Assessment Answers

1a. the basic unit of life

1b. All living things are made up of cells. Cells are the basic units of structure and function in living things. New cells are produced from existing cells.

1c. The microscope enabled people to see cells and study the parts of cells. This ability enabled scientists to learn that all organisms are composed of cells.

2a. Microscopes contain lenses, which focus light or electrons to produce an enlarged image of something that is otherwise too small to see.

2b. False coloring is sometimes added to electron micrographs by computers to make certain structures easier to see.

3a. All cells have DNA at some time in their lives, and all cells are surrounded by a thin, flexible cell membrane.

3b. Prokaryotes do not have DNA enclosed in a nucleus. Eukaryotes have DNA enclosed in a nucleus.

PRACTICE PROBLEMS

4. total magnification: 500×

5. 1000 micrometers (1 mm)

Assessment Answers

1a. cytoplasm with organelles, nucleus

1b. The nucleus controls cell activities as a captain controls plays and players.

2a. Their enzymes break down nutrients and old organelles.

2b. by pumping out excess water

3a. Rough ER has surface ribosomes; smooth ER does not.

3b. Students should describe the steps in **Figure 7–11.**

4a. converting chemical energy in food into compounds the cell can use

4b. a plant or photosynthetic protist

5a. because, like a real mosaic, it is made of many parts that can float around in the membrane

5b. Hydrophilic lipid heads are attracted to water; hydrophobic fatty acid tails turn away from water. A bilayer forms when lipid heads turn toward water inside and outside the cell.

5c. Selective permeability allows needed substances to enter the cell and wastes to leave, while keeping out molecules that are not needed.

VISUAL THINKING

6. Students' labeled illustrations should reflect characteristics of all three types of cells and include all lesson vocabulary terms.