

The levels of organization in multicellular organisms include cells, tissue, organs and organ systems. Individual cells must operate as an independent unit, as well as an interdependent part of a larger system. Tissues are groups of similar cells that perform a common or related function. An organ is composed of a group of tissues that act together to perform complex functions. An organ system is a group of organs that work closely together.

There are eleven organ systems in the human body. They include the nervous system, the integumentary system, the respiratory system, the digestive system, the excretory system, the skeletal system, the muscular system, the circulatory system, the endocrine system, the reproductive system and the lymphatic or immune system. Most organs in these systems contain all four basic types of tissue.

The four basic types of tissues are: epithelial tissue, connective tissue, nervous tissue and muscle tissue. Each type of tissue has a different structure and function.

You will examine various tissue samples under a microscope. Using your book, you will compare tissues of the human body and describe their structures and functions.

Tissues to Examine:

Epithelial

1. Simple squamous epithelium
2. Simple cuboidal epithelium
3. Simple columnar epithelium
4. Pseudostratified ciliated columnar epithelium
5. Stratified squamous epithelium
6. Loose (fibrous) connective tissue (areolar)
7. Loose connective tissue (adipose)
8. Dense connective tissue (regular)

Connective

9. Hyaline cartilage tissue
10. Bone tissue (osseous)
11. Blood (liquid tissue)

12. Skeletal muscle tissue
13. Smooth muscle tissue
14. Cardiac muscle tissue

15. Nervous tissue

Muscle

Nervous

Assignment:

- Draw and label each tissue as it appears under a microscope.
- List the power of magnification used.
- Answer the specific questions found under each type of tissue.

Epithelial Tissue:

1. Define epithelial tissue.
2. In general, where is this tissue found?
3. What is this tissue's function?
4. How is the structure of the tissue important in its function?
5. Briefly describe the five special characteristics of epithelium. Define microvilli and the basement membrane.
6. What are the five major classifications of epithelia?
7. Define endocrine glands, exocrine glands, simple glands and compound glands.
8. For each of the following epithelial tissues, describe its appearance, location and function:
 - Simple squamous epithelium

- Simple cuboidal epithelium
- Simple columnar epithelium
- Pseudostratified ciliated columnar epithelium

Connective Tissue:

9. What are the four general classes of connective tissue and their functions?
10. What are the three common characteristics of connective tissue? Briefly describe each characteristic.
11. What are the three main structural elements of connective tissue?
12. What is ground substance composed of?
13. All connective tissue except blood contain ground substance. Examine the chart on page 128 and discuss the functions of each type of connective tissue (4 categories).
14. What types of cells are found in each type of connective tissue?
15. For each of the following connective tissues, describe its appearance, location and function:
 - Loose connective tissue (areolar)
 - Areolar has two meanings. Define both meanings (see glossary).
 - Define fibroblast.
 - The loose arrangement of fibers holds water and salts for surrounding body tissues. Why is this important? (p. 132) Define edema. (p. 132)
 - Loose connective tissue (adipose)
 - Dense connective tissue
 - Hyaline cartilage tissue
 - What are the three types of cartilage? (p. 135 - 137)
 - Bone (osseous tissue)
 - Blood
 - What is the role of red blood cells?
 - What is the role of white blood cells?

Muscle Tissue:

16. For each of the following muscle tissues, describe its appearance, location and function.
 - Skeletal muscle
 - Cardiac muscle
 - Smooth muscle

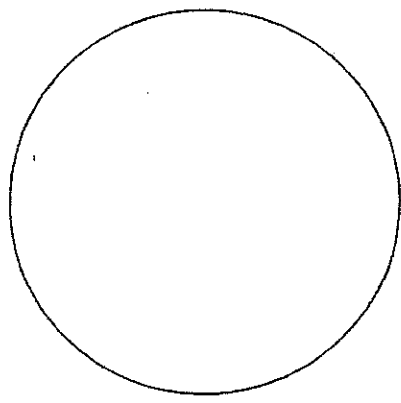
Nervous Tissue:

17. Describe the appearance, location and function of nervous tissue.
18. Describe cutaneous tissue.
19. Describe mucous membranes.
20. Briefly describe the three steps of tissue repair.
21. What are the three primary germ layers? What primary tissue types will each germ layer develop into?

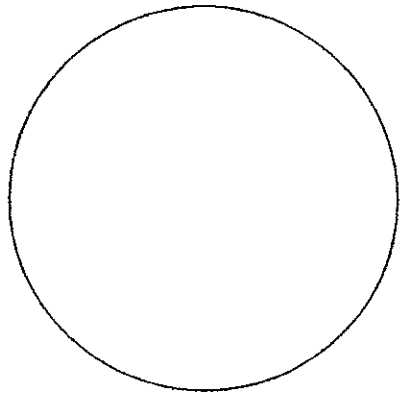
Name _____ Class _____ Date _____

Observations

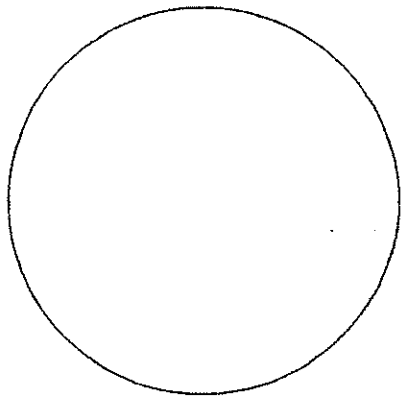
Magnification _____



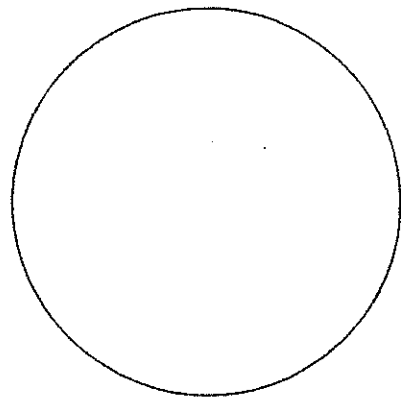
Magnification _____



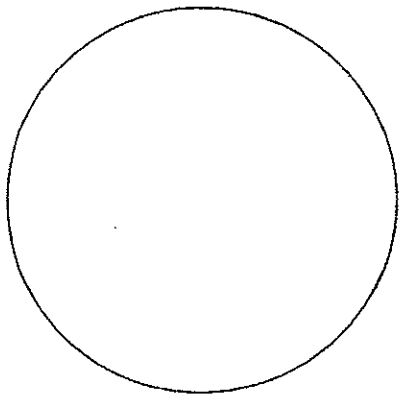
Magnification _____



Magnification _____



Magnification _____



Magnification _____

