Name _____ Date _____ Class _____

2 MATTER AND CHANGE

Practice Problems

In your notebook, solve the following problems.

SECTION 2.1 PROPERTIES OF MATTER

1. Which of the following is *not* a physical change?

a. dissolving sugar in water
c. evaporating sea water to obtain salt
b. burning gasoline in an engine
d. slicing a piece of bread

2. Which of the following is *not* a property of a gas?

a. has a definite shape
c. assumes the shape of its container
b. has an indefinite volume
d. is easily compressed

3. Which of the following is *not* a physical property of sucrose?

a. solid at room temperature
c. dissolves in water
b. decomposes when heated
d. tastes sweet

4. Which of the following is in a different physical state at room temperature than the other three?

a. salt **b.** sugar **c.** flour **d.** water

5. Complete the following table.

Physical state	Definite Shape?	Definite Volume?	Easily Compressed?
gas			
	no		no
	yes		

Use the Table 2.1 to answer the following questions.

Physical Properties of Some Substances

Substance	State	Color	Melting point (°C)	Boiling point (°C)
Neon	Gas	Colorless	−249	−246
Oxygen	Gas	Colorless	−218	−183
Chlorine	Gas	Greenish-yellow	−101	−34
Ethanol	Liquid	Colorless	−117	78
Mercury	Liquid	Silvery-white	−39	357
Bromine	Liquid	Reddish-brown	−7	59
Water	Liquid	Colorless	0	100
Sulfur	Solid	Yellow	115	445
Aluminum	Solid	Silver	660	2519
Sodium chloride	Solid	White	801	1413
Gold	Solid	Yellow	1064	2856
Copper	Solid	Reddish-yellow	1084	2562

6. Which substance is a colored gas?

7. Which liquids boil at a lower temperature than water?

8. Classify the following properties as extensive or intensive.

a. color **b.** volume **c.** mass **d.** boiling point

Name _____ Date _____ Class _____

SECTION 2.2 MIXTURES

1. How might you separate a mixture of water and salt?

2. What is a homogeneous mixture?

3. Which of the following mixtures are homogeneous? Which are heterogeneous?

a. gasoline **b.** chunky peanut butter **c.** oil and vinegar salad dressing

4. Which of the following are substances? Which are mixtures?

a. ethanol **b.** motor oil **c.** vinegar **d.** neon

SECTION 2.3 ELEMENTS AND COMPOUNDS

1. What elements make up ammonia, chemical formula NH_3?

2. Name the elements represented by the following chemical symbols.

a. Pb **b.** K **c.** Au **d.** Fe

3. Classify the following as elements, compounds, or mixtures.

a. table salt **b.** water **c.** iron **d.** stainless steel

4. Write the chemical symbol for each of the following elements.

a. tin **b.** sodium **c.** silver **d.** carbon

5. A liquid is allowed to evaporate and leaves no residue. Can you determine whether it was an element, a compound, or a mixture?

6. Which of the following is not an element?

a. copper **b.** sulfur **c.** sucrose **d.** helium

SECTION 2.4 CHEMICAL REACTIONS

1. Which one of the following is a chemical change?

a. Gasoline boils.

b. Oxygen is added to gasoline.

c. Gasoline burns.

d. Gasoline is poured into a tank.

2. Classify each of the following changes as physical or chemical.

a. A puddle is dried by the sun.

b. A dark cloth is faded by sunlight.

c. Bread is toasted.

d. Soap is mixed with water.

3. Carbon dioxide plus water yields carbonic acid.

a. Name the product(s) of this reaction.

b. Name the reactant(s) of this reaction.

4. If 44 grams of carbon dioxide react completely with 18 grams of water, what is the mass of carbonic acid formed?

5. In an engine, octane combines with oxygen to form carbon dioxide and water. If 22.8 grams of octane combine completely with 80 grams of oxygen to form 70.4 grams of carbon dioxide, what mass of water is formed?

6. What is the name of the chemical law on which problems 4 and 5 are based?