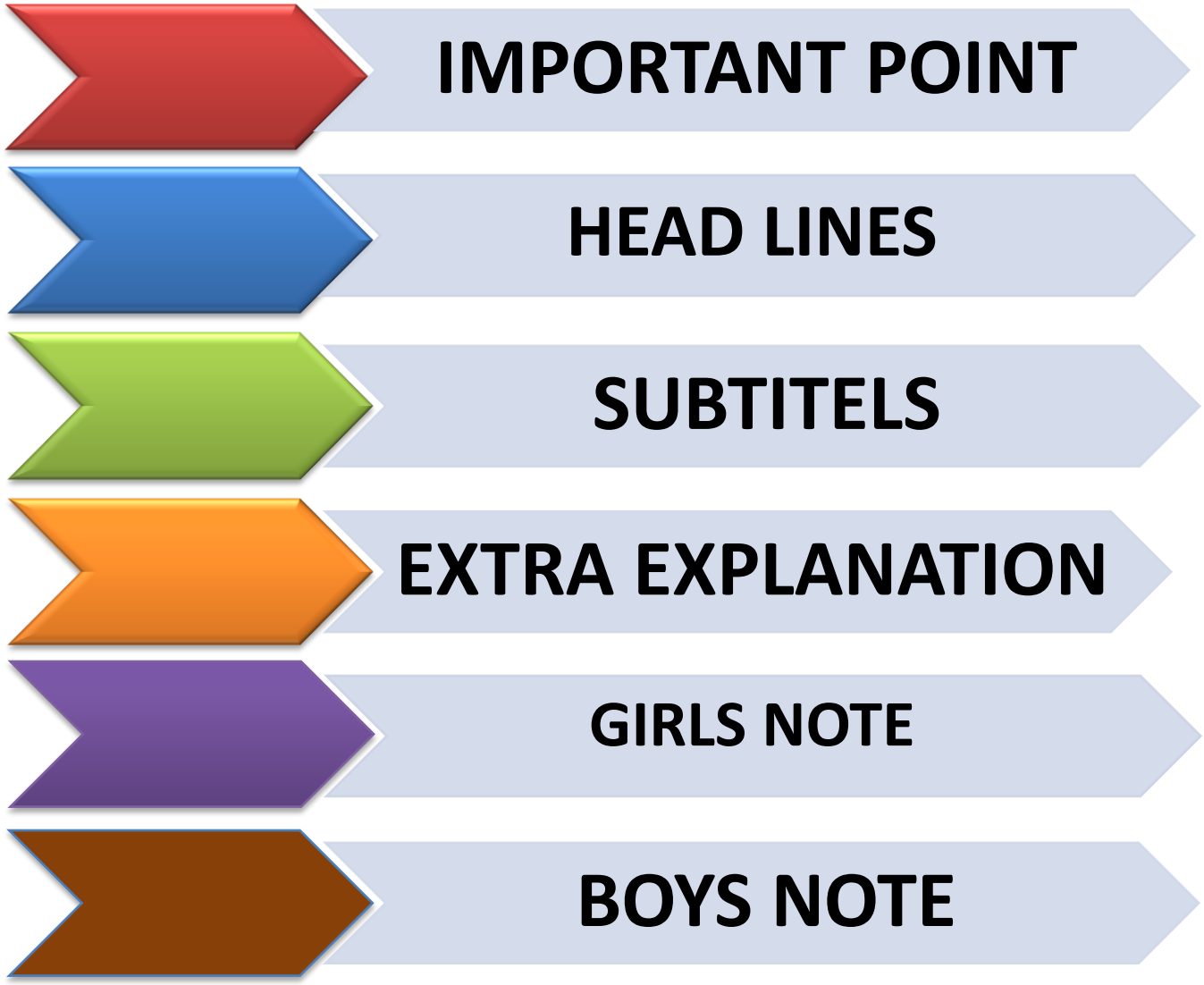
Anatomy Team
433

King Saud University
College of medicine
Foundation block

Anatomical Terminology & Skeletal System



COLOR INDEX


IMPORTANT POINT
HEAD LINES
SUBTITELS
EXTRA EXPLANATION
GIRLS NOTE
BOYS NOTE

OBJECTIVES:

at the end of the lecture, students should be able to:

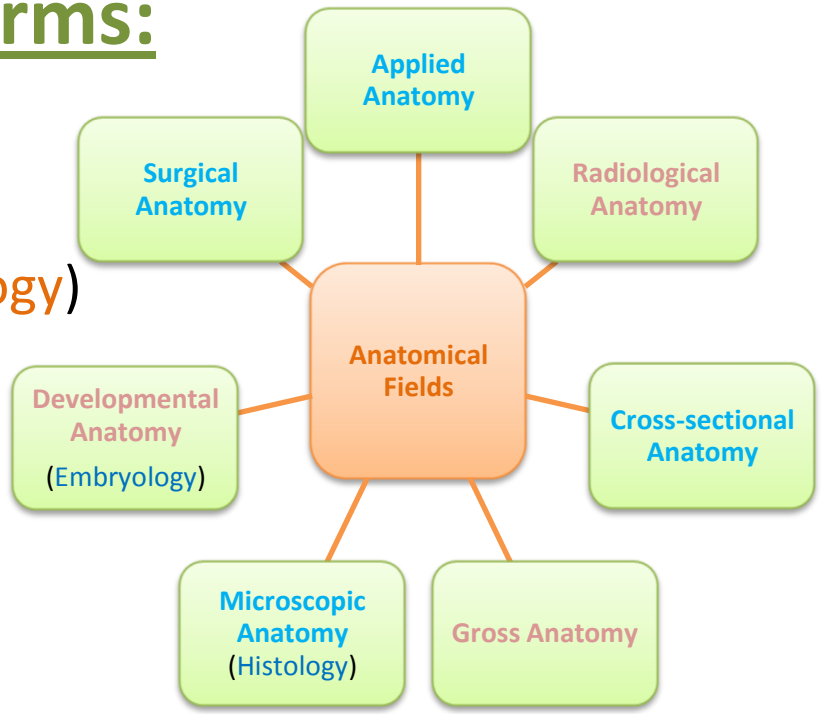
- ✓ Define the word "Anatomy"
- ✓ Enumerate the different anatomical fields
- ✓ Describe the anatomical position
- ✓ Classify bones according to shape, structure & development
- ✓ Enumerate bones of axial & appendicular skeleton
- ✓ Describe different anatomical terms of position & movements as well different anatomical planes

What is Anatomy?!

- The science which deals with the study of the structure and shape of the body & body parts.

Important Anatomy Terms:

- Gross Anatomy
- Microscopic Anatomy (Histology)
- Development Anatomy (Embryology)
- Radiological Anatomy
- Cross sectional Anatomy
- Applied Anatomy
- Surgical Anatomy

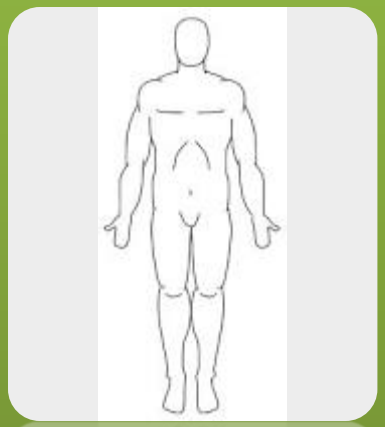


Comparing between GROSS ANATOMY VS MICROSCOPIC ANATOMY

	Gross Anatomy	Histology
definition	The study of the large structures of the human body	Study of fine(دقيق) structures of the human body
Structure visibility to the naked eye	√	×
What is used to study it	Naked eye	Microscope
Example	Muscles , bones and organs	Cells (Neurons – Cardiac muscle cells – RBC) and tissues (Nervous tissue)

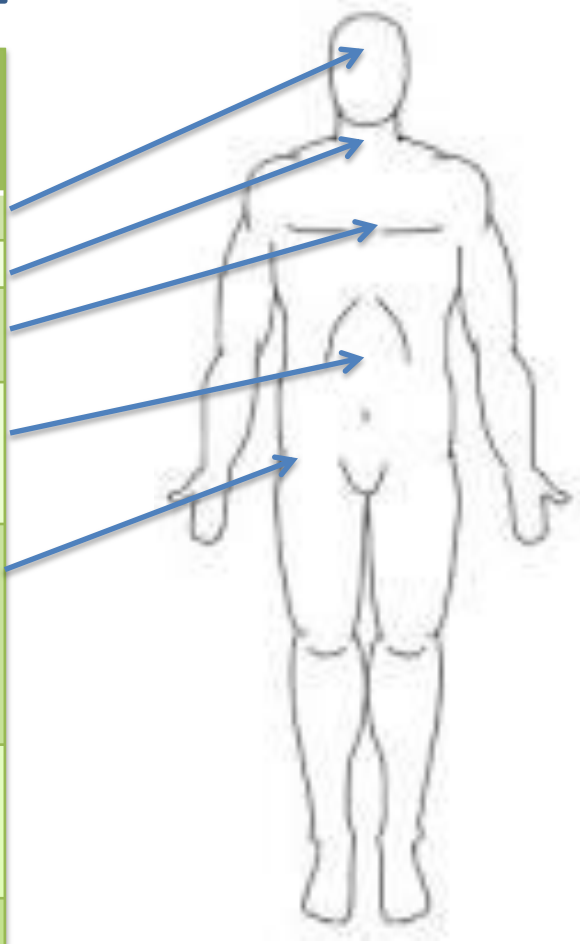
Anatomical position:

- **Body is erect.**
- **Arms hanging by the side.**
- **Palms facing forward.**
- **Feet are parallel.**



Important Anatomical Terms

Anatomical terms	What is it related to?	Examples of some structures present there
Cranial	head	brain
Cervical	Neck	
Thoracic	Chest cavity	Cardiovascular & respiratory organs
Abdominal	Abdomen	Viscera: stomach, liver, intestine, kidney……..
Pelvic	Pelvis	Reproductive organs, the urinary bladder, the pelvic colon, and the rectum
Plantar	Sole of the foot (باطن القدم)	
Palmar	Palm of the hand	



Terms of Positions:

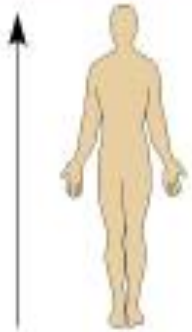
- **Superior** (cranial, above): nearer to the head,
  - **Inferior** (caudal, under): away from the head.
- **Anterior** (ventral, front): nearer to the front,
  - **Posterior** (dorsal, behind): nearer to the back.
- **Medial** (middle): nearer to the median plane,
  - **Lateral** (side): away from the median plane.

- **Proximal:** nearer to the trunk (back)
- **Distal:** away from the trunk.
- **Superficial:** nearer to the skin (surface)
- **Deep:** away from the skin.

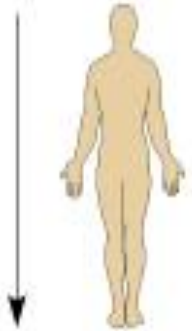
for more clarification see (9Minutes) then (8Minutes)

Pictures for more explanation:

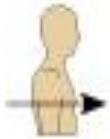
Example



The head is superior to the abdomen



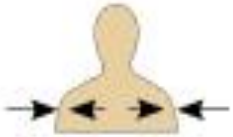
The navel is inferior to the chin



The breastbone is anterior to the spine

The elbow is proximal to the wrist

The knee is distal to the thigh



The skin is superficial to the skeletal muscles

The lungs are deep to the skin

Terms of movements:-

ADJUSTING THE ANGLE BETWEEN TWO PARTS		
	Flexion	extension
Definition	Bending movement: Decreasing the angle between 2 parts	Straightening movement: Increasing the angle between 2 parts
Examples	*bending the elbow *when sitting down the knees are flexed *moving the limb forward (towards the anterior side of the body)	*fully extended fingers in a handshake *when standing up the knees are extended *moving the limb backward (towards the posterior side of the body)

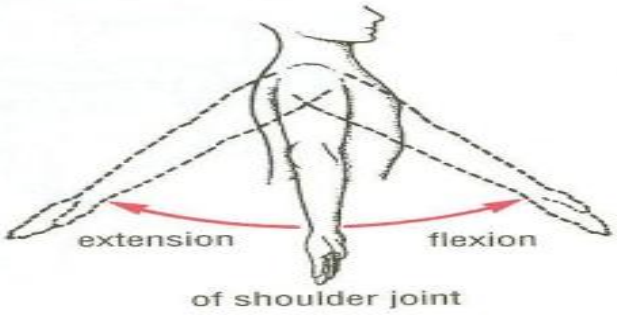
ADJUSTING RELATION TO THE MEDIAN PLANE OF THE BODY		
	Abduction	Adduction
Definition	Pulling the part away from the median plane of the body	The movement toward the median plane of the body
Examples	*Raising the arms laterally *moving the knees away from each other	*Dropping the arms to the side *bringing the knees together
In case of fingers and toes , the median is the middle finger/toe	Spreading the digits away from the median	Closing the digits together

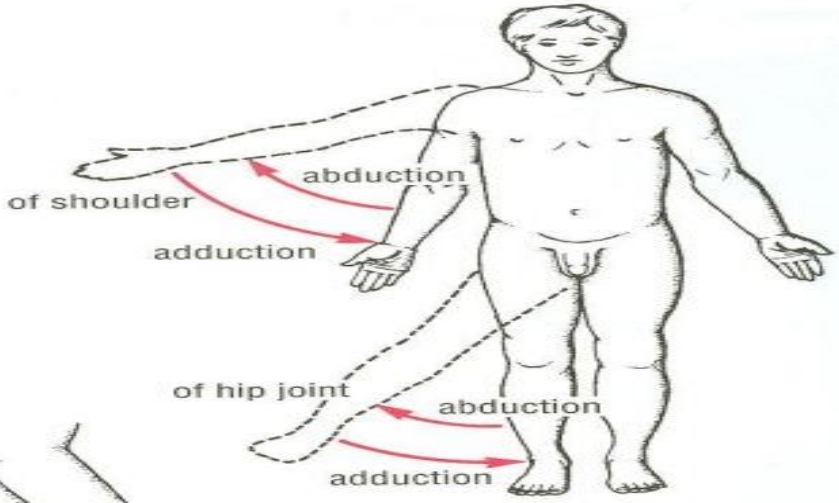
	Circumduction	Opposition
Definition	Combined movements of flexion, extension, abduction & adduction.	Bringing tips of fingers and thumb together as in picking something up, opposite of above movement.

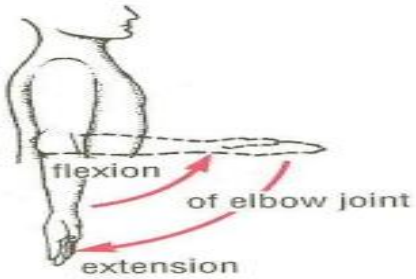
ROTATING BODY PARTS		
	Medial Rotation	Lateral Rotation
Definition	Rotating the limbs towards the median plane (internally)	Rotating the limbs away from the median plane (externally)
Examples	Rotation of the shoulder / hip inwards	Rotation of the shoulder / hip outwards (backwards)

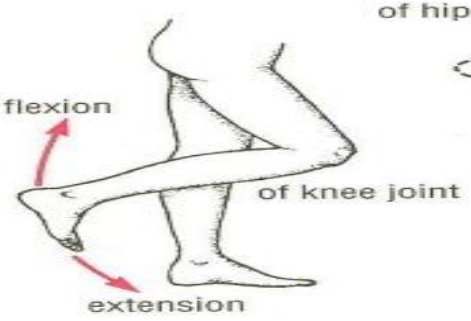
keep going , you can do it :")

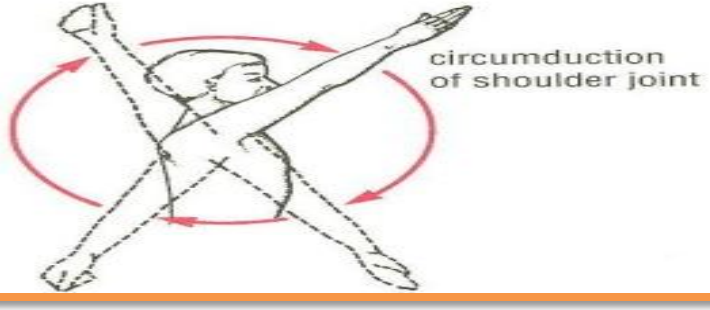
Pictures for more explanation:

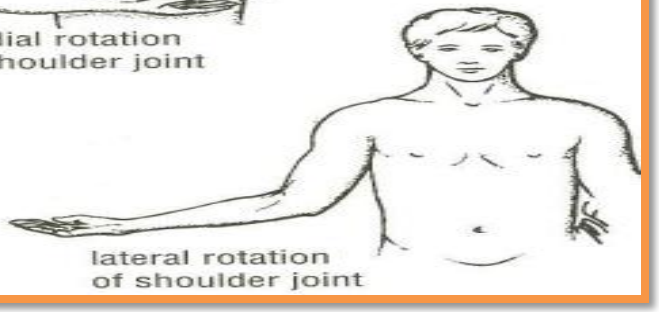












Body planes and sections:

- To look at the internal structures, the body is cut into sections along imaginary lines called PLANES

1- Frontal (coronal) Section:

Dividing the body into anterior and posterior parts.

2- Transverse (cross) Section:

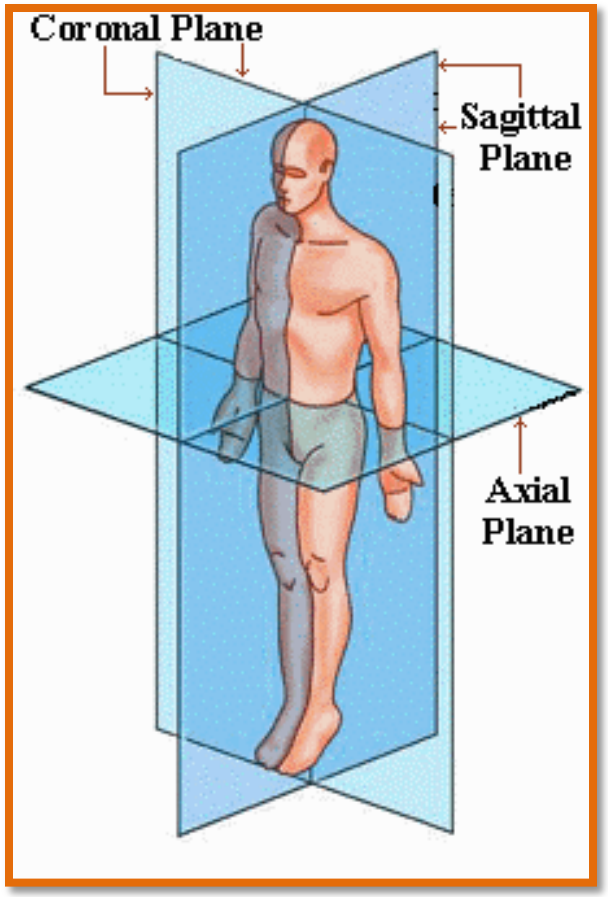
Dividing the body into superior and inferior parts

3- Sagittal Section:

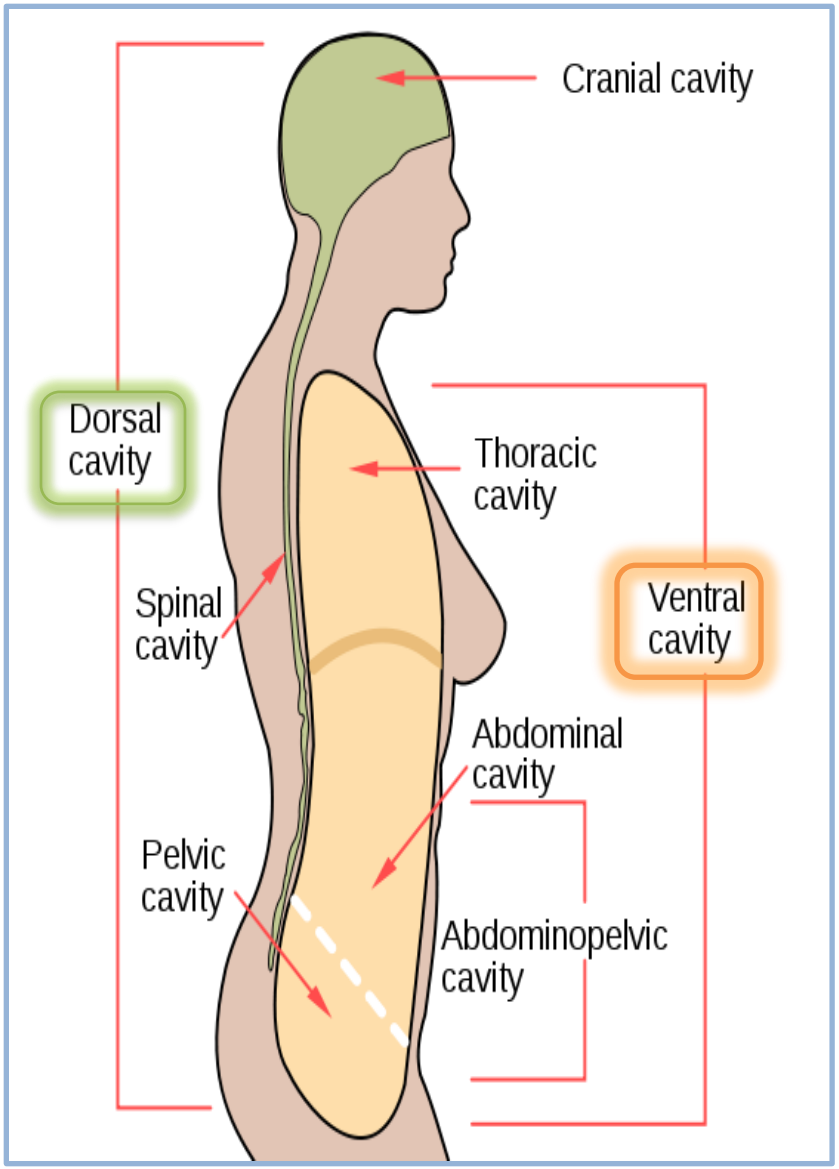
a cut made along a longitudinal plan dividing the body into right and left parts.

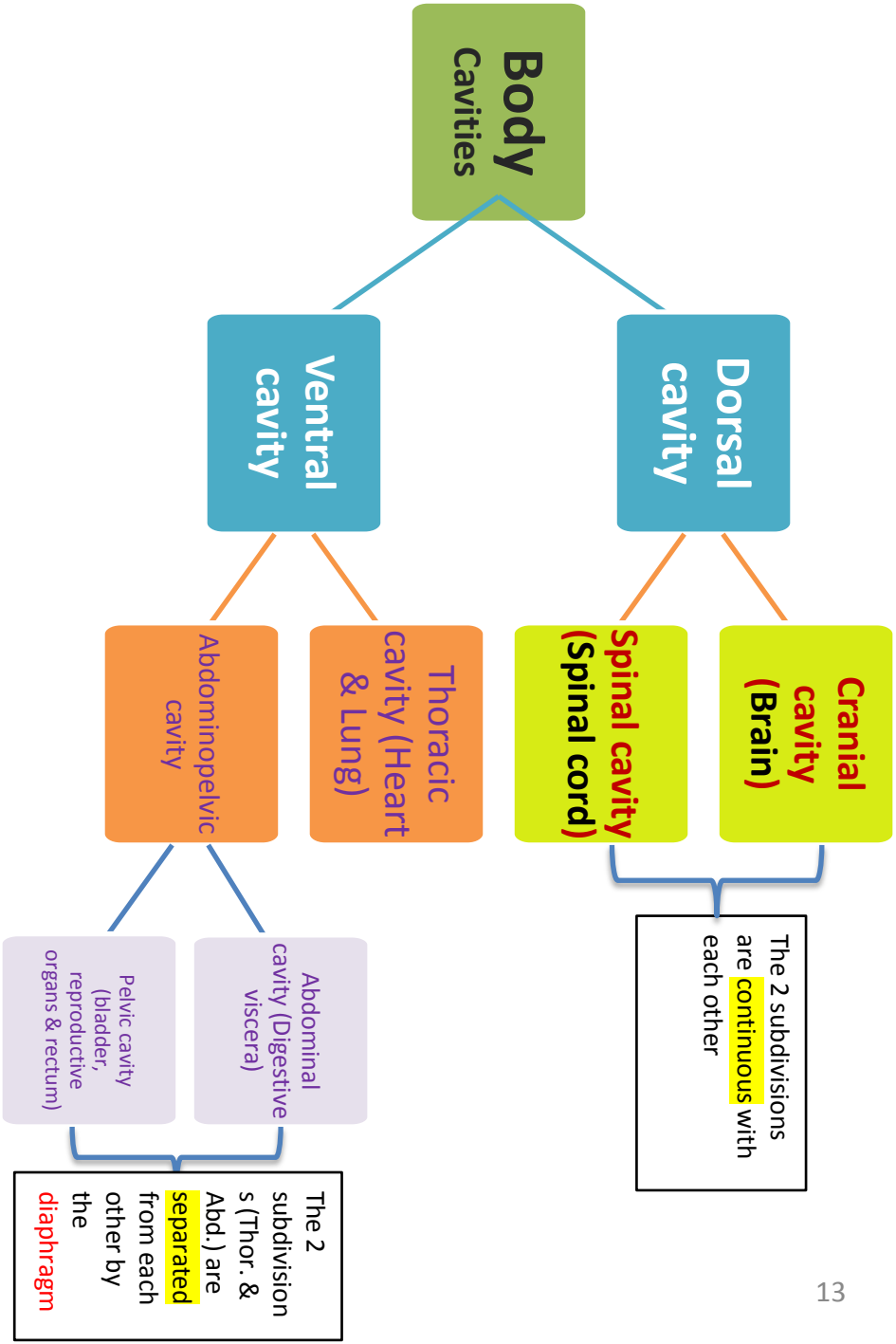
A. Mid-sagittal or median plane:

The plane passing through the midline of the body, cutting the body into the right and left equal halves.



Body cavities:

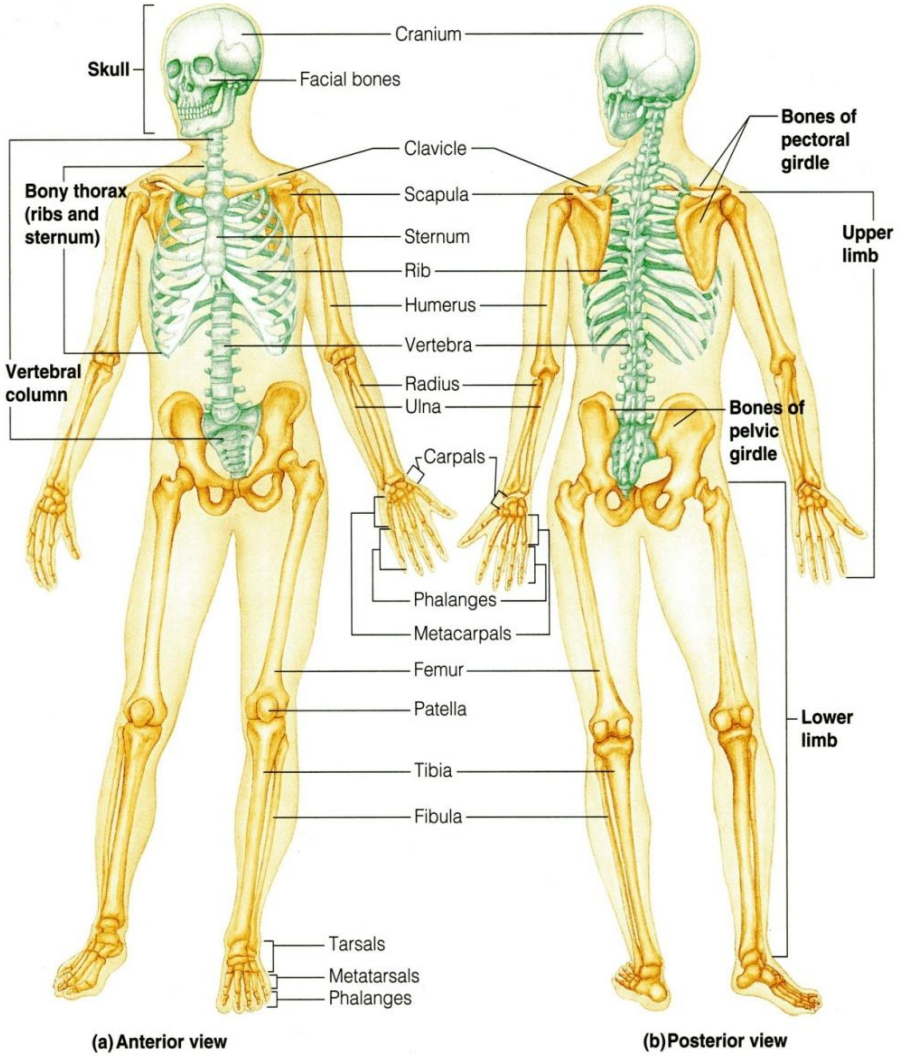




Bones

Joints

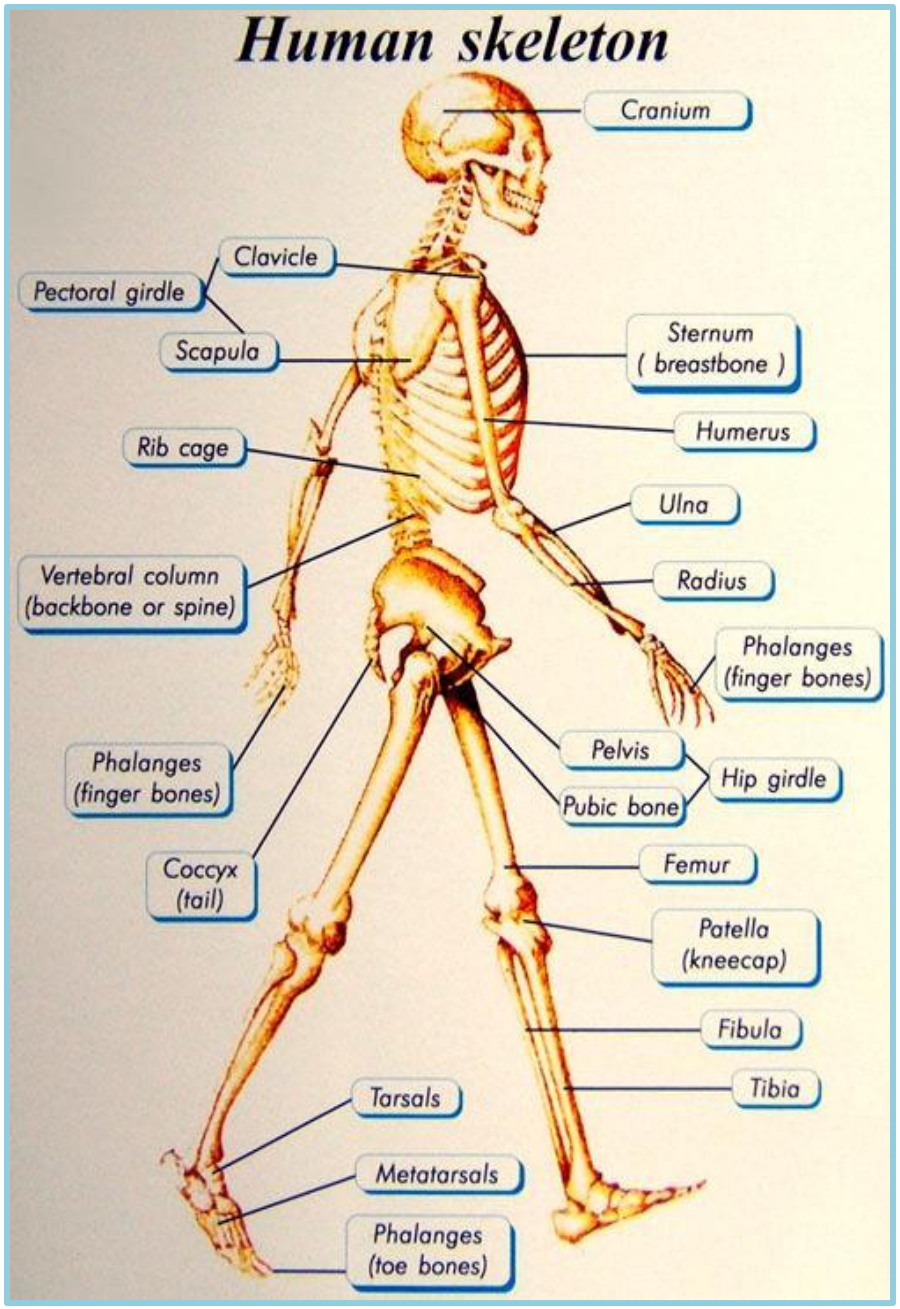
The Skeleton System



The skeleton contains 206 bones

Bone Functions:

- Support
- Protection
- Attachment of muscles
- Movement
- Storage
- RBC production



Classification:

Shape

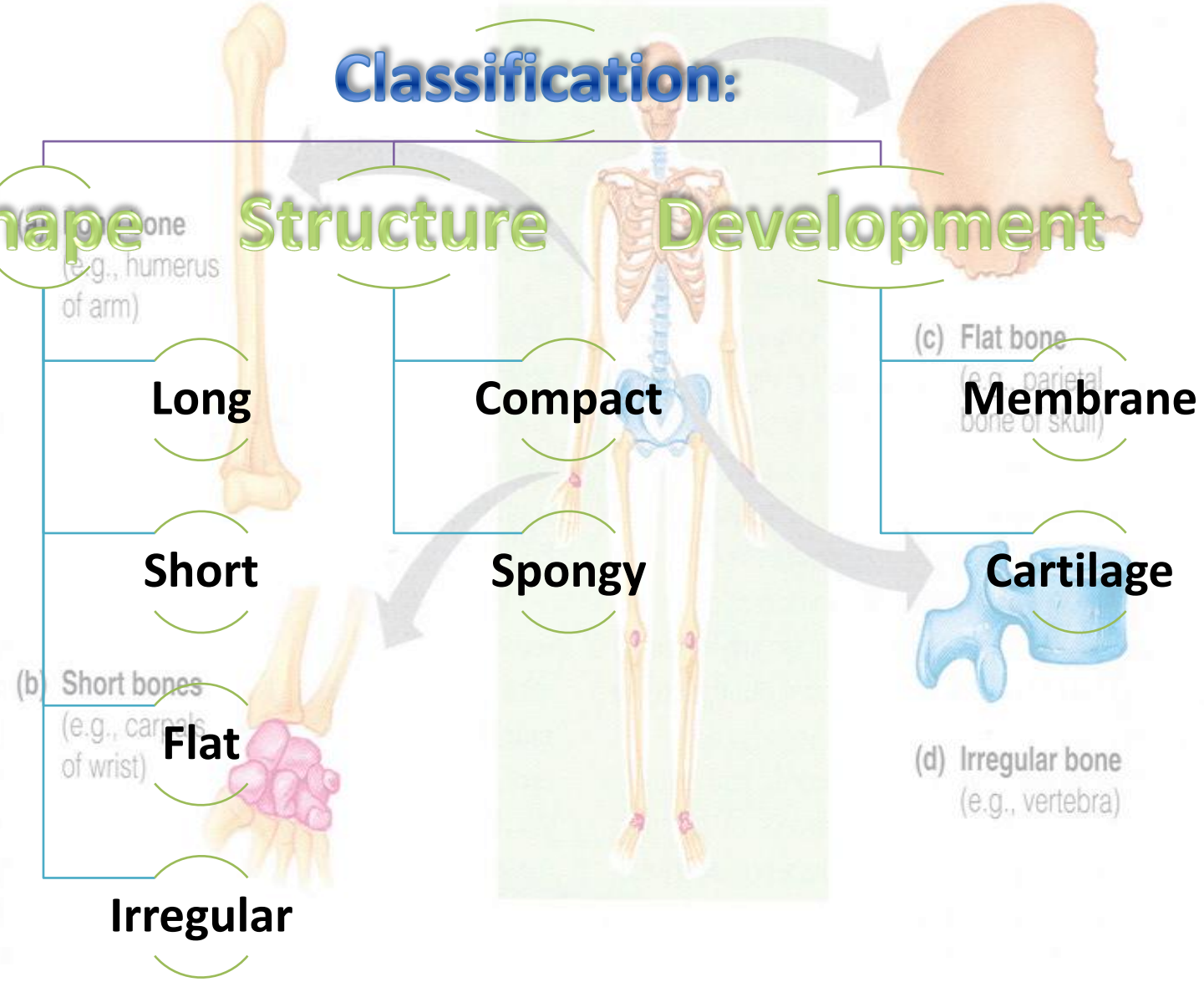
- Long
- Short
- Flat
- Irregular

Structure

- Compact
- Spongy

Development

- Membrane
- Cartilage



Gross structure of Long bone

Epiphysis:

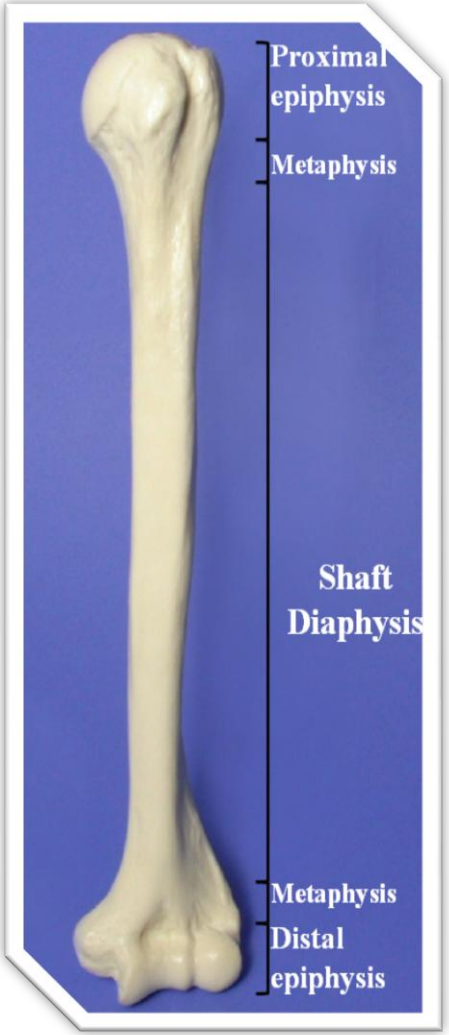
- Spongy structure
- Covered with Articular cartilage
- providing smooth movement

Diaphysis:

- Compact structure
- Covered with fibrous Periosteum
- Has a marrow cavity
- RBC & WBC production

Metaphysis:

- Contain Epiphyseal plate
- Responsible for length-wise growth of long bone
- Junction of Epiphysis and Diaohysis



ROLE OF PERIOSTEUM(أهمية غشاء العظم)

- Protects the bone.
- Gives attachment to muscles.
- Carries blood vessels and nerves to bone.
- Deposits new bone on the surface thus increases the girth of bone.

The skeleton subdivided into:

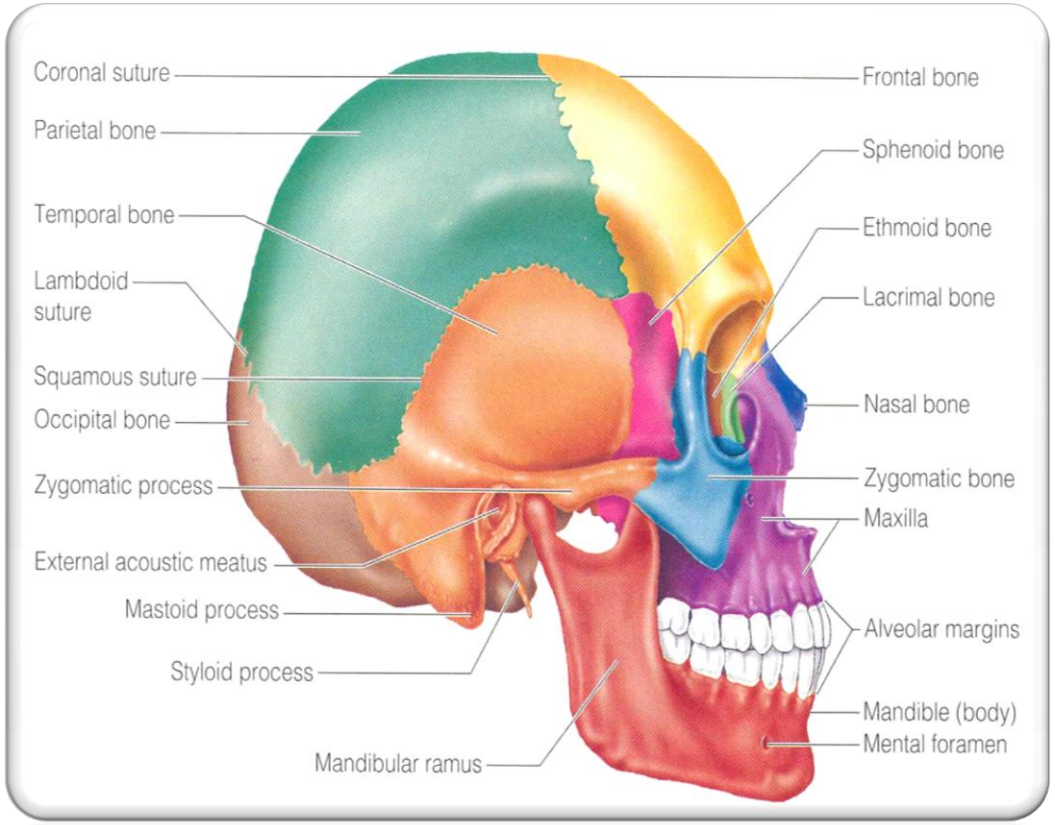
Axial skeleton Longitudinal axis	Appendicular Skeleton Limbs & girdle
Skull bones	Pectoral & Pelvic Girdle
Vertebral column	Upper limbs
Sternum	Lower limbs
Ribs	

(I.N) **Periosteum** → **Increase in bone girth (width)**

Epiphyseal plate → Increase in bone length

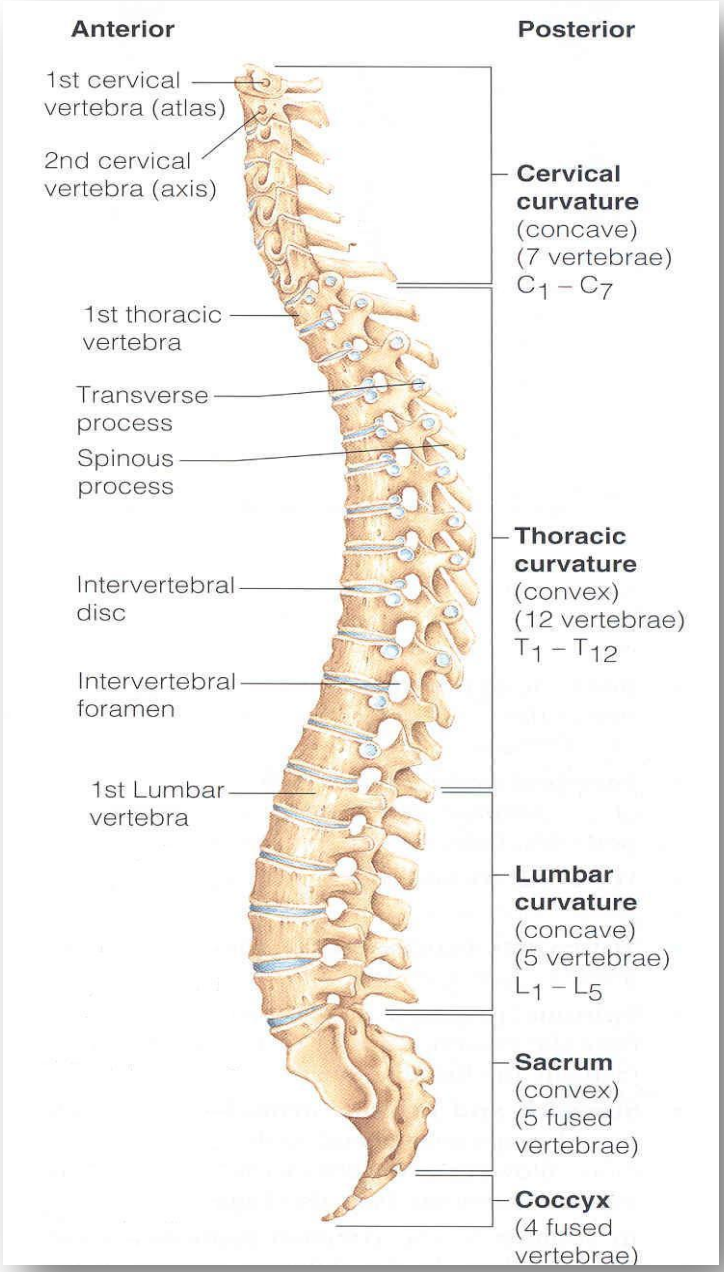
Skull bone

- Cranium
  - Frontal
  - Parietal
  - Temporal
  - Occipital
  - Sphenoid
- Facial Bones
  - Maxilla
  - Mandible
  - Zygomatic
  - Nasal



Vertebral column:-

- Support axial skeleton
- 33 irregular bone
- Contains the spinal cord
- Divided into 5 regions
  - cervical: 7 vertebrae
  - Thoracic: 12 vertebrae
  - Lumbar: 5 Vertebrae
  - Sacral: 5 v. fused to form "Sacrum"
  - Coccygeal: 4 v. fused to form "coccyx"

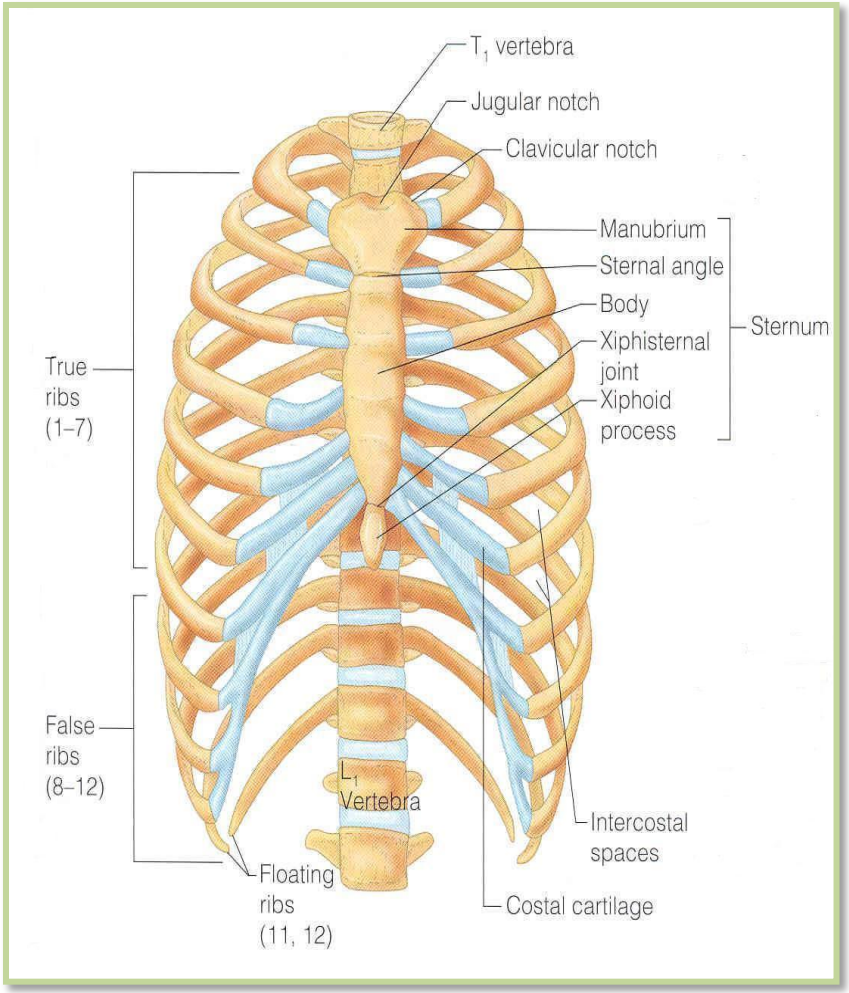


Sternum

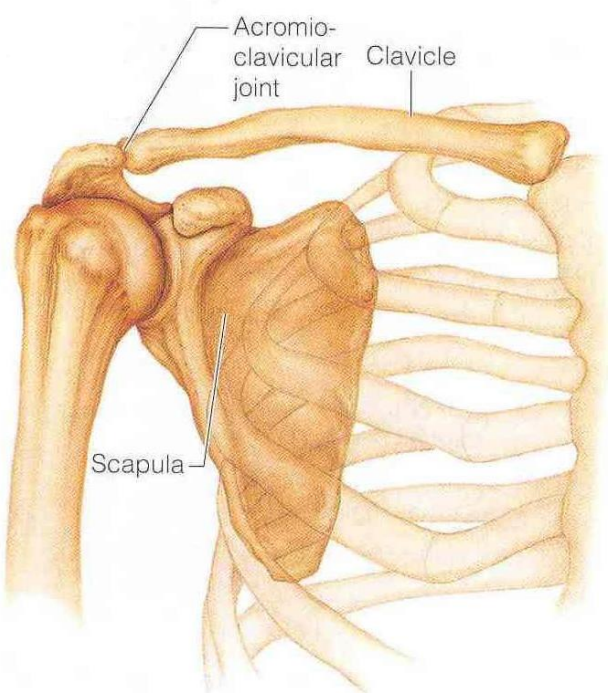
- Flat bone
- Has 3 parts:
  - Manubrium
  - Body
  - Xiphoid

Ribs

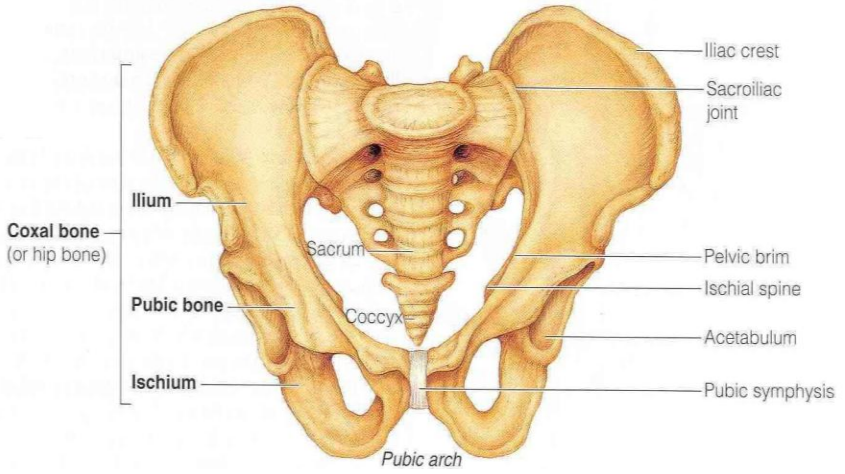
- 12 ribs
- Articulate with thoracic spine
- Only the upper 7 articulate with sternum



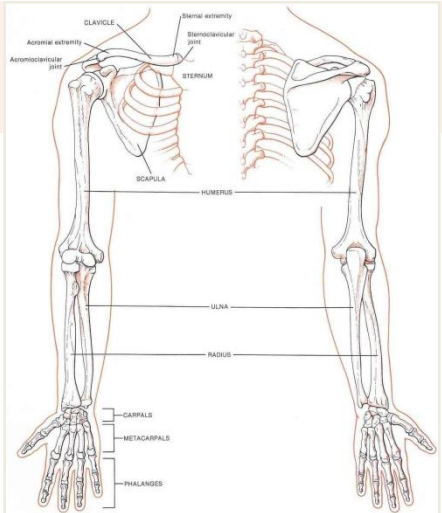
Bones of the Girdles:

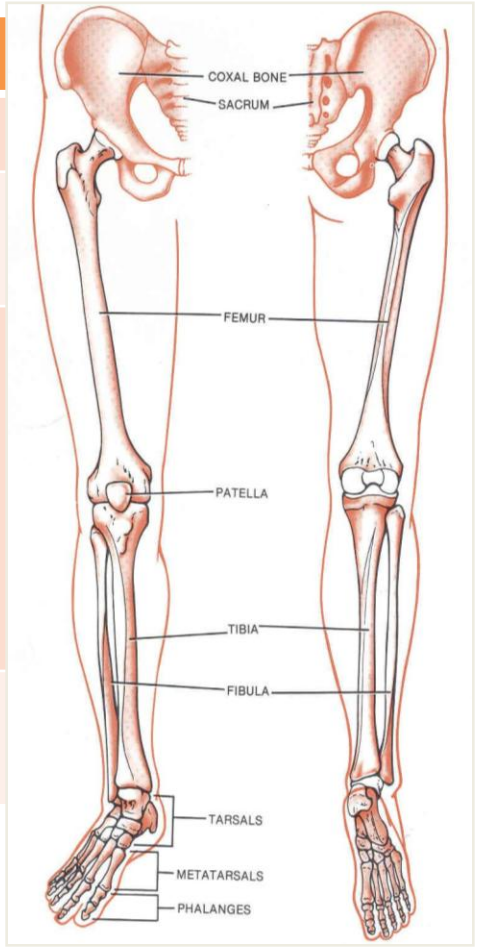


Pectoral "chest" girdle	Pelvic girdle
Connecting the upper limbs to the axial	Connecting the lower limbs to the axial
• Scapula • Clavicle	• 2 hip bones



Bones of Upper & Lower limbs:

Upper limbs	Lower limbs
Bone of arm: Humerus	Bone of thigh: Femur
Forearm: Radius (lateral) & Ulna (Medial)	Leg: Fibula (lateral) & Tibia (medial)
Bones of hand: • 8 Carpal bones • 5 Metacarpal bones • 14 phalanges → 2 for thumb & 3 for each of medial 4 fingers	Bones of foot: • 7 tarsal bones • 5 metatarsal bones • 14 phalanges → 2 for big toe & 3 for each of lateral 4 toes
	Knee: Patella



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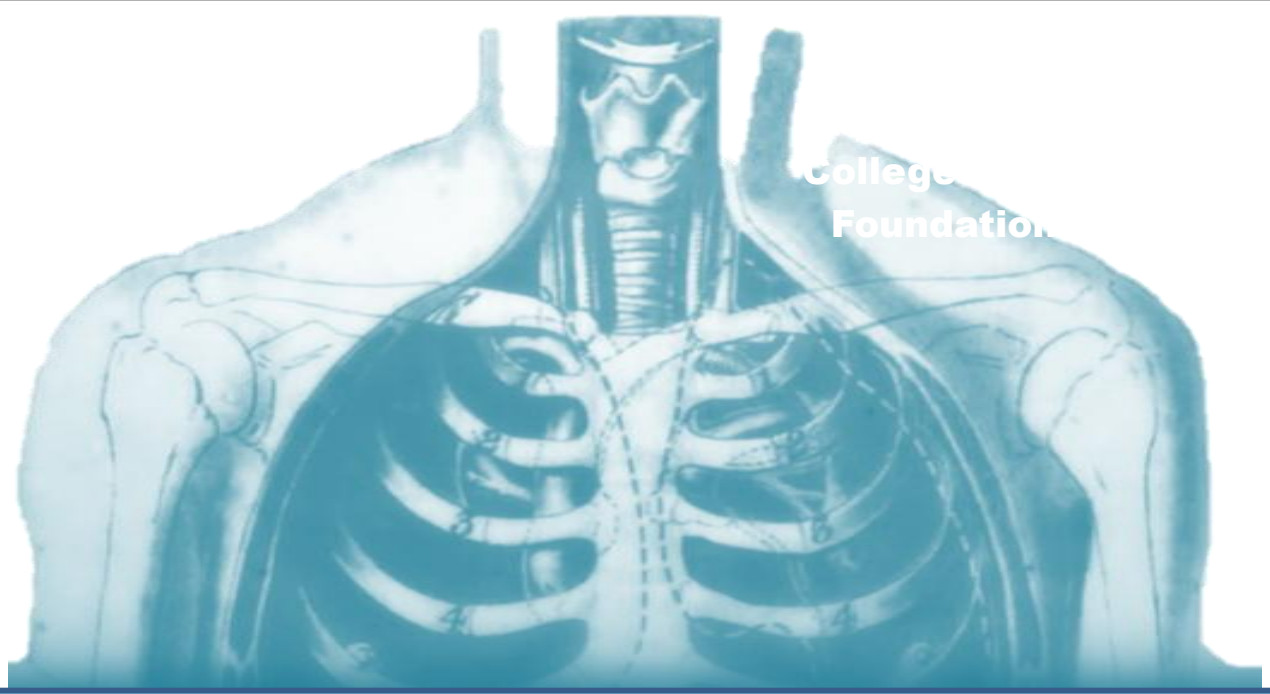

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Good luck

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