



Sections 2.4–2.6

1. Classify the following as *physical* or *chemical* changes.
 - a. Mothballs gradually vaporize in a closet.
 - b. Hydrofluoric acid attacks glass and is used to etch calibration marks on glass laboratory utensils.
 - c. Calcium chloride lowers the temperature at which water freezes and can be used to melt ice on city sidewalks and roadways.
 - d. An antacid tablet fizzes and releases carbon dioxide gas when it comes in contact with hydrochloric acid in the stomach.
 - e. A flashlight battery corrodes and leaks on prolonged storage.
 - f. Chemistry majors usually get holes in the cotton jeans they wear to lab because of the acids used in many experiments.
 - g. Whole milk curdles if you add vinegar to it.
 - h. A piece of rubber stretches when you pull it.
 - i. Rubbing alcohol evaporates quickly from the skin.
 - j. Acetone is used to dissolve and remove nail polish.
2. Identify the following as *mixtures* or *pure substances*.
 - a. milk
 - b. the paper on which this book is printed
 - c. a teaspoon of sugar
 - d. a teaspoon of sugar dissolved in a glass of water
 - e. steel
3. Classify the following mixtures as *homogeneous* or *heterogeneous*.
 - a. vanilla ice cream
 - b. "rocky road" ice cream
 - c. Italian salad dressing
 - d. kitty litter
4. Are all physical changes accompanied by chemical changes? Are all chemical changes accompanied by physical changes? Explain.

Answers to
Focus Questions

1.

a. physical	f. chemical
b. chemical	g. chemical
c. physical	h. physical
d. chemical	i. physical
e. chemical	j. physical
2.

a. mixture	d. mixture
b. mixture	e. mixture
c. pure substance	
3.

a. homogeneous
b. heterogeneous
c. heterogeneous
d. heterogeneous
4. Physical changes are not accompanied by chemical changes. In fact, the very nature of a physical change implies no change in the composition of the substance. Chemical changes, on the other hand, are accompanied by physical changes, because the composition of the substance is changed and thus will have new physical properties.