

**SECTION 4-1 REVIEW****INTRODUCTION TO THE CELL****VOCABULARY REVIEW** Define the following terms.

1. organelle \_\_\_\_\_  
\_\_\_\_\_
2. nucleus \_\_\_\_\_  
\_\_\_\_\_
3. eukaryote \_\_\_\_\_  
\_\_\_\_\_
4. prokaryote \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

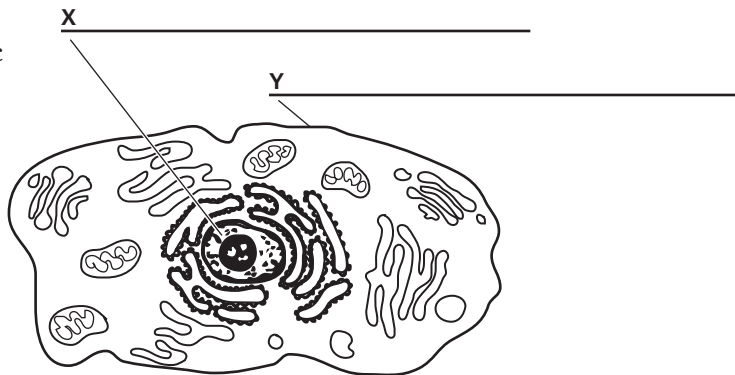
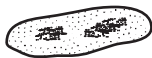
- \_\_\_\_\_ 1. One early piece of evidence supporting the cell theory was the observation that
- |                                        |                                        |
|----------------------------------------|----------------------------------------|
| a. only plants are composed of cells.  | c. cells come from other cells.        |
| b. only animals are composed of cells. | d. animal cells come from plant cells. |
- \_\_\_\_\_ 2. Cells are limited in size by the
- |                                                                                        |                                                            |
|----------------------------------------------------------------------------------------|------------------------------------------------------------|
| a. rate at which substances needed by the cell can enter the cell through its surface. | c. amount of material the cell can collect to fill itself. |
| b. rate at which the cell can manufacture genetic information.                         | d. amount of cell membrane the cell can produce.           |
- \_\_\_\_\_ 3. The diameter of most plant and animal cells is about
- |                               |                             |               |                 |
|-------------------------------|-----------------------------|---------------|-----------------|
| a. 0.1 to 0.2 $\mu\text{m}$ . | b. 10 to 50 $\mu\text{m}$ . | c. 1 to 2 mm. | d. 10 to 50 mm. |
|-------------------------------|-----------------------------|---------------|-----------------|
- \_\_\_\_\_ 4. The characteristic of a nerve cell that relates directly to its function in receiving and transmitting nerve impulses is its
- |                     |                                            |
|---------------------|--------------------------------------------|
| a. long extensions. | c. ability to change shape.                |
| b. flat shape.      | d. ability to engulf and destroy bacteria. |
- \_\_\_\_\_ 5. One difference between eukaryotic and prokaryotic cells is that only
- |                                                         |                                                     |
|---------------------------------------------------------|-----------------------------------------------------|
| a. prokaryotic cells are surrounded by a cell membrane. | c. eukaryotic cells have genetic information.       |
| b. prokaryotic cells have a nucleus.                    | d. eukaryotic cells have membrane-bound organelles. |

**SHORT ANSWER** Answer the questions in the space provided.

1. State the three parts of the cell theory. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
2. How does the ability of a white blood cell to change its shape affect its function? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. How are the organelles of a single cell like the organs of a multicellular organism? \_\_\_\_\_  
 \_\_\_\_\_
4. Name two features of eukaryotic cells that prokaryotic cells lack. \_\_\_\_\_  
 \_\_\_\_\_
5. **Critical Thinking** When a spherical cell increases in diameter from 2  $\mu\text{m}$  to 20  $\mu\text{m}$ , by what factor does its surface area change? By what factor does its volume change? (The surface area of a sphere =  $4\pi \text{ radius}^2$ , and the volume of a sphere =  $4/3\pi \text{ radius}^3$ . Remember that diameter =  $2 \times \text{radius}$ .)  
 \_\_\_\_\_  
 \_\_\_\_\_

**STRUCTURES AND FUNCTIONS**

1. These figures represent a eukaryotic cell and a prokaryotic cell. In the spaces below the diagrams, indicate which type of cell each diagram represents.



a \_\_\_\_\_

b \_\_\_\_\_

2. List two features that formed the basis for your identification of these cells.  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Identify the structures labeled X and Y. \_\_\_\_\_