

- List 5 functions of bones:

- Classify bones according to shape: give descriptions and examples:
long _____
short _____
flat _____
irregular _____
ectopic: sutural (Wormian) _____
ectopic: sesamoid _____
- The _____ is the shaft of a long bone.
The _____ is the end of a long bone.
The _____ is between the shaft and end. It contains cartilage that is responsible for _____ growth.
- Red bone marrow is found in the _____ and _____ in infants.
- In adults, yellow bone marrow is found in the _____ and red bone marrow is found in the _____.
- What type (texture) of bone is found in the diaphysis of adults? _____
What type (texture) of bone is found in the epiphyses of adults? _____
- _____ are immature cells that secrete osteoid bone matrix.
_____ are mature cells that maintain bone matrix.
_____ are monocyte-macrophages that break down bone.
- Concentric lamellar circular arrangements in compact bone are called _____
or _____.
These develop around blood vessels that eventually reside in the _____
which provides nutrients and removes wastes from bone tissue.
Osteocytes are found in _____.
_____ allow communication between osteocytes.
Arteries and veins feed to arterioles and venules through _____ canals that are between osteons.
- Collagen fibers are arranged in different directions. This gives bone _____
and _____.
- Bone growth and remodeling is due to stress (load) on bone. This is _____ law.

11. Body weight distribution goes from _____ bone to _____ bone.
12. Bone stores calcium. List some body functions that require calcium:

13. The _____ is the connective tissue covering outside of bone.
_____ fibers keep it attached to bone.
The _____ lines the medullary cavity.
14. In the fetus, _____ ossification forms bones from membranes.
_____ centers are aggregations of little spicules.
_____ bone forms first. (*compact or spongy*)
Name some bones formed by this process. _____
15. In the fetus, _____ ossification forms bones from a hyaline cartilage model.
_____ bone forms first. (*compact or spongy*)
16. Which type of bone formation is also responsible for longitudinal growth during childhood?
Growth continues as long as a cartilage _____ is in the metaphysis.
Once a cartilage _____ is present in the metaphysis, longitudinal bone growth has stopped. _____ growth (growth in diameter) still continues.
17. Bone _____ (forming and breaking down bone) occurs constantly.
18. _____ is a disorder that occurs after menopause due to decreased estrogen and activity. Estrogen _____ osteoclasts and _____ osteoblasts.
_____ is loss of bone matrix due to aging and decreased activity.
19. What substance found in soft drinks decreases bone matrix? _____
20. About _____% of bone is made up of organic compounds (mostly collagen).
About _____% of bone is made up of inorganic compounds (calcium, phosphate, carbonate, magnesium, potassium)
21. _____ is the hormone that decreases blood calcium level.
It causes _____ to build bone.
It also causes the kidneys to _____ excess calcium.
22. _____ hormone increases blood calcium level.
It causes _____ to break down bone.
It also causes the kidneys to _____ calcium.
23. _____ feedback maintains bone matrix. (*negative or positive*)

NAME THE DISORDER

- 24. Over activity of the parathyroid glands produces a lack of calcification resulting in extreme flexibility and inability to stand. _____
- 25. Low levels of calcitonin causes an overgrowth of bone in soft tissues resulting in inability to move. _____
- 26. Disorder seen in people in their 70s. Over production of bone matrix producing bone that is spongy and not strong. _____
- 27. Lack of vitamin D results in less calcium absorption. Bones are soft and legs bow. _____
- 28. Lack of vitamin C results in less protein fibers that help maintain bone. Bleeding gums. _____
- 29. Bone matrix doesn't form well resulting in bones that break easily. _____
- 30. Lack of longitudinal growth due to lack of growth hormone. _____
- 31. Over production of growth hormone during growing years. _____
- 32. Over production of growth hormone once epiphyseal plates close and growth has stopped. Dermal bone grows in soft tissue. _____
- 33. List and describe the steps in repair of bone after a fracture.

- 34. Describe these bone terms.

See table 6-1 for additional terms, descriptions and functions (openings, joints, muscle attach.)

ramus	foramen
trochanter	meatus
tuberosity	sinus
tubercle	fissure
condyle	squama
trochlea	cuneiform
sulcus	ptera

1. support; protection (organs); stores minerals (esp. calcium); stores lipids (yellow bone marrow); produces blood cells (red bone marrow)
2. long - longer than wide; humerus, femur
short - length and width approx. the same; wrist (carpals) and ankle (tarsals) bones
flat - 2 layers; compact bone (outer); spongy/trabecular bone (inner); skull, rib, sternum
irregular - many different shapes; vertebrae of spinal column
ectopic: sutural - small bones that form in sutures (immovable joints); in lambdoid suture of skull
ectopic: sesamoid - dermal bone that grows out of connective tissue; patella, clavicle, lower jaw (mandible)
3. diaphysis; epiphysis; metaphysis; longitudinal
4. medullary cavity; epiphyses
5. medullary cavity; epiphyses
6. compact; spongy
7. osteoblasts; osteocytes; osteoclasts
8. osteons; Haversian systems; central canal; lacunae; canaliculi; perforating
9. flexibility; strength
10. Wolff's
11. compact; trabecular
12. action potentials; blood coagulation; muscle contraction; sodium and potassium balance
13. periosteum; Sharpey's; endosteum
14. intramembranous; growth; spongy; mandible, clavicles, patella
15. endochondral; compact
16. endochondral; plate; line; appositional
17. remodeling
18. osteoporosis; inhibits; stimulates; osteopenia
19. phosphoric acid
20. 33; 67
21. calcitonin; osteoblasts; excrete
22. parathyroid; osteoclasts; reabsorb
23. negative
24. Osteitis fibrosa cystica
25. myositis ossificans
26. Paget's disease
27. rickets
28. scurvy
29. osteogenesis imperfecta
30. dwarfism (*one type; other types of dwarfism are due to other reasons, such as genetics*)
31. gigantism
32. acromegaly
33. formation of hematoma due to bleeding
formation of cartilage callus; phagocytes clean up injured area
ossification - bone formation
vascularization - restoration of blood supply and formation of more osteons
remodeling of callus

34. Bone terms

ramus	curve; forms angle	foramen	hole
trochanter	rock-like; large, rough	meatus	long passageway
tuberosity	smaller; smoother; rock-like	sinus	room; chamber in bone
tubercle	even smaller; rounded	fissure	crack; elongated
condyle	small, rounded, fits in fossa	squama	flat
trochlea	grooved; pulley-shaped	cuneiform	wedge shaped
sulcus	sunken; groove	ptera	wing shaped