

Name: \_\_\_\_\_

Block: \_\_\_\_\_

Date: \_\_\_\_\_

Chemistry 11

**Classifying Matter**

Assignment

1. Complete the following sentences by filling in the appropriate word from the list below.

Elements

Carbon

Mixtures

Pure

Compound

Letters

Symbols

Carbon dioxide

Properties

- a. Elements cannot be separated by physical or chemical means.
- b. Elements are abbreviated with symbols, which consist of one or two letters.
- c. Two or more elements chemically combined make up a compound.
- d. Carbon is an example of an element and carbon dioxide is an example of a compound.
- e. Elements and compounds are called pure substances because they have a unique set of chemical and physical properties.

2. Fill in the blanks in the following chart.

Element Name	Element Symbol	Common Ions Formed
a. Sodium	Na	+1
b. Copper	Cu	+2, +1
c. Tungsten	W	+6
d. Iron	Fe	+3, +2
e. Tin	Sn	+4, +2
f. Potassium	K	+1
g. Gold	Au	+3, +1
h. Silver	Ag	+1

3. Classify each of the following as one of an Atom (A), a Molecule (M) or an Ion (I).

- a.  $P^{3-}$  I
- b.  $H_2O$  M
- c.  $O_2$  M
- d.  $Au^{3+}$  I

- e. Ge A
- f. O A
- g.  $Ca^{2+}$  I
- h.  $NH_3$  M

4. Describe the difference between a homogeneous and heterogeneous mixture. Give an example of each.

Homogeneous: looks the same throughout (one phase)

Ex. Salt water

Heterogeneous: different parts if the mixture can be seen (more than one phase)

Ex. Trail mix

5. Assume you have 10g of pure gold. Should you refer to the gold as an atom or an element? Why?

Element, an atom is only a single particle of the element. In 10g of a sample there will be LOTS of atoms.

6. Which of an Element (E), Compound (C), Solution (S), or Mechanical Mixture (MM) are possible classifications for the following? (There may be more than one answer for each example).

- A clear liquid which can be boiled away to leave a white solid. S
- A collection of solid particles, some of which are white, and some of which are red. MM
- A solid which melts at 170°C. E or C
- A gas. E or C or S
- A liquid. E or C or S
- A liquid which boils away completely at 136°C. When the liquid is strongly heated in a closed container, a yellow gas and a black solid are produced. C

7. Which substance is the solute in each of the following?

- a. Water containing 5% acetic acid (this mixture is commonly called “vinegar”).

acetic acid

- b. Tincture of iodine (a small amount of solid iodine mixed with alcohol).

iodine

- c. A mixture containing 60% alcohol and 40% chloroform.

chloroform

- d. A solution containing 900g of silver nitrate in 100g of water.

silver nitrate

8. Classify the following as a Pure substance (P) or Mixture (M).

- Air M
- Sugar P
- Dirt M

9. Classify each of the following as a Mixture (M) or a Compound (C).

- Alcohol,  $\text{CH}_3\text{CH}_2\text{OH}$  C
- A pizza M
- Soda pop M
- Baking soda,  $\text{NaHCO}_3$  C
- $\text{CH}_3\text{OH}$  in  $\text{H}_2\text{O}$  M
- Iced Tea M

10. In an aqueous solution of calcium chloride, what is the solvent and what is the solute?

Solvent: water

Solute: Calcium chloride