Name: _____ Regents Chemistry

Unit 1B: Introduction to Chemistry

Objectives:

1. Identify and understand basic chemistry terms: matter, atom, compound, element, mixture
2. Identify and draw particle diagrams for different phases of matter
3. Identify and classify matter as an element, compound, or mixture
4. Draw particle diagrams for each classification of matter
5. Identify between physical and chemical properties/changes
6. Understand mass and matter is conserved in a chemical reaction

I. Important Terms:

- **Chemistry:** Study of _____
- **Matter:** Any object that has _____

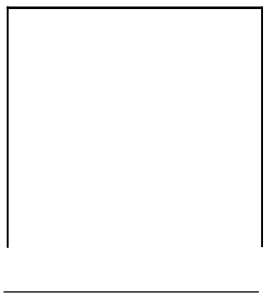
Atom	vs.	**Compound**
Definition:		**Definition:**
Particle Diagram		**Particle Diagram**

II. Phases of Matter

- The phase that matter is in depends on:

1.

2.

Phase	Shape	Volume	Particle Diaram	IMF	Movement
Solid (s)					
Liquid (/)					
Gas (g)					

- These are the three most common states and the ones we will focus on for this course. However, there are additional ones such as plasma, supercritical fluid, and degenerate gas.

III. Classification of Matter

- **Element:** Substance that _____

  _____ under normal conditions

- **Compound:** Substance consisting of_____

_____

_____

_____

- **Mixture:** _____

_____

_____

Aqueous Solution *(aq)* - _____

_____

(A)	(B)	(C)
H2 (g)	H20(l)	NaCl (aq)
He (g)	H20 (g)	C6H1206 (aq)
K (s)	NaCl (s)	C02 (aq)
Co (s)	C02 (g)	Air
Na (s)	C6H1206 (s)	Tap water

IV. Physical vs. Chemical Properties

Physical Properties	Chemical Properties
Properties of an element or compound that can be observed or measured _____ _____	The ability of an element or substance to undergo a _____ and form a _____
Examples of Physical Properties:	**Examples of Chemical Properties:**

- **Physical or Chemical Properties:** Determine whether chemical or physical
  1. Water boils at 100 degrees Celsius
  2. Water can be separated by electrolysis into hydrogen and oxygen
  3. Sugar is capable of dissolving in water
  4. Vinegar will react with baking soda
  5. Yeasts acts on sugar to form carbon dioxide and ethanol
  6. Wood is flammable

V. Physical and Chemical

Physical Change	Chemical Change
• It does NOT _____, it just changes _____ • A change that does NOT affect a substance's chemical composition	• Changing into a _____ _____ • A color change may occur and a _____
Physical Change Phrases	**Chemical Change Phrases**
Particle Diagram for Physical Change	**Particle Diagram for Chemical Change**

- **Physical or Chemical Change:** Determine whether chemical or physical

1. Dry ice, solid carbon dioxide, is sublimed at room temperature.
2. Iron rusts in damp environment
3. Gasoline burns in the presence of oxygen
4. Hydrogen peroxide decomposes to water and oxygen
5. Burning coal
6. Cooking a steak
7. Cutting grass

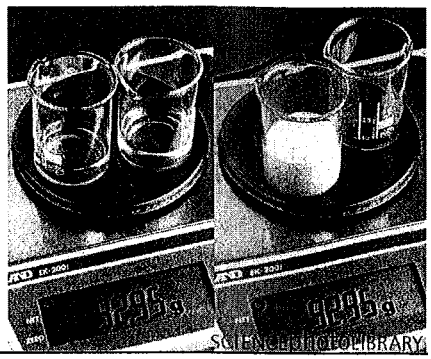
- **Chemical Reaction Equation:**

A chemical reaction ALWAYS results in new substance(s)

$$2\ H_2\ (g) + O_2\ (g) \rightarrow 2\ H_2O\ (l)$$

VI. Conservation of Mass:

- ***Mass cannot be created or destroyed in a chemical reaction***



Silver nitrate ($AgN0_3$) and sodium chloride (NaCl) solutions before and after chemical reaction

Examples:

1. If 50.0 grams of sodium reacts with chlorine to form 126 grams of sodium chloride. How many grams of chlorine reacted?

2. If 178.8 g of water is separated into hydrogen and oxygen gas, and the hydrogen gas has a mass of 20.0 g. What is the mass of the oxygen gas produced?