

UNIT 4 - SKELETAL SYSTEM

ACTIVITY - Skeletal Tissue Worksheet

Name _____ Period _____

1. What are six principal functions of the skeletal system?

2. What other systems of the body depend on a healthy skeletal system? Why?

3. _____ is the branch of medical specialty that treats conditions of the bones and joints?

4. The skeletal system consists of two types of connective tissue. What are they?

5. What are the two types of bone? _____

6. Matching:

- | | |
|------------------------|--------------------------|
| A. Articular cartilage | EP. Epiphyseal Plate |
| E. Endosteum | O. Osteogenic periosteum |
| F. Fibrous periosteum | D. Diaphysis |

- _____ a. Thin layer of hyaline cartilage at end of long bone
_____ b. Region of a long bone where lengthwise growth takes place
_____ c. Outer layer of covering over bone - ligaments and tendons attach here
_____ d. Inner layer of covering over bone; osteoblast here permit increase in diameter
_____ e. Layer of bone cells lining the marrow cavity
_____ f. Shaft or long, main, portion of the bone

7. Describe:

- a. Compact Bone
- b. Spongy Bone

8. Describe these three kinds of bone or osseous tissue cells:
 - a. Osteoblast
 - b. Osteoblast
 - c. Osteoclasts

9. Complete these questions about bone growth.
 - a. Cartilage cells multiply on the (epiphysis / diaphysis) side of the epiphyseal plate, providing temporary new tissue. But cartilage cells then die and are replaced by bone cells on the (epiphysis / diaphysis) side of the epiphyseal plate.
 - b. Contrast the epiphyseal plate with the epiphyseal line.
 - c. Defend or dispute this statement: "Once a bone, such as your thighbone, is formed, the bone tissue is never replaced unless the bone is broken."

10. Complete these questions about skeletal changes that occur during exercise and aging.
 - a. Exercise (strengthens / weakens) bones. A healing bone that is not exercised is likely to become (stronger / weaker) during the period that it is in a cast.
 - b. The pull of muscles upon bones, as well as the tension on bones as they support body weight during exercise, causes (increased / decreased) production of the protein collagen.
 - c. The stress of exercise also stimulates (osteoblast / osteoclasts) and increases production of the hormone calcitonin which inhibits (osteoblast / osteoclasts)
 - d. The amount of calcium in bones ____ - creases with age. As a result, bones of the elderly are likely to be (stronger / weaker) than bones of younger persons. This change occurs at a younger age in (men / women).
 - e. Another component of bones that decreases with age is _____ . What is the significance of this change?

WORKSHEET - Skeletal Tissue -KEY

1. The framework of bones and cartilage that protects our organs and allows us to move is called the skeletal system. Its functions are support, protection, movement facilitation, mineral storage, storage of blood cell - producing cells, and storage of energy.
2. Essentially all do. For example, muscles need intact bones for movement to occur; bones are sites of blood formation; bones provide protection for viscera of nervous, digestive, urinary, reproduction, cardiovascular, respiratory, and endocrine systems; broken bones can injure the integument or skin.
3. Orthopedics
4. Cartilage and Bone.
5. Compact, Spongy
6. a. A b. EP c. F d. O e. E f. D
7.
 - a. Compact bone tissue contains few spaces. It forms the external layer of all bones and the bulk of the diatheses of long bones. Has osteons.
 - b. Spongy bone does not contain true osteons. It is made up of trabeculae. The spaces between the trabeculae are usually filled with red bone marrow.
8.
 - a. Osteoblasts secrete some of the organic components and mineral salts involved in bone formation. They do not have mitotic potential.
 - b. Osteocytes are the principal cells off bone tissue and have no mitotic potential. They are actually osteoblasts that become isolated within the bony intercellular substance. Osteoblasts initially form bone, and osteocytes maintain daily cellular activities of bone tissue.
 - c. Osteoclasts are very large bone cells which secrete enzymes that digest the bony material, splitting the bone minerals and enabling them to be absorbed by the surrounding fluid.
9.
 - a. epiphysis, diaphysis
 - b. The epiphyseal plate is responsible for lengthwise growth of long bones. The epiphyseal line is a remnant of the once active epiphyseal plate.
 - c. The statement is NOT true because even after bones have reached their adult shapes and sizes, old bone is perpetually destroyed and new bone tissue is formed in its place. Bone is never metabolically at rest; it is constantly remodeling and replacing itself.
10.
 - a. strengthens, weaker
 - b. increased
 - c. osteoblasts, osteoclasts
 - d. de, weaker, women
 - e. protein, bones are more brittle and vulnerable to fracture