Chapter 3

Elements, Compounds, And Mixtures

Name _____
Class _____

Test Date _11/05/2014___

Chapter 3 –Elements, Compounds, and Mixtures Outline
Section 1-Elements (p. 56 – 59)

I. Elements, the Simplest Substances

*Notes: An ___ELEMENT_____ is a pure substance that cannot be separated into simpler substances by physical or chemical means. An aluminum can is an example of a material made out of an element. (pan)

A. A ____PURE SUBSTANCE_____ is a substance in which there is only one type of particle. They are made up of small particles called ___ATOMS & Molecules ___.

II. Properties of Elements

A. Identifying Elements by Their Properties

physical properties chemical properties CHARACTERISTIC PROPERTIES

characteristic property of sulfur = STINK!

III. Classifying Elements by Their Properties

A. Categories of Elements

*There are __THREE____ major categories of elements.

1. ___METALS___-Shiny, malleable, ductile, conduct heat and electricity.

2. ____NONMETALS__-Dull, poor conductors of heat and electricity, unmalleable.
*Sulfur is an example of a nonmetal. (See page 59)

3. __METALLOIDS___- Properties of both metals and nonmetals.
*Metalloids are similar to metals because some are good conductors of electricity.
Metalloids *DO NOT* have any metal in them!!

B. Categories are Similar

Chapter 3 –Elements, Compounds, and Mixtures Outline
Section 2-Compounds (p. 60 – 63)

I. Compounds: Made of Elements

*Notes: A pure substance made of two or more elements that are chemically combined is called a ___COMPOUND_____.

*_____CALCIUM CARBONATE = CHALK_____ ($CaCO_3$) is a compound because Calcium combines chemically with carbon.

*Notes: Compounds are considered pure substances because:

1. They are composed of only one type of particle.
2. The particles are made of atoms of two or more elements that are chemically combined.
3. Different samples of any compound have the same elements in the same proportion.

A. The Ratio of Elements in a Compound

II. Properties of Compounds

*Notes: ___REACTIVITY_____ of a substance is a chemical property. (flammability!)

A. Properties: Compounds versus Elements

*Notes: __SODIUM___ and _CHLORINE__ can chemically combine to make sodium chloride which we use as ___TABLE SALT = NaCl_____. Page 61!

III. Breaking Down Compounds

A. Methods of Breaking Down Compounds

*Notes-

IV. Compounds in Your World

A. Compounds in Industry

B. Compounds in Nature

*Notes-Plants use ___CARBON DIOXIDE__CO_2_____ during **photosynthesis.**

Chapter 3 –Elements, Compounds, and Mixtures Outline
Section 3-Mixtures (p. 64 – 71)

I. Properties of Mixtures

*Notes: When elements form ___MIXTURES____, the elements keep their original properties.

A. No Chemical Changes in a Mixture

*Notes: A ____MIXTURE___ is different from a ___COMPOUND__ because each substance in a compound loses its characteristic properties.

*Notes: Potting soil is an example of a mixture of solids because each substance in the mixture keeps its own identity.

B. Separating Mixtures Through Physical Methods

Distillation, using a magnet, and centrifuge are some ways to separate mixtures.

C. The Ratio of Components in a Mixture

II. Solutions

*Notes-A ____SOLUTION____ is formed when particles of two or more substances are distributed evenly among each other.

*A solution has two parts

The ____SOLUTE__ is the substance being dissolved.

The __SOLVENT___ is what the solute is being dissolved in.

*In instant coffee, the coffee is the **solute** and the water is the **solvent**.

A. Examples of Solutions

*Notes-An _ALLOY___ is a solid solution of metals and nonmetals. For example, __STEEL____ is an alloy because it is made out of the nonmetal carbon mixed with the metal iron.

B. Particles in Solutions

III. Concentrations of Solutions

A. Concentrated or Dilute?

B. Solubility

*See table 6 on page 69-Be able to answer these questions:

1. Which solid is more soluble at lower temperatures than high temperatures?
2. Which compounds solubility is least affected by changes in temperature?
3. Which solids are more soluble at higher temperatures than lower temperatures?

C. Dissolving Gases in Liquids

D. Dissolving Solids Faster in Liquid

*Notes-A sugar cube could be dissolved more quickly in water by

__MIXING / STIRRING_____it, ___HEATING__it , or ____CRUSHING__ it.

V. Suspensions

*Notes: A ___SUSPENSION_____ is a mixture in which particles of a material are evenly dispersed throughout a liquid or gas. * A milkshake is an example of a suspension because the ingredients are evenly distributed in the mixture.

VI. Colloids

* Notes: __COLLOIDS_____ have properties of suspensions and solutions.

*Notes: Particles in both a solution and a colloid can _____PASS_____ through a filter. The particles are small enough to go through the filter.