**Long bone -**longer than they are wide with growth plates on either side ex: femur

**Short bone -**as wide as they are long and provide support with little movement ex:carpals

**Flat bone -**strong flat plates: provide protection ex: scapula

**Irregular bone -**bones that do not have a category due to non- uniform shape ex: spine

**Epiphysis -**the end part of a long bone, initially growing separately from the shaft

**Diaphysis -**the shaft or central part of a long bone

**Cartilage -**firm, whitish, flexile connective tissue

**Periosteum -**fibrous membrane of connective tissue that snugly covers all bones, but not the articular surfaces

**Compact (cortical) bone -**one of the 3 layers of bone. Dense rigid bone. supports weight of body

**Spongy( cancellous) bone -**comprises the majority of interior long bone tissue, soft sponge texture

**Medullary Cavity -**is cylinder at the center of compact bone surrounds and protects the spongy bone marrow. Where yellow bone marrow is produced

**Red bone marrow -**produces red and white blood cells and platelets. Gets color from hemoglobin and is highly vascular

**Yellow bone marrow -**produces fat, cartilage, and bone, gets it color from the carotenoids in fat droplets.

**Osteocyte -**occupies a small chamber called a lacuna. derive from osteoblasts, or bone forming cells

**Haversian Canal -**surround blood vessels and nerve cells and communicate with osteocytes in lacunae

**Canaliculi -**small channels that link together the lacunae as well as routing nutrients to osteocytes and expelling waste products

**Bony trabeculae -**forms a meshwork of intercommunicating spaces that are filled with bone marrow

**Comminuted break -**splinters and contains small bone particles, can shatter into more than two pieces. Usually caused by severe force

**Depression break -**break in the skull

**Transverse break -**broke straight across the bone

**Oblique Break -**broken at an angle across the bone

**Spiral break -**fracture caused by a force that creates an oblique fracture around and through the bone

**Compression break -**break in the back

**Greenstick break -**usually occurs in children, soft bones splinter without breaking into 2

**Open break -**an injury that not only damages bone but will break through the skin

**Closed break -**bone breakage but no break in skin

**Displacement-**bone breakage that results in misalignment

**Non-displacement-**bone breakage that does not affect the alignment of the bone

**Osteoblasts -**a cell that secretes the matrix for bone formation

**Osteoclasts -**absorbs bone tissue during growth and healing

**Uses of calcium**

1) muscle contractions and relaxations
2)transmission of nerve impulses
3)activation of enzyme reactions
4)stimulation of hormone secretions
5) build healthy bones and teeth

### Calcitonin -A polypeptide hormone especially from the thyroid gland that tends to lower the level of calcium in the blood plasma.

### Parathyroid Hormone -A hormone of the parathyroid gland that regulates the metabolism of calcium and phosphorus in the body.

### Stages of Bone Repair

* **Step 1 – Hematoma Formation** Blood vessels that are ruptured during the break swell to form a mass called a hematoma. This mass forms between the broken bones.
* **Step 2 – Fibrocartilage Callus Formation** New capillaries begin to form into the clotted blood in the damaged area. Connective tissues cells form a mass of repair tissue called a *fibrocartilage callus*. This callus contains some cartilage, some bone and collagen fibers and the combined mass closes the gap between the broken bones.
* **Step 3 – Bony Callus Formation** The fibrocartilage callus is gradually replaced by one made of spongy bone. This new mass is referred to as the *bony callus*. Osteoclasts and osteoblasts move to the area and multiply.
* **Step 4 – Bone Remodeling** Over the weeks and months to come, the callus is remodeled with the help of osteoclasts and osteoblasts. The shape of the bones will gradually return to normal and there will eventually be little evidence of the fracture.