

Unit 1 – Matter and Change

Unit Goals- As you work through this unit, you should be able to:

1. Identify characteristics of matter.
2. Differentiate among the three states of matter.
3. Understand the difference between physical changes & properties
4. Describe a mixture and explain how it can be separated.
5. Explain the difference between an element and a compound.
6. Explain the difference between a pure substance and a mixture.
7. Understand the difference between chemical changes & properties
8. Apply the law of conservation of mass.

Read: Chapter 2 (pp 32 – 59)

Assignments:

	Description	Goals	5	4	0
A1	Chapter 2.1-2.1 Reading guide	1 – 4			
A2	Chapter 2.3-2.4 Reading guide	5 – 8			
A3	Chem vs. Physical Props, Elements, Compounds and Mixtures WS	1 – 8			
A4					
A5					
A6					

Activities, Labs & Test

Safety Lab
Mixture Separation Lab
Chemical & Physical Changes Lab
Unit 1 test

Late Lab Stamp (this stamp means you are not qualified to do lab and test corrections)

Key Terms

chemistry, matter, substance, mass, solid, liquid, gas, vapor, physical change, physical property, intensive property, extensive property, chemical reaction, reactants, products, chemical change, chemical property, Law of Conservation of Mass, element, compound, chemical symbols, mixture, solutions, phase, heterogeneous mixture, homogeneous mixture

Demo's

CO₂ vs H₂ vs O₂ physical and chemical properties; Lighter gas vs vapor (drill), liquid, gas; Dry ice sublimation; Screaming bottle; Heated Chalk; Fe & S combined; Burning wood = water; Alkali metal in water; Light bulb in water, salt water, sugar water; Precipitation of solid; H₂O electrolysis, Separation of Markers, Melt and separate butter and oil.

2-1 Describing matter?

A. Matter: Anything that has _____ and _____.

- a. An _____ property depends on _____ of a sample. _____ and _____ are good examples.
- b. An _____ property depends only on the type of matter. _____ and _____ are good examples.
- c. A _____ is matter that has a uniform and _____ composition.

B. Physical Property is a quality or condition of a _____ that can be observed or measured _____.

i.e.

Table 2.2

Physical Properties of the three States of Matter			
	Solid	Liquid	Gas
Pictures			
Properties of Water (H ₂ O)			

C. Physical Change alters the material without _____.

2-2 Mixtures

A. A mixture is _____ but are not _____.

- a. _____ mixtures are _____.

To be classified as this type of mixture, something must be _____ into something else. If _____ is involved, we call the mixture _____ (____)

i.e.

- i. Homogeneous mixtures are also called _____

B. Table 2.3

Some Common Types of Solutions	
System (States of Matter)	Examples
Gas → Gas	
Liquid → Gas	
Gas → Liquid	
Liquid → Liquid	
Solid → Liquid	
Solid → Solid	

a. _____ mixtures are _____.

i.e.

C. Separating Mixtures

a. Mixtures can be separated by _____. This means you do not actually _____.

b. The composition of a mixture _____.

i.e.

i. Some common physical properties that allow you to separate mixtures....

2-3 Elements and Compounds

A. **Pure substances** can be classified into two groups: _____ & _____

a. Pure substances have _____. i.e. _____

B. _____: The simplest form of _____. _____ be broken down by _____.

i.e.

C. _____: _____ that combine chemically to form a larger substance called a _____. In general, the properties of _____ are quite different from those of their _____.

Can only be separated by _____ means.

a. Homogeneous looking??? Be careful. Of the four types of matter (list them below)

_____ & _____ & _____ & _____

circle the three that always look Homogeneous (the same throughout)? The only way to tell is if you know what is in it, or if you test it by _____.

D. Symbols and Formulas

a. _____ All matter is ultimately composed of _____. Each _____ is represented by a one or two letter _____.

Notice on the periodic table that each symbol has only _____ capitol letter.

- List any element names and symbols you already know:

b. _____ : When two or more _____ elements are bonded together they form a _____. In a compound formula, _____ are used to represent the number of each element in the compound. Compounds always have _____ capitol letter.

- Water is made of two hydrogen atoms and one Oxygen atom, the formula is _____

Demo

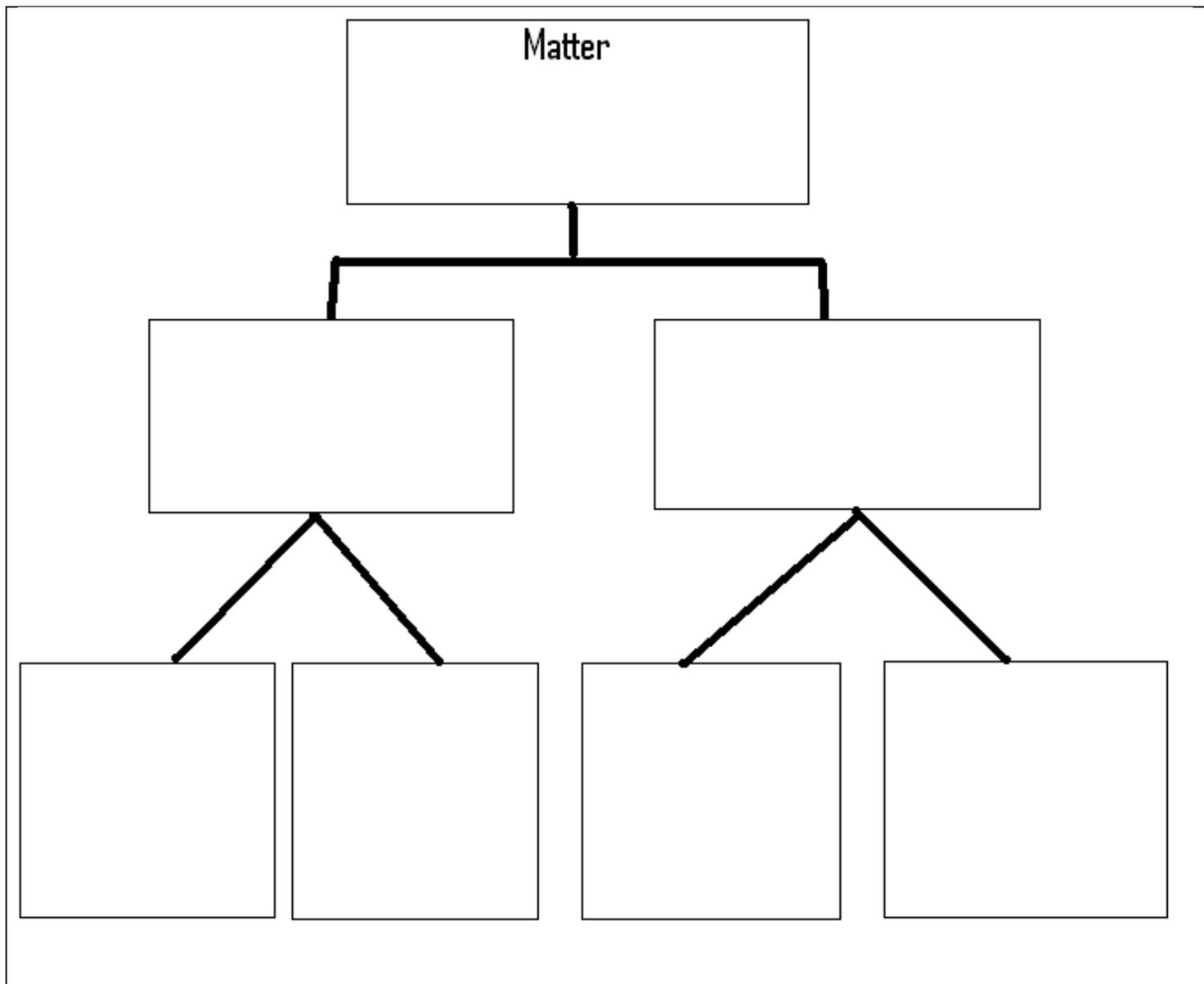
Hydrogen: H_2 = Elem./Cmpd	Oxygen: O_2 = Elem./Cmpd	Water: H_2O = Elem./Cmpd
Physical Properties:	Physical Properties:	Physical Properties:
Chemical Properties:	Chemical Properties:	Chemical Properties:

- Sugar is made of six carbon atoms, twelve hydrogen atoms, and six oxygen atoms that are all _____ to eachother. The chemical formula is _____.

- Table salt (Sodium Chloride, NaCl) =

Sodium =

Chlorine =



2-4 Chemical Changes

A. In a chemical _____, one or more substances are changed into _____
 _____ that have _____.

a. Common observations of chemical changes are:

B. **Chemical Properties.** The _____ to undergo a _____
 _____ to form new substances.

1. Can only be measured by _____.

a. Common reactions tested for:

C. Chemical _____ express the chemical change using symbols and formulas.

- a. Starting substances in a chemical reaction are called _____ because they are the ones that _____.
- b. The new substances that form after the chemical change are called the _____ because they are _____.
- c. Evidence of chemical changes can include the following:

i.e. Right now you are burning sugar with oxygen gas. In turn, you are producing carbon dioxide gas and water. This is expressed in a chemical equation below.

Chemical or Physical Property?	Chemical or Physical Change?
1. Tarnishes in Rain: _____	1. Lighting a firework: _____
2. Bends easily: _____	2. Boiling Pasta: _____
3. Decomposes: _____	3. Chewing gum: _____
4. Reusable/Recyclable: _____	4. Running your car: _____
5. Shiny _____	5. Rolling your bike: _____
6. Not Flammable: _____	6. Melting a crayon: _____
7. Perishable Food: _____	7. Rusting a nail: _____
8. Freezable Food: _____	8. Opening a can of pop: _____

D. Law of the _____ of Mass.

- a. In a chemical or physical _____, matter is never _____ or _____.
- b. In a chemical reactions, the mass of the _____ must always _____ the mass of the _____.

Test Essay Question: If you look at the world around you matter is everywhere. We've learned in this chapter that all matter can be classified into mixtures, elements, or compounds. One of these classifications of matter is far more useful and abundant than the other two on earth. Explain why this phenomenon occurs and use examples to support your answer.