- Depressions
    - Notches, hollows or holes
    - Allow nerves, vessels or connective tissue through

LO5- Define and give examples of bone markings and their likely function

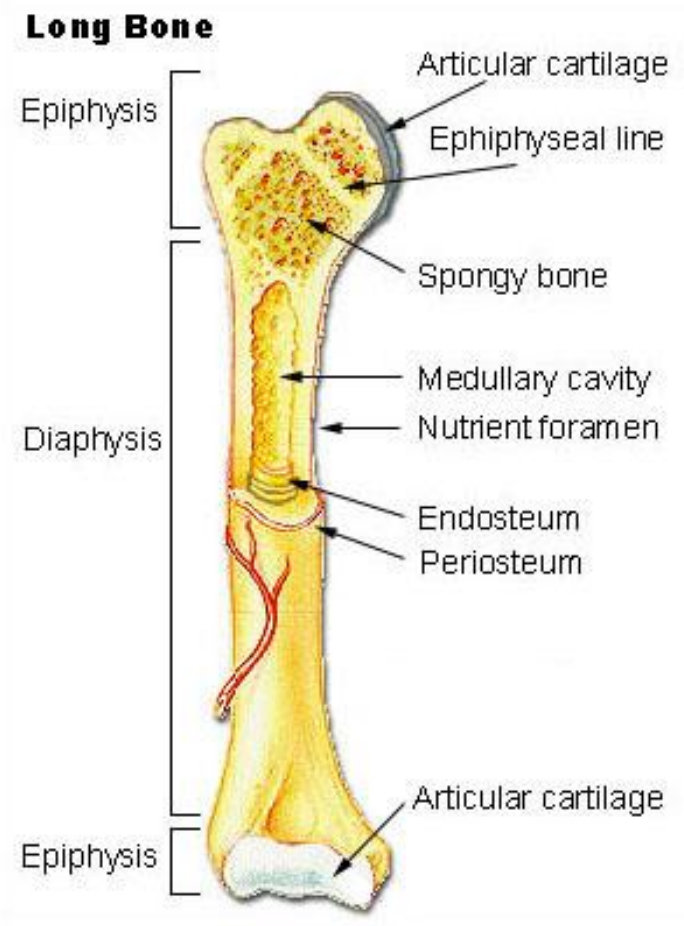
Articular surfaces – make up joints -:

- condyle – e.g. that in the knee
- Head – e.g. that of the femur
- Facet – e.g. that between ribs and vertebrae
- Malleolus – e.g. that at the distal end of tibia

- Protrusion – muscle or ligament attachment-:
    - Epicondyle (before the condyle) – e.g. on humerus
    - Crest/line – e.g. proximal end of ulna
    - Tubercle – e.g. proximal femur
    - Trochanter – e.g. proximal femur
    - Spine/process – e.g. spinous process
- Depression – allow nerves, ligaments, blood vessels etc. through –:
    - Neck – e.g. rib – attaches head of ribs to rest of rib
    - Notch – e.g. suprascapula notch
    - Foramen – e.g. foramen magnum
    - Fovea – e.g. on femur
    - Fossa/sulcus – e.g. distal posterior end of femur

LO6- Name the components of a typical long bone.

- *Diaphysis*
    - The shaft of the bone (long part)
    - Medullary cavity holds bone marrow
- *Epiphysis*
    - Ends of the bone
    - Mainly spongy/cancellous bone
    - The *epiphyseal plate* separates the diaphysis and epiphysis
- *Metaphysis aka epiphyseal plate/line*
    - Actively growing area of the bone
    - Most vascular area
    - Plate when growing, once done growing it fuses to form a line
- *Periosteum*
    - Dense irregular connective tissue
    - Tough outer membrane of the bone
- *Endosteum*
    - Lines the medullary cavity i.e. the internal surface of the bone



LO7- Define endochondral and intramembranous ossification and give examples of where these two processes take place. Describe the pattern of growth of a long bone.

- Bone cells;
  - OSTEOBLASTS: bone regeneration
  - OSTEOGENIC: stem cell
  - OSTEOCYTES: maintain bone
  - OSTEOCLASTS: break down bone
- *Intramembranous*
  - Starts with a fibrous membrane which osteoblasts deposit bone onto in order to build bone
  - Skulls of the cranium and the clavicle are made this way
- *Endochondral ossification*
  - Hyaline cartilage forms the model of the bone, and bone is then deposited onto it to form bone
  - Primary ossification centre: diaphysis
  - Secondary ossification centre: epiphyseal plates

LO8- Review principle T1, and then briefly describe the structure and function of both compact and cancellous bone.

- *Cancellous bone*
  - Lighter, spongy, areolar
  - Trabeculae are aligned along lines of stress
  - Absorbs force and shock in the body
- *Compact bone (aka cortical bone)*
  - Made of osteons, helping to withstand torsion, lots of collagen fibres that run in opposite directions to increase strength
  - Act to transfer force throughout the body, resisting muscle pull

LO9- Name examples of long, short, flat, irregular and sesamoid bones and the typical features of each.

- *Long bones*
  - Longer than they are wide
  - Have a long diaphysis and expanded epiphyses
  - All limb bones except knee, ankle and patella bones
- *Short bones*
  - Roughly cube shaped
  - Tarsals and carpals
    - *Sesamoid bones:* bones that form in a tendon like the patella (change direction of tendon pull)
- *Flat bones*
  - Thin, flat and slightly curved
  - Sternum, skull, scapula and ribs
- *Irregular bones*
  - Complicated shape that doesn't fit the above categories
  - Hip bones and vertebrae

LO10- Describe how principles S2 and S8 apply to the development, remodelling and repair of bone. Contrast the role of osteoprogenitor cells, osteoblasts and osteoclasts in the remodelling of bone. Review principle T2 and describe the role of blood supply in the repair of bone.

- The skeleton is a living system subject to change (S2) and the internal structure of each bone is reflective of the stresses placed on it (S8)
  - Development
    - Utilises osteoblasts to create bone from hyaline cartilage. Bones form in the shape they do due to the stresses placed on them
  - Remodelling