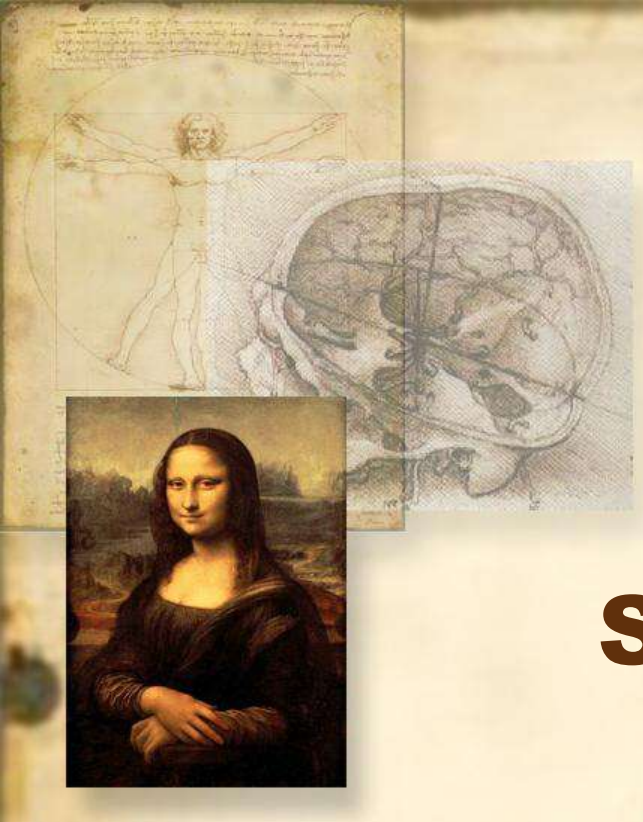
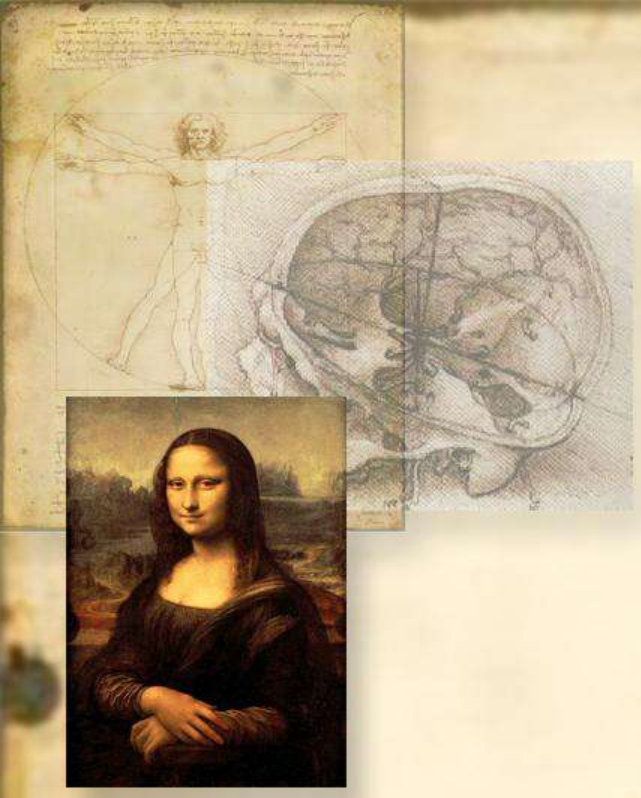


Skeletal System

Chapter 3

The Skeletal System

Major Structures	Related Combining Forms or Medical Term	Primary Functions
Bones		
Bone Marrow		
Cartilage		
Joints		
Ligaments		
Synovial		
Membrane		



Terms

Ankylosis
Arthralgia
Arthrocentesis
Arthrography
Arthroplasty
Arthroscopy
Brachial
Chondrectomy
Chondromalacia
Hematopoiesis
Intercostal
Osteoarthritis
Osteoblast
Osteoclast
Osteoma
Osteomalacia
Osteomyelitis
Osteoporosis
Spondylosis
Ambidextrous

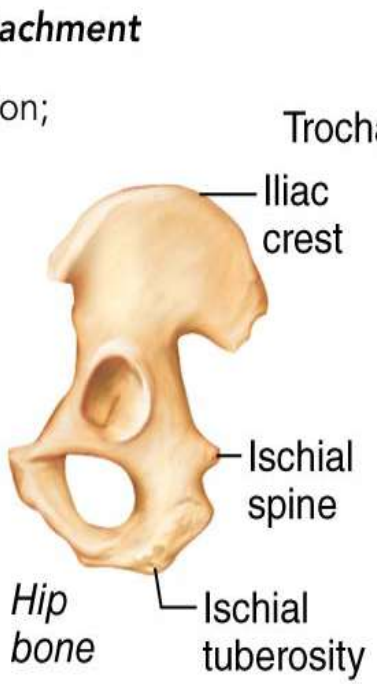
Abbreviations:

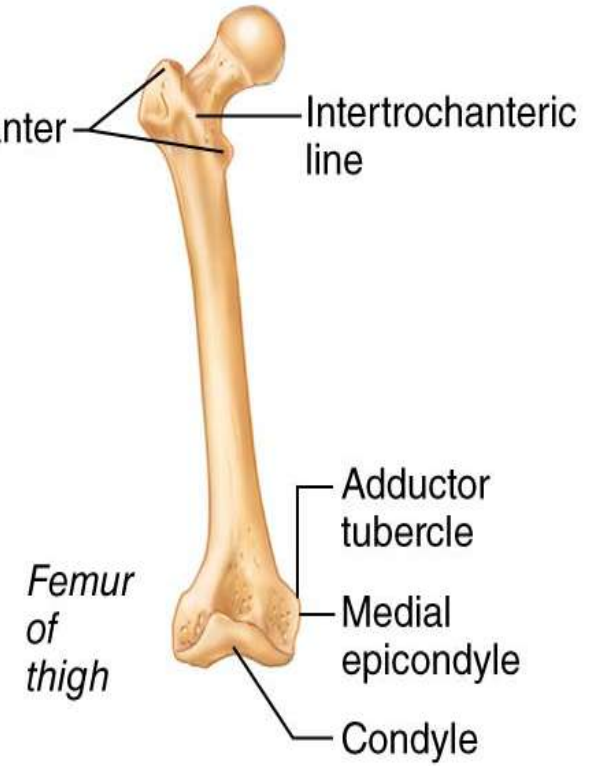
amb
CXR
Fx
Tx

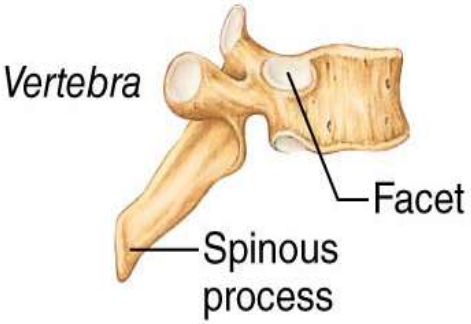
** define all terms and abbreviations in your notebook

Table 5.1 Bone Markings

Name of bone marking	Description	Illustration
Projections that are sites of muscle and ligament attachment		
Tuberosity	Large, rounded projection; may be roughened	
Crest	Narrow ridge of bone; usually prominent	
Trochanter (tro-kan'ter)	Very large, blunt, irregularly shaped process (the only examples are on the femur)	
Line	Narrow ridge of bone; less prominent than a crest	
Tubercle (too'ber-kl)	Small, rounded projection or process	
Epicondyle	Raised area on or above a condyle	
Spine	Sharp, slender, often pointed projection	
Process	Any bony prominence	







Functions of Skeletal System

** write each function on one bone. Cut them out and glue them into your notebook. Mark the bold words.

- **Supports** and gives the shape to the body
- **Protects** internal organs
- Makes **movement** possible
- **Storage** - Calcium is stored in bones and used for nerve and bone function
- **Produces** blood cells

Osteoblast
Osteoclast
Osteoma
Osteomalacia
Osteomyelitis
Osteoporosis

* Naming the bones sheet – put the top third only in your notebook and answer

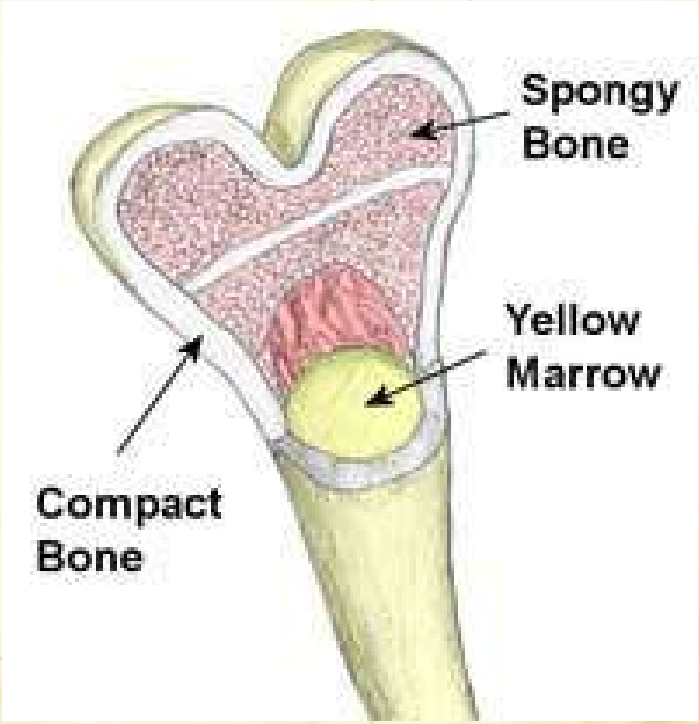
Bones

- Skeleton is made of organs called bones
- Adult has 206 bones, infant has more with 270
- Related Word Roots
  - oss/e, oss/i
  - oste/o, ost/o
- Longest bone: femur
- Smallest Bones are in the: ear

Anatomy of Bone

*Bone Anatomy page- whole page, like a foldable Write definitions inside flaps

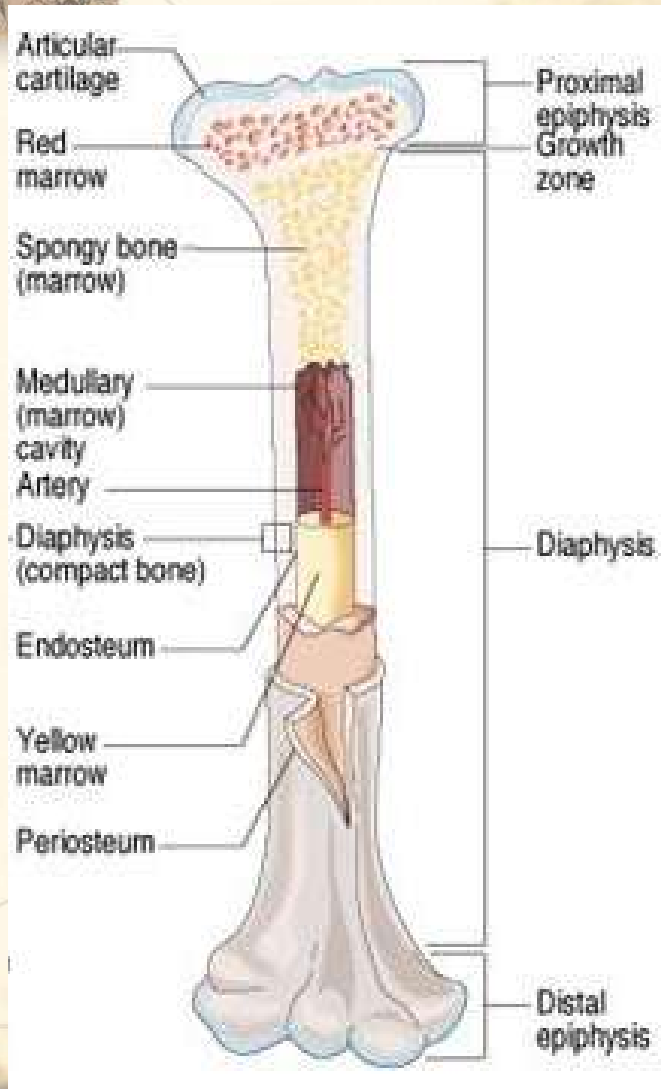
- **Periosteum** (peri-, oste, -um) – outer most covering
- **Compact Bone** – strong, hard outer layer
- **Spongy Bone** – Lighter; contains red bone marrow
- **Marrow** – see next slide

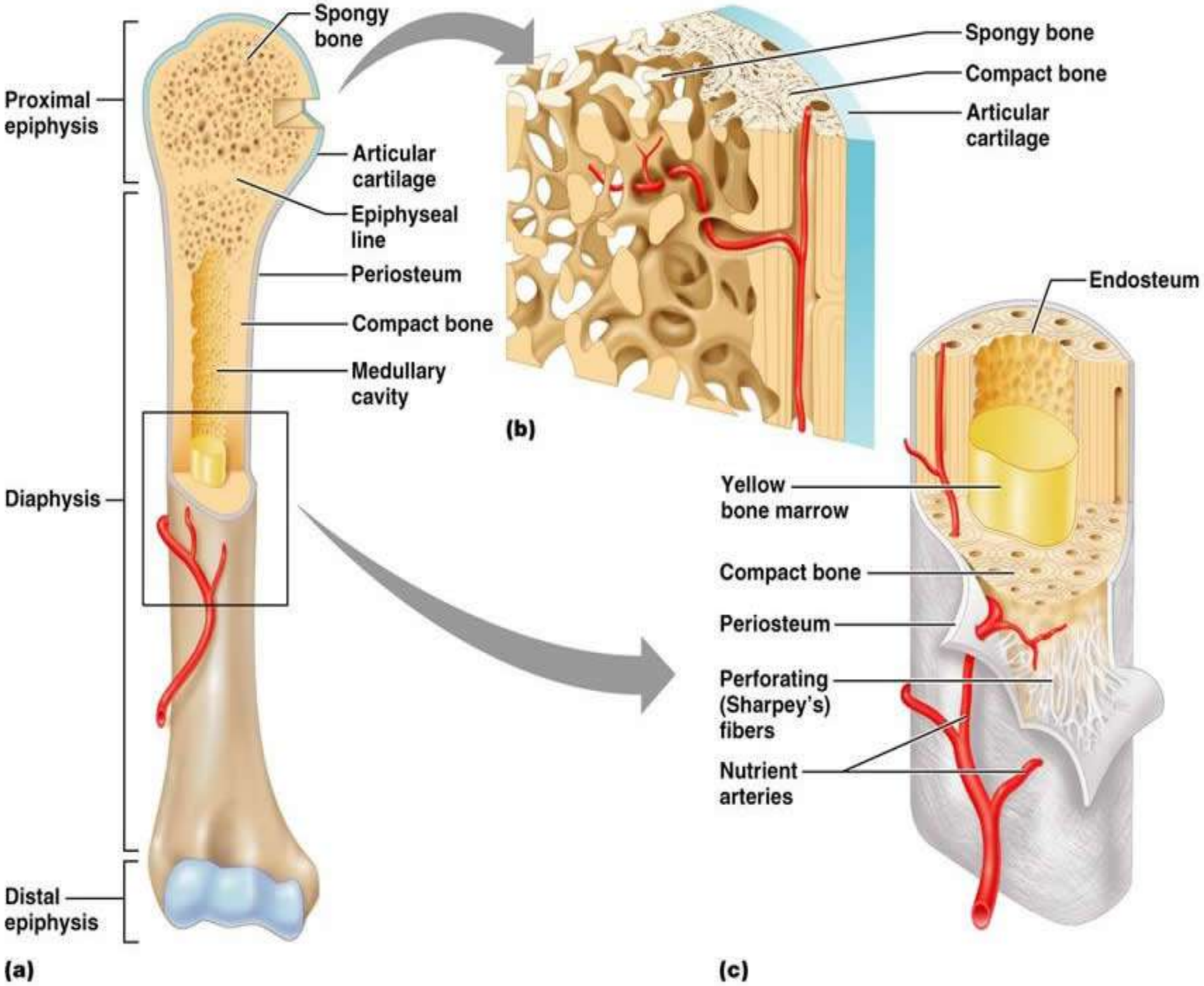


Bone Marrow

- Primary Functions
  - **Red** bone marrow manufactures some blood cells.
  - **Yellow** bone marrow stores fat.
- Related Combining Form
  - myel/o (also means spinal cord, pay attention to your context)

hematopoietic




Spongy bone
Proximal epiphysis
Articular cartilage
Epiphyseal line
Periosteum
Compact bone
Medullary cavity
Diaphysis
Distal epiphysis
(a)
Spongy bone
Compact bone
Articular cartilage
(b)
Endosteum
Yellow bone marrow
Compact bone
Periosteum
Perforating (Sharpey's) fibers
Nutrient arteries
(c)

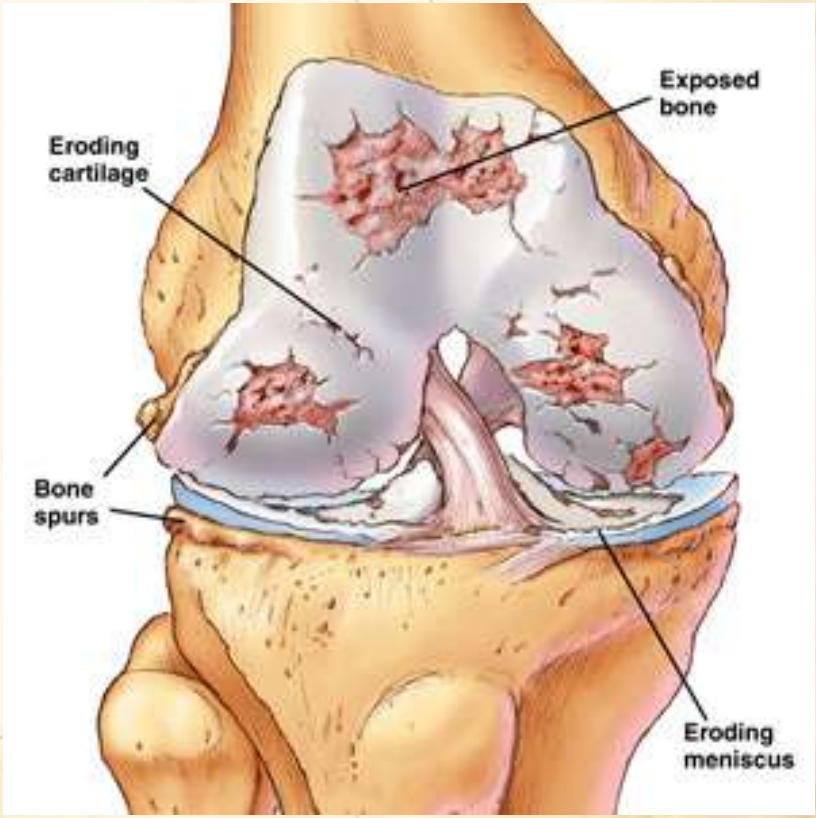
*write under last foldable (last slide)

Cartilage

- Related Combining Form
  - chondr/o
- Primary Functions
  - Creates a smooth surface for motion within the joints.
  - **Protects** the ends of the bones.

***Articular** cartilage is located on the surfaces of bones that form joints

Chondrectomy
Chondromalacia



Joints (articulations)

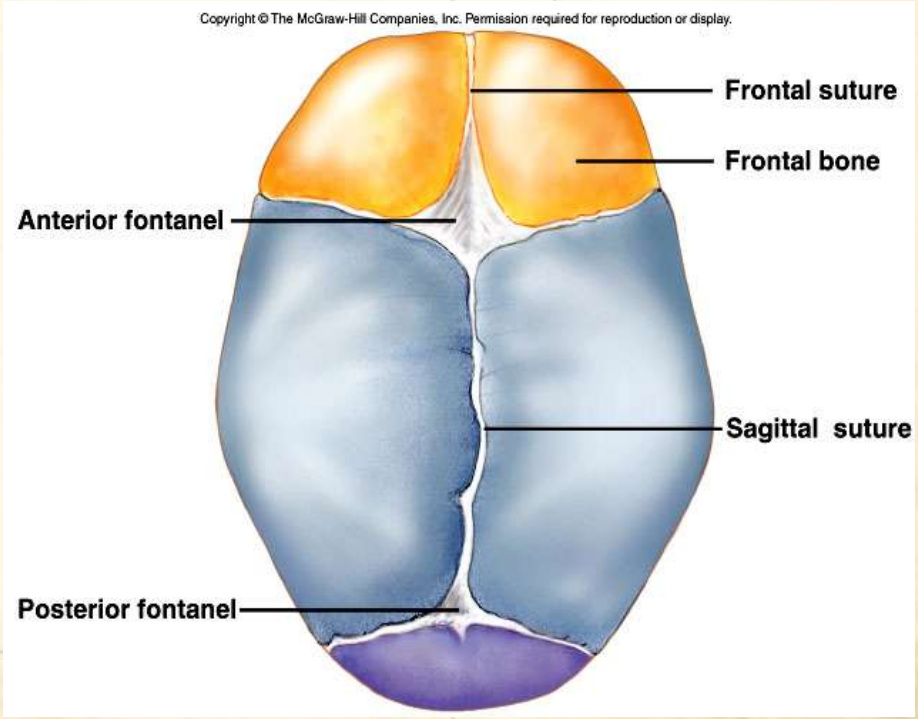
Arthralgia
Arthrocentesis
Arthritis
Arthrography
Arthroplasty
Osteoarthritis

Types of joints page – this slide goes on the inside of the first flap

- Related Combining Form
  - arthr/o
- Primary Function
  - Work with the muscles to make a variety of motions possible.
- Types of Joints
  - Sutures
  - Symphysis
  - Synovial

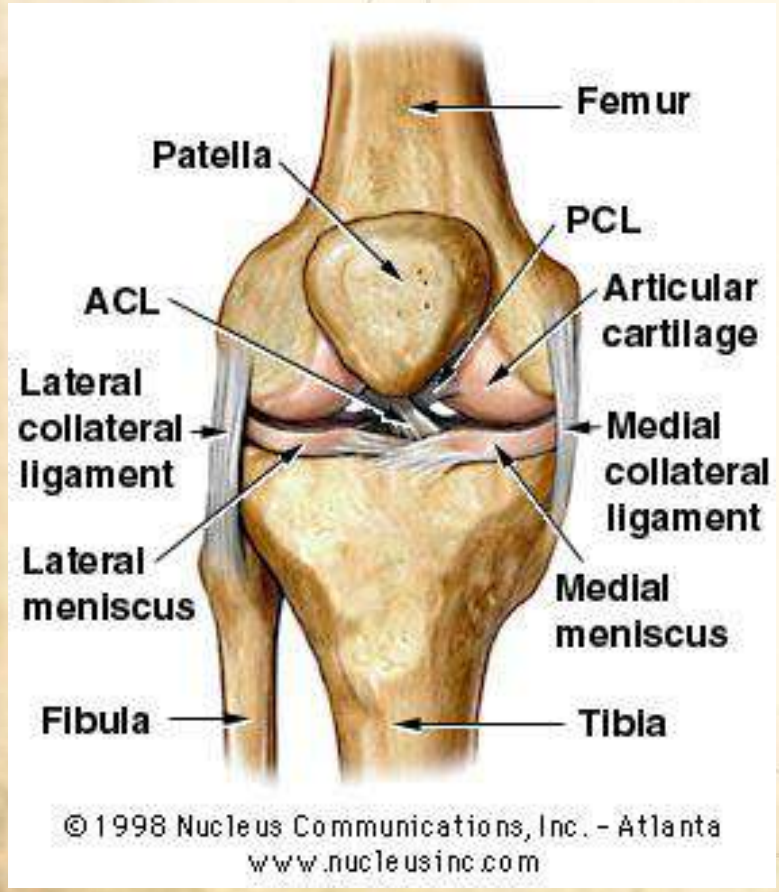
Sutures

- A **suture** is a joint where bones join together and form a joint that does not move.
- A **fontanel** is where the sutures between the frontal and parietal bones have not yet closed



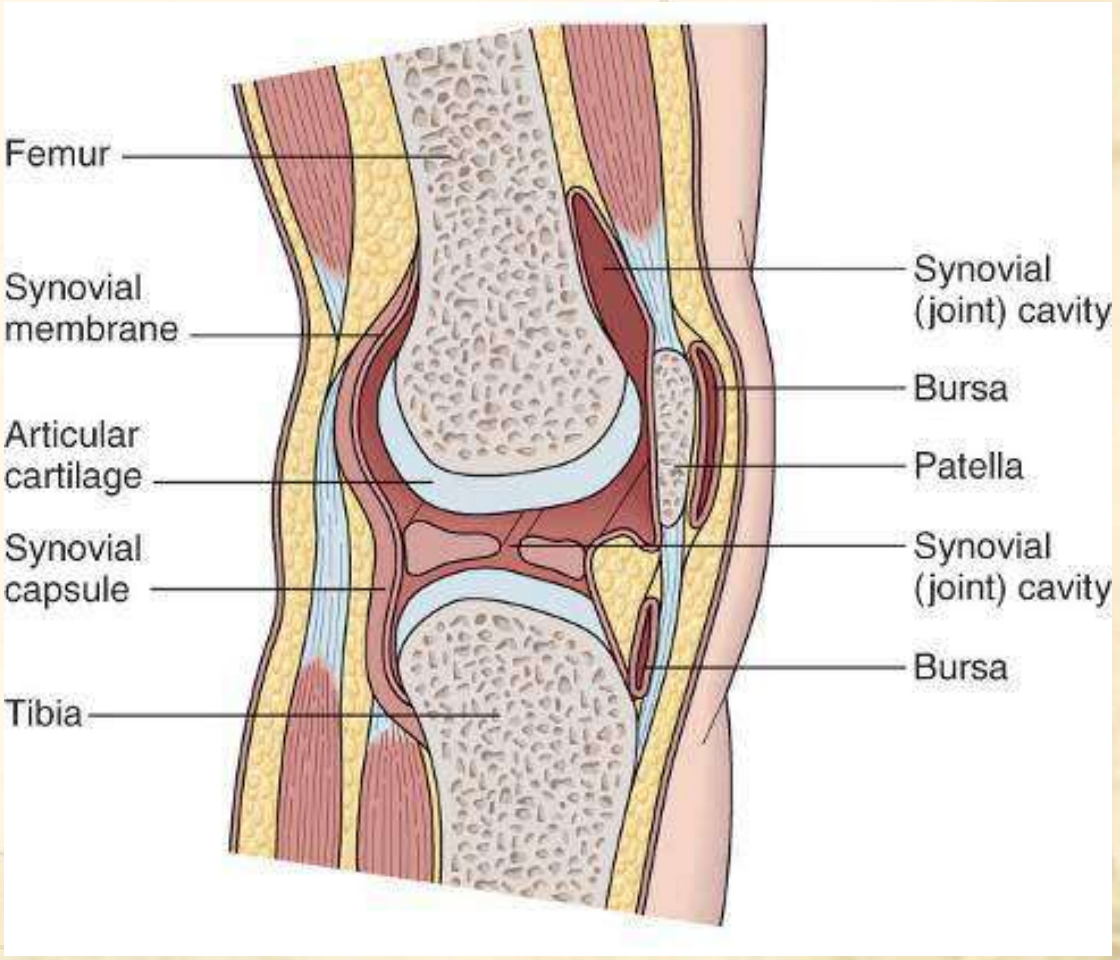
Types of joints page – this slide goes on the inside of the 2nd and 3rd flap

Structures of Synovial Joints



- **Ligaments**
  - Connect one bone to another.
- **Synovial Membrane**
  - Forms the lining of synovial joints.
  - Secretes synovial fluid
- **Synovial Fluid**
  - Lubricant that makes smooth joint movements possible.
- **Bursa**
  - Cushions areas of joints that are subject to friction during movement.

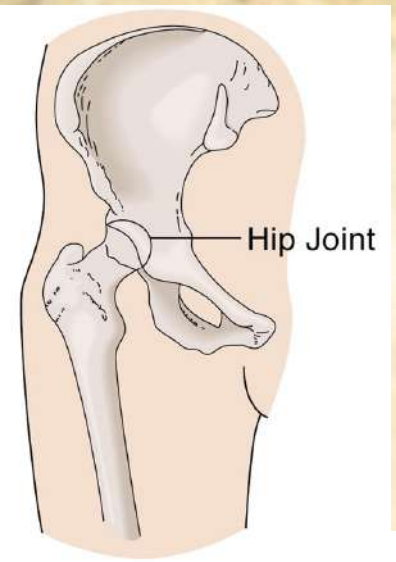
Structures of Synovial Joints

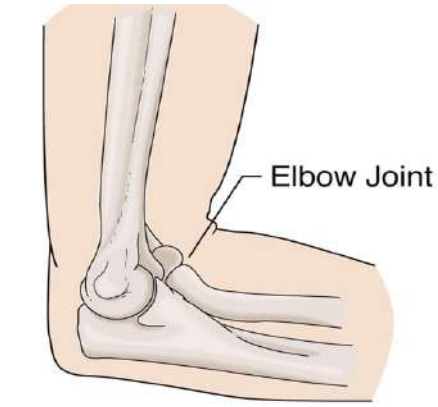


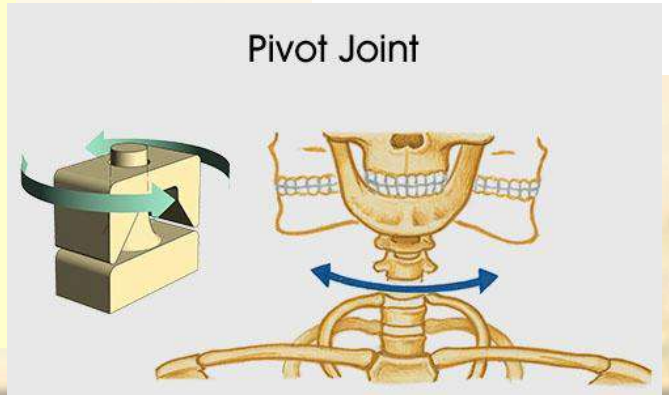
Synovial Joints

3 joints page – write definition and examples under each picture

- The **movable** joints in the body
- **Ball and socket** joints allow a wide range of movement in many directions
- **Hinge joints** allow movement primarily in one direction or plane
- **Pivot Joints** allow movement on an axis



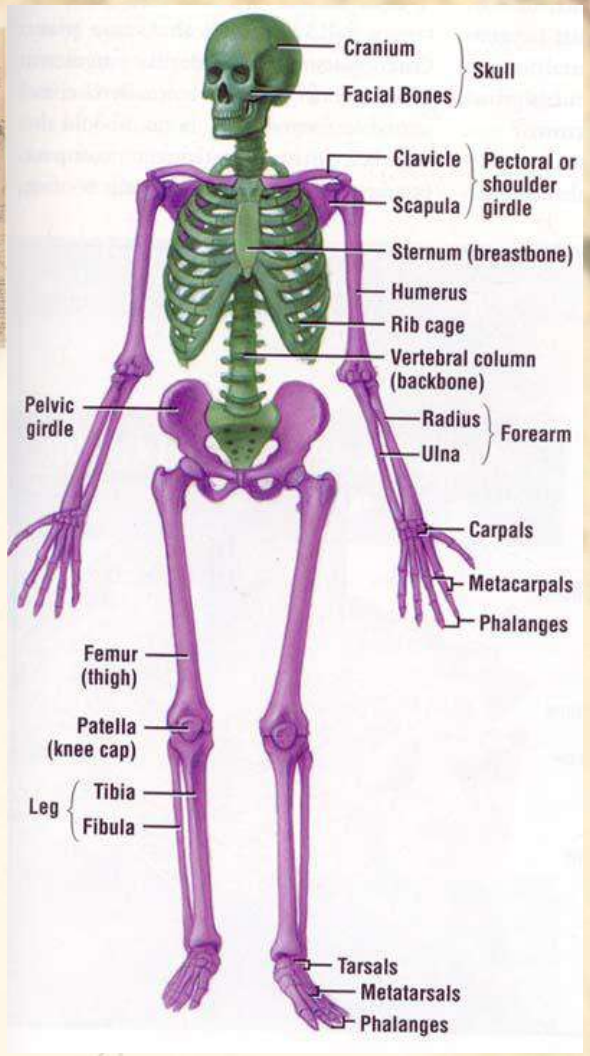




- **Trim the skeleton page and glue into notebook on it's own page. We will color, label, and add notes to this page**

The Skeleton

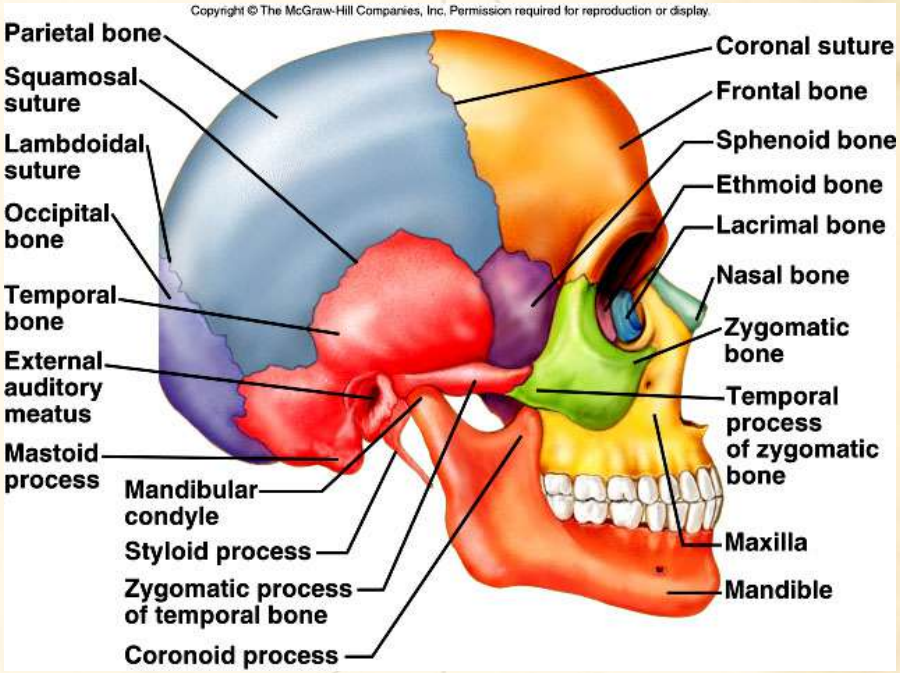
- **Axial**
  - Main trunk of body
  - Skull, spinal column, ribs, and sternum
- **Appendicular**
  - Extremities
  - Shoulder girdle, arm bones, pelvic girdle, and leg bones



**Color the axial and appendicular skeleton different colors on your example. Label each color

Skull

- Cranial and facial bones
- **Sutures**-jagged line where bones are joined.
- **Foramina**- openings in the bone
- Skull surrounds and protects the brain (8)
  - Frontal-forehead
  - Parietal (2)
  - Temporal (2)
  - Occipital-back of head
  - Sphenoid (2)



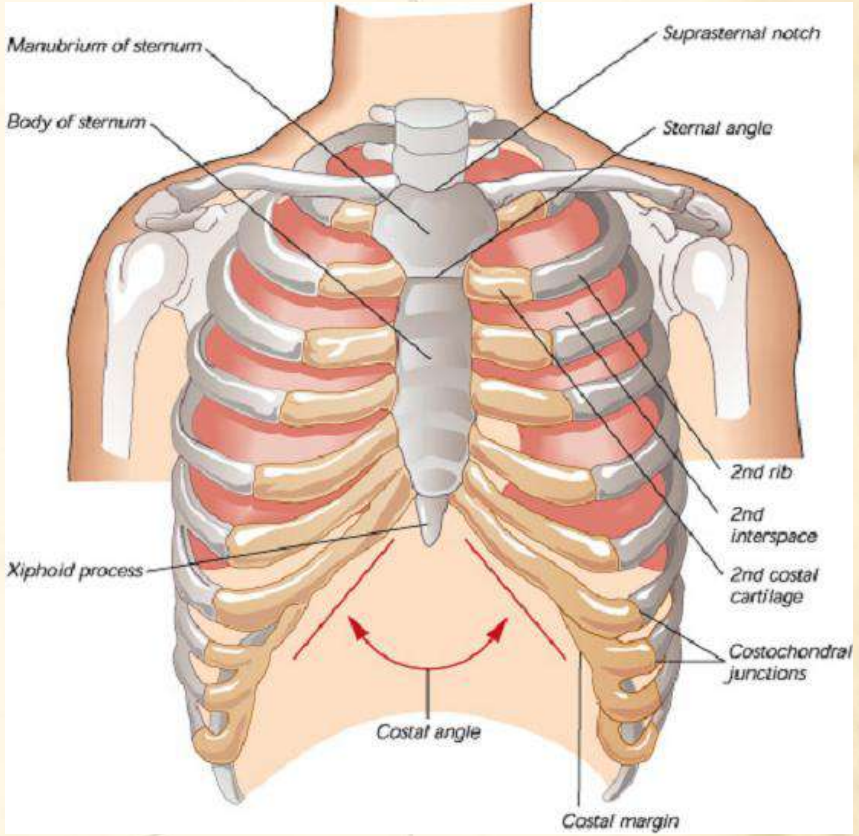
Pg 43

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)

Thoracic Cavity

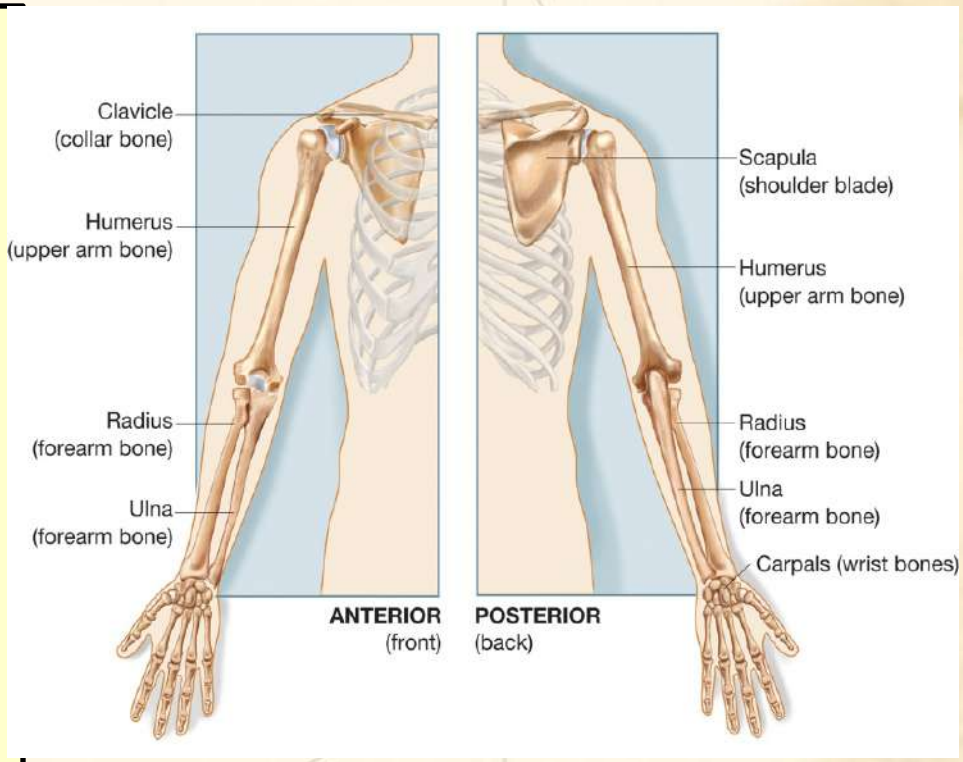
- **Ribs (costals)**
  - 12 pairs of long slender bones
  - Attach to thoracic vertebrae
  - True ribs – first 7 pairs; attach to sternum
  - False ribs – last 5 pairs, includes the floating ribs which do not attach to the anterior.
- **Sternum**
  - Breastbone
  - Consists of 3 parts-manubrium, the body and the xiphoid process.
  - Two clavicles attach (collarbones)
  - Ribs attach with cartilage



Pg. 42
(written description)

Shoulders

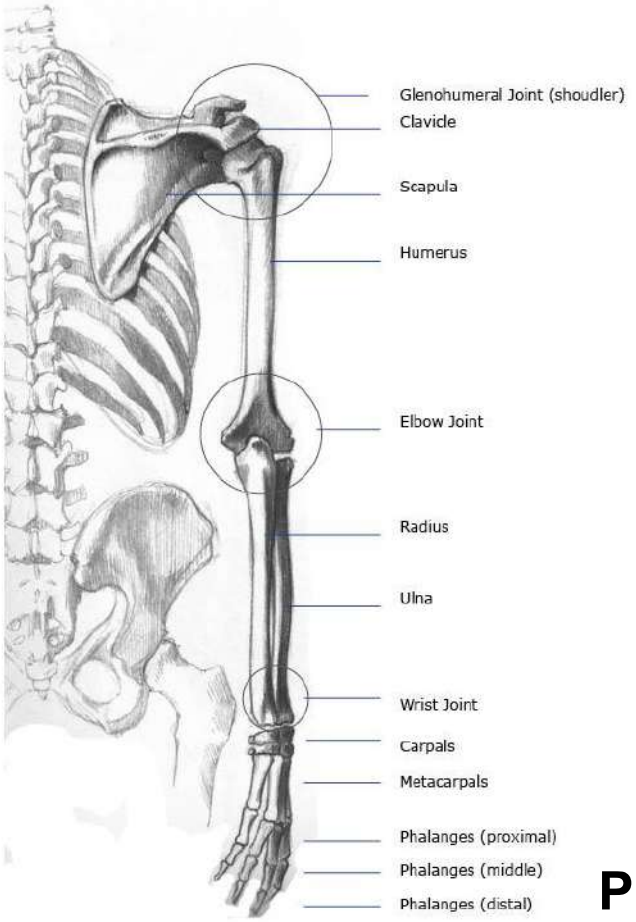
- **2 clavicles** (collarbones)
- **2 scapula** (shoulder bones)
- Upper arm bones attach to scapula



Pg 44

Arms

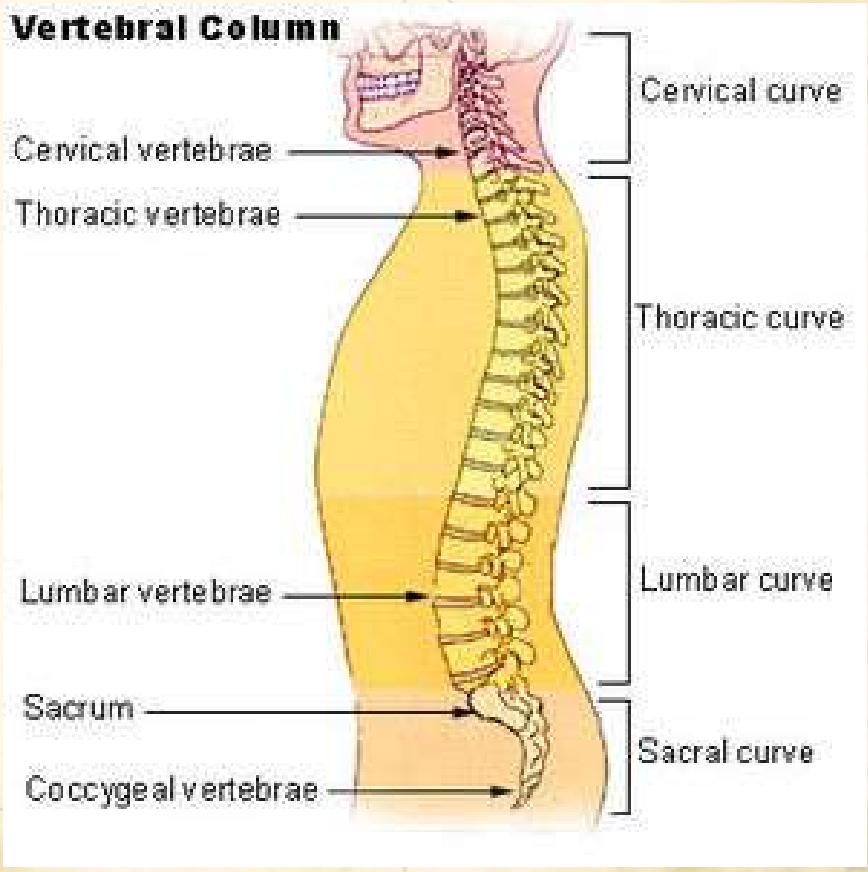
- **Humerus** – upper arm
- **Radius**- goes to thumb side
- **Ulna**- * little name, little finger
- **Carpals**-wrist
- **Metacarpals**-palm of the hand
- **Phalanges** - fingers



Pg 44

Spinal Column

- **26 bones**
- Protects the spinal cord
- Supports head and trunk
  - Cervical (7) – neck
  - Thoracic (12) – chest, attach to ribs
  - Lumbar (5) – waist
  - Sacrum (1) – back of pelvic girdle
  - Coccyx (1) – tailbone

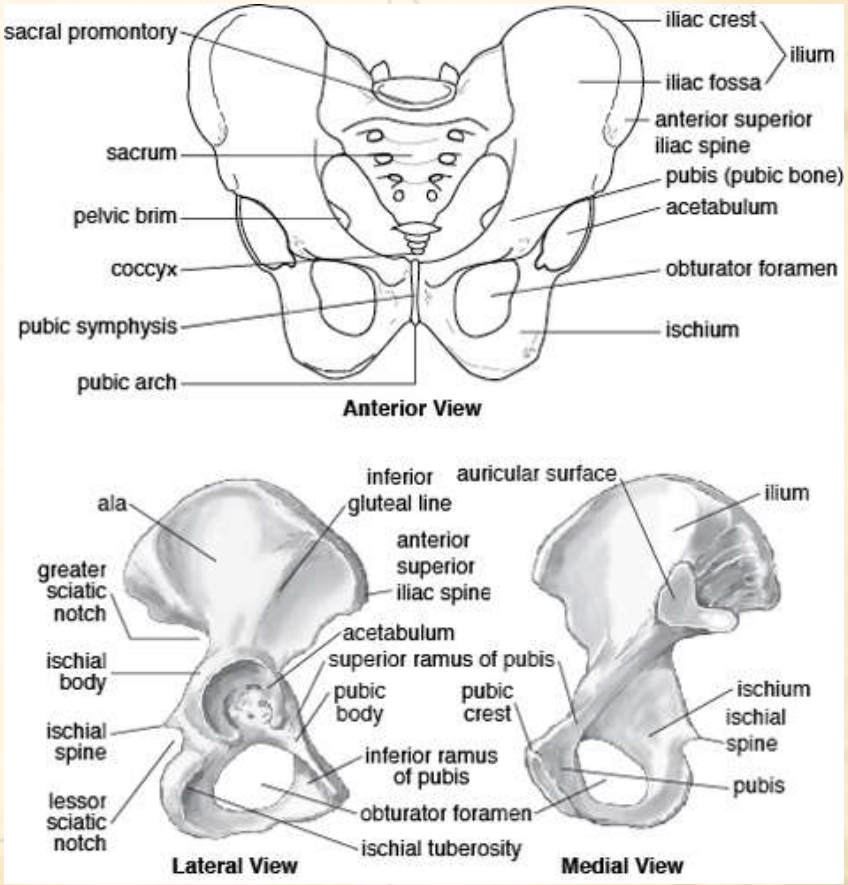


Intervertebral Disks

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

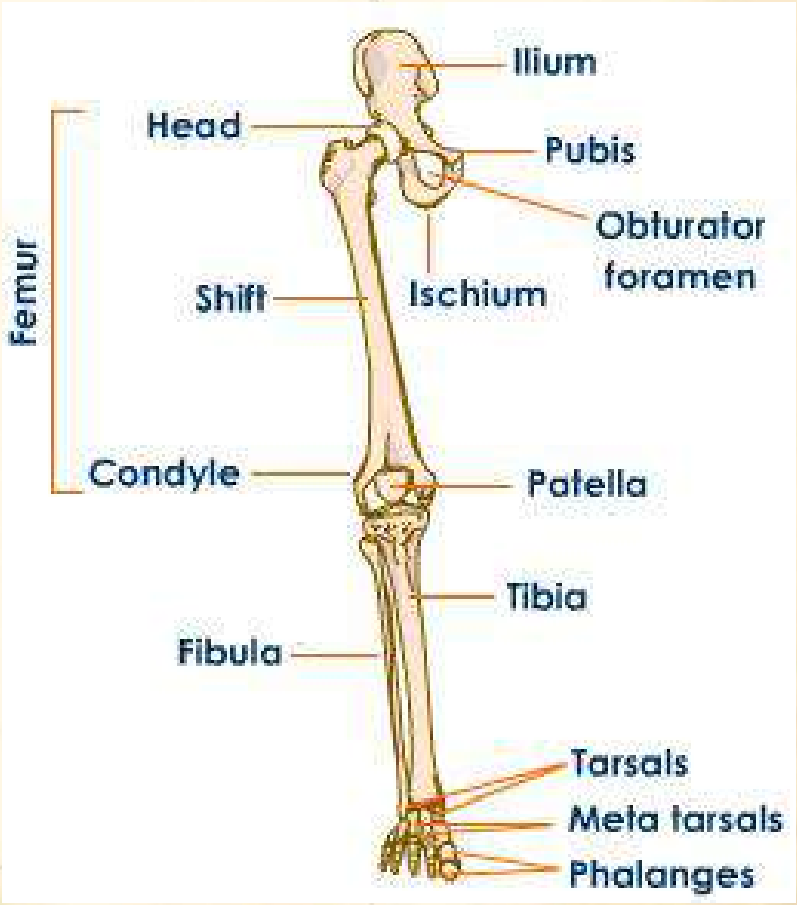
Bones of Pelvic Girdle

- Consists of 2 coxal or hip bones
- **Symphysis pubis**
- **Ilium**
- **Ischium**
- **Pubis**
- **Acetabula**- hip socket
- **Obturator foramen**



Legs

- **Femur** – upper leg
- **Patella** – knee cap
- **Tibia**- shinbone
- **Fibu**la-*lateral bone
- **Tarsals**-ankles
- **Metatarsals**-foot bones
- **Phalanges**-toes



Pg 47

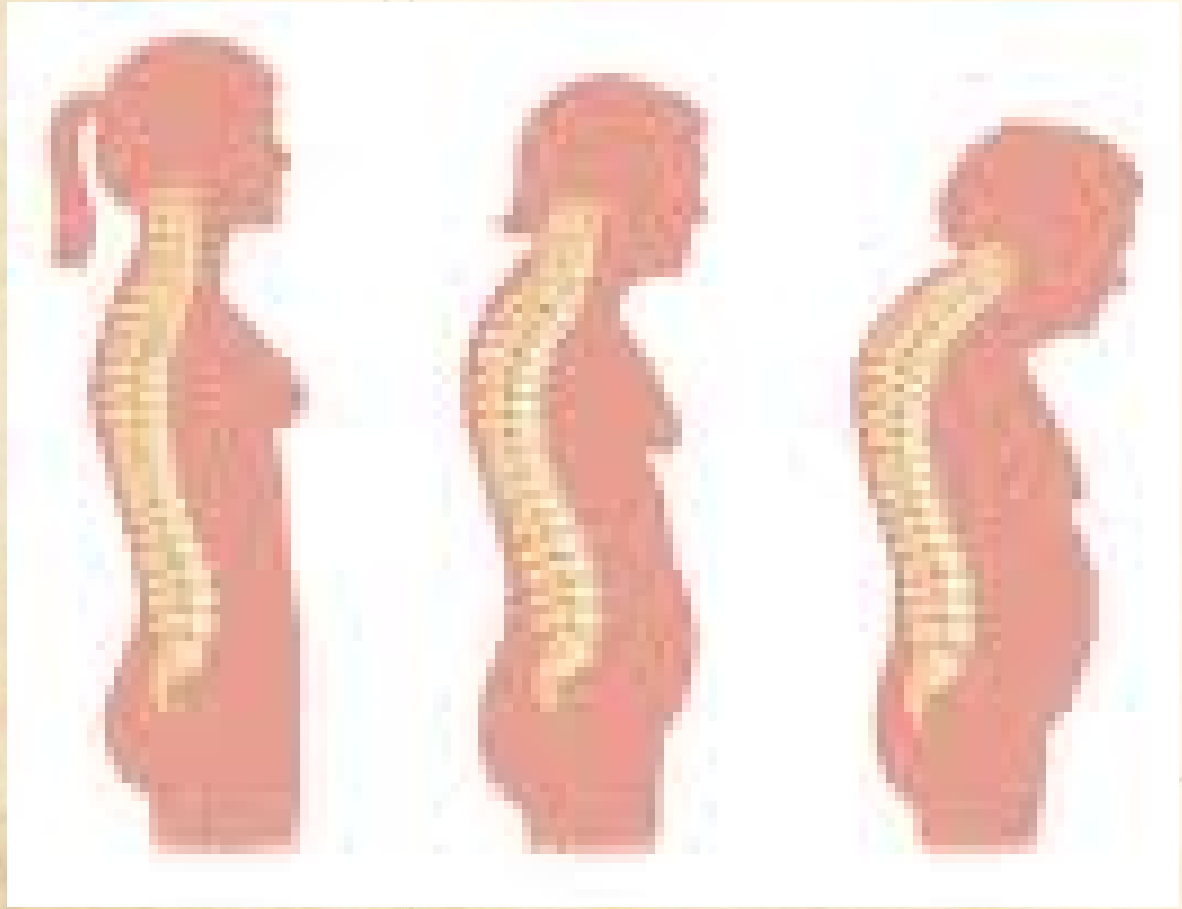
Diseases and Abnormal Conditions

- Arthritis-RA, JRA OA,
- Bursitis
- Fractures
- Dislocation
- Sprain
- Osteomyelitis-

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

Scoliosis- before/after

Kyphosis- humpback often due to osteoporosis

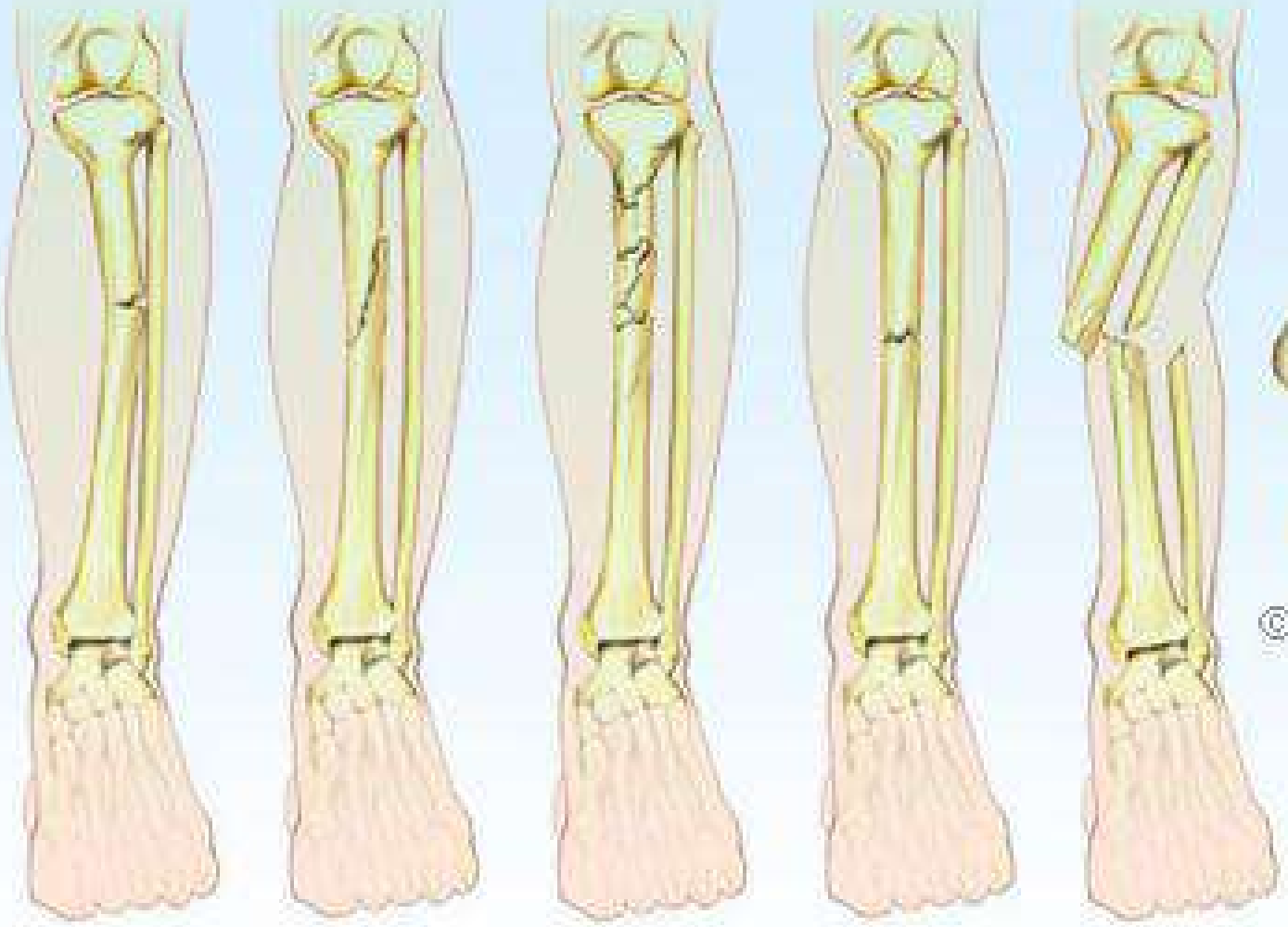


Lordosis-swayback

Fractures (Fx)

- Greenstick- incomplete, common in children
- Complete- bone is broken, but no wound to skin.
- Compound-bone breaks & skin is wounded
- Comminuted-bone crushed to pieces
- Spiral-twisting injury (sports)
- Colles fracture of wrist

Greenstick Spiral Comminuted Transverse Compound



Vertebral Compression

Typical Bone Fractures

Spiral fracture of little finger

Complete Fx

Treatment of fractures

- Traction- pull on limb externally
- Immobilization-cast,sling
- External fixation- pins placed through the skin, then removed
- ORIF- open reduction, internal fixation
- Pins or plates placed directly on the bones, not usually removed.

Medical Specialties: Pg. 47

- There are 5 medical specialists described on pg. 47-48.
- List these specialists. Define them and show combining forms (word parts)