**Chapter 1 – Matter & Change**

I. Chemistry is a Physical Science

 A. **Chemistry** is the study of ***matter*** and the ***changes*** it undergoes

 B. **Matter** is anything that takes up \_\_\_\_\_\_\_\_\_\_ and has \_\_\_\_\_\_\_\_\_\_.

1. **Mass –** measure of the \_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_ that makes

up an object or substance.

II. Matter & Its Properties

1. Atoms are the Building Blocks of Matter
2. **Element –** a \_\_\_\_\_\_\_\_\_\_ substance that \_\_\_\_\_\_\_\_\_\_ be

broken down into simpler, stable substances. **[NOTE:** You’ll only

see **one capital letter** in the formula!**]**

1. **Atom –** \_\_\_\_\_\_\_\_\_\_ unit of an element that maintains the \_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_ of that element.

1. **Compound –** \_\_\_\_\_\_\_\_\_\_ be broken down into simpler, stable

substances. **[NOTE:** You’ll see **two or more capital letters** in

the formula!**]**

# Performance-Based Objective #1 (Let’s Annotate!)

**SWBAT** analyze changes in matter **IOT** distinguish between physical and chemical changes.

 B. All Substances Have Characteristic Properties

1. **Extensive** – depend on the \_\_\_\_\_\_\_\_\_\_ of matter that is present

 Examples: mass length volume heat

 2. **Intensive** – \_\_\_\_\_ \_\_\_\_\_ depend on \_\_\_\_\_\_\_\_\_\_ of matter present

 Examples: density odor color

 physical state temperature

 C. Physical Properties and Physical Changes

1. **Physical properties** can be \_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_

WITHOUT changing the \_\_\_\_\_\_\_\_\_\_ of the substance!

 Examples of physical properties:

 \* mass \* volume \* density \* color

\* melting pt \* odor \* boiling pt \* physical state

 (solid, liquid, gas)

 2. **Physical changes** are a change in a substance that \_\_\_\_\_ \_\_\_\_\_

 ­­­­change the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the substance!!!

 Examples of physical changes:

 \* cutting \* tearing \* breaking \* all changes of state

 D. States of Matter

1. A **change of state** is a change of matter from one \_\_\_\_\_\_\_\_\_\_ to

another.

**Performance-Based Objective #2 (Let’s Annotate!)**

**SWBAT** describe the states of matter **IOT** identify their properties and behaviors.

 2. Three Most Common Physical States

 a. **Solid -­­­­­** a \_\_\_\_\_\_\_\_\_\_ volume and a \_\_\_\_\_\_\_\_\_\_ shape

 \*\* *very LITTLE SPACE between particles* \*\*

 b. **Liquid –** a \_\_\_\_\_\_\_\_\_\_ volume but a \_\_\_\_\_\_\_\_\_\_ that can

 \_\_\_\_\_\_\_\_\_\_

 \*\* *particles are LESS CLOSELY packed than in a solid* \*\*

 c. **Gas -**  has neither a \_\_\_\_\_\_\_\_\_\_ volume nor a \_\_\_\_\_\_\_\_\_\_

 shape

 \*\* LOTS OF SPACE between particles \*\*

**What do you notice about the pattern of particles in these pictures?**



 E. Chemical Properties and Chemical Changes

1. **Chemical property** relates to a substance’s ability to undergo

\_\_\_\_\_\_\_\_\_\_ that transform it into \_\_\_\_\_\_\_\_\_\_ substances.

 Examples of chemical properties:

 \* any type of reaction (think of the evidences) \* rusting

 \* “burning” (reacting with O2) \* tarnishing

1. **Chemical change** is a change in which \_\_\_\_\_ or \_\_\_\_\_

substances are converted into \_\_\_\_\_\_\_\_\_\_ substances.

 Examples of chemical changes:

 decomposing exploding rusting burning

1. A change in which at least one new substance is formed is

called a \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

1. The substances that react in a chemical change are called the

\_\_\_\_\_\_\_\_\_\_.

1. The substances formed by the chemical change are called the

\_\_\_\_\_\_\_\_\_\_.

 F. Matter can be a Pure Substance or a Mixture

 1. Mixtures

a. **Mixture -**  blend of \_\_\_\_\_ or \_\_\_\_\_ kinds of matter, each of which keeps its \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_.

 1. **Homogeneous mixture** (or **solution**) is \_\_\_\_\_\_\_\_\_\_

 in composition. **[You cannot see different**

**parts!!!]**

 Examples (3):

1. b. c.

 2. **Heterogeneous mixture** is NOT \_\_\_\_\_\_\_\_\_\_

 throughout. **[You can see different parts!!!]**

 Examples (3):

1. b. c.

b. Mixtures can be separated by physical means...no chemical

reactions are needed! (Examples: filtration, distillation, etc.)

 2. Pure Substances

 a. A **pure substance** has a \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 and differs from a mixture in the following ways:

 1. …**exactly the same characteristic properties!**

2.. …**exactly the same composition!**

 b. Pure substances are either an element or a compound.

 **[You can either write a symbol or formula for it!]**

**Performance-Based Objective #3 (Let’s Annotate!)**

**SWBAT** examine the examples of matter **IOT** classify them as elements, compounds, or mixtures.

III. Classification of Matter Flowchart

