Skeletal System and Muscles Study Guide

Functions of Bones
1. The skeleton makes up the framework of the body.
2. Skeleton provides shape, support for body.
3. Internal skeleton is called endoskeleton.
4. All vertebrates have an endoskeleton.

Functions of Skeletal System
5. Protect body organs from injury.
6. Provide a place for muscles to anchor to allow for movement.
7. Makes blood cells in the red marrow.
8. Store fat and minerals. Fat stored in yellow marrow, bone stores calcium and phosphorus, easily returnable to the body.

2 Parts of the Skeleton
9. Axial- made up of bones in skull, ribs, and vertebrae of the backbone.
10. Appendicular- the bones attached to the axial skeleton; arms, legs, collarbones, hip-bones, and shoulder bones.

Types of Bones
11. Long bones- arms, legs, and fingers. Hollow, light, strong. These support weight and are used for movement.
12. Short bones- feet and wrists. These support weight and allow small movements.
13. Irregular bones- vertebrae, inner ear bones. These allow for slight movements.
14. Flat bones- ribs, breastbone, and shoulder bones. These protect and support body organs.

Bone Structure
15. Bones are made of living bone cells surrounded by nonliving materials, such as calcium (strength) and phosphorus (hardness).
16. The shaft is made mostly of compact bone surrounding a cavity.
17. Compact bone is dense, helps bones withstand bangs and bumps.
18. Compact bone is full of tiny passages called Haversian canals, containing blood vessels and nerves.
19. Cavity contains yellow marrow, a tissue containing fat.
20. Bone is covered with a membrane called the periosteum, connective tissue, bone-forming cells, and nerve fibers.
21. The knob-like ends contain spongy bone. It is softer, and lighter than compact bone.
22. Spongy bone is full of holes, which contain red marrow, where blood cells are made.

Cartilage
23. Cartilage is a strong, flexible tissue that gives shape to some parts of the body.
24. Covers the ends of some bones, to keep them from grinding against one another or to absorb shock.

Ossification
25. Ossification is the process of bone formation from cartilage.
27. Cells absorb **calcium**, turning cartilage into bone.
28. Bones are held to other bones by **ligaments**. These are connective tissues that stretch.
29. Movement requires muscles, and these are held to bones by **tendons**.

**Joints**

30. A joint is where **2 or more body parts** meet.
31. **Ball-and-Socket**: allows for movement in all directions, like shoulders and hips.
32. **Hinge**: allows for back and forth movement, like knees and elbows.
33. **Pivotal**: allow for side-to-side and up-and-down movement, like your head.
34. **Gliding**: bones can slide past one another, allowing for movement in many directions, like vertebrae and wrists.

**The Muscular System**

35. Muscles are tissues that contract, or shorten.
36. Muscles make the skeleton move.
37. Muscles **work in pairs**, each pulling on a bone to cause movement.
38. **Extensors**: muscles that straighten a joint.
39. **Flexors**: muscles that bend joints.

**Types of Muscles**

40. **Skeletal muscle**: voluntary, can be moved when you want. Makes movement at joints possible. It is striped, or striated.
41. **Smooth muscle**: involuntary, controlled automatically by your brain. Covers the inside of most internal organs, such as stomach and blood vessels.
42. **Cardiac muscle**: makes up the heart. Cells branch and weave together, looks striated, acts smooth.
43. Know the names of the bones we learned in class.