Name _____ Date _____ Class _____

CHAPTER 1 REVIEW

Matter and Change

SECTION 1

SHORT ANSWER Answer the following questions in the space provided.

1. _____ Technological development of a chemical product often

(a) lags behind basic research on the same substance.
(b) does not involve chance discoveries.
(c) is driven by curiosity.
(d) is done for the sake of learning something new.

2. _____ The primary motivation behind basic research is to

(a) develop new products.
(b) make money.
(c) understand an environmental problem.
(d) gain knowledge.

3. _____ Applied research is designed to

(a) solve a particular problem.
(b) satisfy curiosity.
(c) gain knowledge.
(d) learn for the sake of learning.

4. _____ Chemistry is usually classified as

(a) a biological science.
(b) a physical science.
(c) a social science.
(d) a computer science.

5. Define the six major branches of chemistry.

Name _____ Date _____ Class _____

SECTION 1 continued

6. For each of the following types of chemical investigations, determine whether the investigation is *basic research, applied research,* or *technological development.* More than one choice may apply.

_____ **a.** A laboratory in a major university surveys all the reactions involving bromine.

_____ **b.** A pharmaceutical company explores a disease in order to produce a better medicine.

_____ **c.** A scientist investigates the cause of the ozone hole to find a way to stop the loss of the ozone layer.

_____ **d.** A pharmaceutical company discovers a more efficient method of producing a drug.

_____ **e.** A chemical company develops a new biodegradable plastic.

_____ **f.** A laboratory explores the use of ozone to inactivate bacteria in a drinking-water system.

7. Give examples of two different instruments routinely used in chemistry.

_____

_____

8. What are microstructures?

_____

_____

9. What is a chemical?

_____

_____

10. What is chemistry?

_____

_____

Name _____ Date _____ Class _____

CHAPTER 1 REVIEW

Matter and Change

SECTION 2

SHORT ANSWER Answer the following questions in the space provided.

1. Classify each of the following as a *homogeneous* or *heterogeneous* substance.

_____ **a.** iron ore

_____ **b.** quartz

_____ **c.** granite

_____ **d.** energy drink

_____ **e.** oil-and-vinegar salad dressing

_____ **f.** salt

_____ **g.** rainwater

_____ **h.** nitrogen

2. Classify each of the following as a *physical* or *chemical* change.

_____ **a.** ice melting

_____ **b.** paper burning

_____ **c.** metal rusting

_____ **d.** gas pressure increasing

_____ **e.** liquid evaporating

_____ **f.** food digesting

3. Compare a physical change with a chemical change.

_____

_____

_____

_____

_____

_____

Name _____ Date _____ Class _____

SECTION 2 continued

4. Compare and contrast each of the following terms:

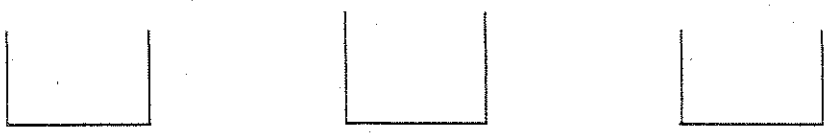
a. *mass* and *matter*

b. *atom* and *compound*

c. *physical property* and *chemical property*

d. *homogeneous mixture* and *heterogeneous mixture*

5. Using circles to represent particles, draw a diagram that compares the arrangement of particles in the solid, liquid, and gas states.



Solid Liquid Gas

6. How is energy involved in chemical and physical changes?

Name _____ Date _____ Class _____

CHAPTER 1 REVIEW

Matter and Change

SECTION 3

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

1. A horizontal row of elements in the periodic table is called a(n) _____.
2. The symbol for the element in Period 2, Group 13, is _____.
3. Elements that are good conductors of heat and electricity are _____.
4. Elements that are poor conductors of heat and electricity are _____.
5. A vertical column of elements in the periodic table is called a(n) _____.
6. The ability of a substance to be hammered or rolled into thin sheets is called _____.
7. Is an element that is soft and easy to cut cleanly with a knife likely to be a metal or a nonmetal? _____
8. The elements in Group 18, which are generally unreactive, are called _____.
9. At room temperature, most metals are _____.
10. Name three characteristics of most nonmetals.

    _____

    _____
11. Name three characteristics of metals.

    _____

    _____
12. Name three characteristics of most metalloids.

    _____

    _____
13. Name two characteristics of noble gases.

    _____

Name _____ Date _____ Class _____

SECTION 3 continued

14. What do elements of the same group in the periodic table have in common?

15. Within the same period of the periodic table, how do the properties of elements close to each other compare with the properties of elements far from each other?

16. You are trying to manufacture a new material, but you would like to replace one of the elements in your new substance with another element that has similar chemical properties. How would you use the periodic table to choose a likely substitute?

17. What is the difference between a family of elements and elements in the same period?

18. Complete the table below by filling in the spaces with correct names or symbols.

Name of element	Symbol of element
Aluminum	
	Ca
	Mn
Nickel	
Potassium	
Cobalt	
	Ag
	H

Name _____ Date _____ Class _____

CHAPTER 1 REVIEW

Matter and Change

MIXED REVIEW

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

1. Classify each of the following as a *homogeneous* or *heterogeneous* substance.

_____ **a.** sugar

_____ **b.** iron filings

_____ **c.** granola bar

_____ **d.** plastic wrap

_____ **e.** cement sidewalk

2. For each type of investigation, select the most appropriate branch of chemistry from the following choices: *organic chemistry, analytical chemistry, biochemistry, theoretical chemistry*. More than one branch may be appropriate.

_____ **a.** A forensic scientist uses chemistry to find information at the scene of a crime.

_____ **b.** A scientist uses a computer model to see how an enzyme will function.

_____ **c.** A professor explores the reactions that take place in a human liver.

_____ **d.** An oil company scientist tries to design a better gasoline.

_____ **e.** An anthropologist tries to find out the nature of a substance in a mummy's wrap.

_____ **f.** A pharmaceutical company examines the protein on the coating+ of a virus.

3. For each of the following types of chemical investigations, determine whether the investigation is *basic research, applied research,* or *technological development*. More than one choice may apply.

_____ **a.** A university plans to map all the genes on human chromosomes.

_____ **b.** A research team intends to find out why a lake remains polluted to try to find a way to clean it up.

_____ **c.** A science teacher looks for a solvent that will allow graffiti to be removed easily.

_____ **d.** A cancer research institute explores the chemistry of the cell.

_____ **e.** A professor explores the toxic compounds in marine animals.

Name _____ Date _____ Class _____

MIXED REVIEW continued

4. Use the periodic table to identify the name, group number, and period number of the following elements:

_____ **a.** Cl

_____ **b.** Mg

_____ **c.** W

_____ **d.** Fe

_____ **e.** Sn

5. What is the difference between extensive and intensive properties?

_____

_____

6. Consider the burning of gasoline and the evaporation of gasoline. Which process represents a chemical change and which represents a physical change? Explain your answer.

_____

_____

_____

7. Describe the difference between a heterogeneous mixture and a homogeneous mixture, and give an example of each.

_____

_____

_____

8. Construct a concept map that includes the following terms: *atom, element, compound, pure substance, mixture, homogeneous,* and *heterogeneous.*