

Classification of Matter

Matter is defined as anything that _____
and _____.

Ex: cars, clothes, carbon, diamond, everything and anything on this planet

So what's not matter??? Ex: _____

Matter can be broken into 2 different categories: Pure Substances and Mixtures.

Pure Substances:

- A substance that is composed of ONLY _____ type of atom or ONLY _____ type of molecule.
- Ex: silver (Ag), oxygen (O₂), pure water (H₂O)
- Pure substances can be: _____
 - Element: found on the periodic table. Ex: gold (Au), bromine (Br₂), neon (Ne)
 - Compounds: made from different atoms that are chemically bonded together. Ex: water (H₂O), carbon dioxide (CO₂), sodium chloride (NaCl)

-Law of definite proportions states that all sample of any compound contain the same elements in the same proportion.

-Law of Multiple Proportions states that if elements combine to make more than one compound, the masses will be small, whole number ratios.

-REMEMBER in order for a substance to be a pure substance, it has to be uniform/ constant composition throughout.

Mixtures:

- _____ substances physically combined in any proportion.
- If they are physically combined, this means that they can be separated by physical means.
- There are 2 main types of mixtures: Homogeneous and Heterogeneous

Practice I: Write PS (pure substance) or M (mixture) for the following:

- | | | | |
|--------------------|---------------------|------------------------|--------------------|
| ____ 1. Table salt | ____ 4. Sugar | ____ 7. Bath tub water | ____ 10. Oxygen |
| ____ 2. Granite | ____ 5. Fruit salad | ____ 8. Muddy water | ____ 11. Air |
| ____ 3. Helium | ____ 6. Pure water | ____ 9. Neon gas | ____ 12. Sweet Tea |

Homogeneous Mixtures

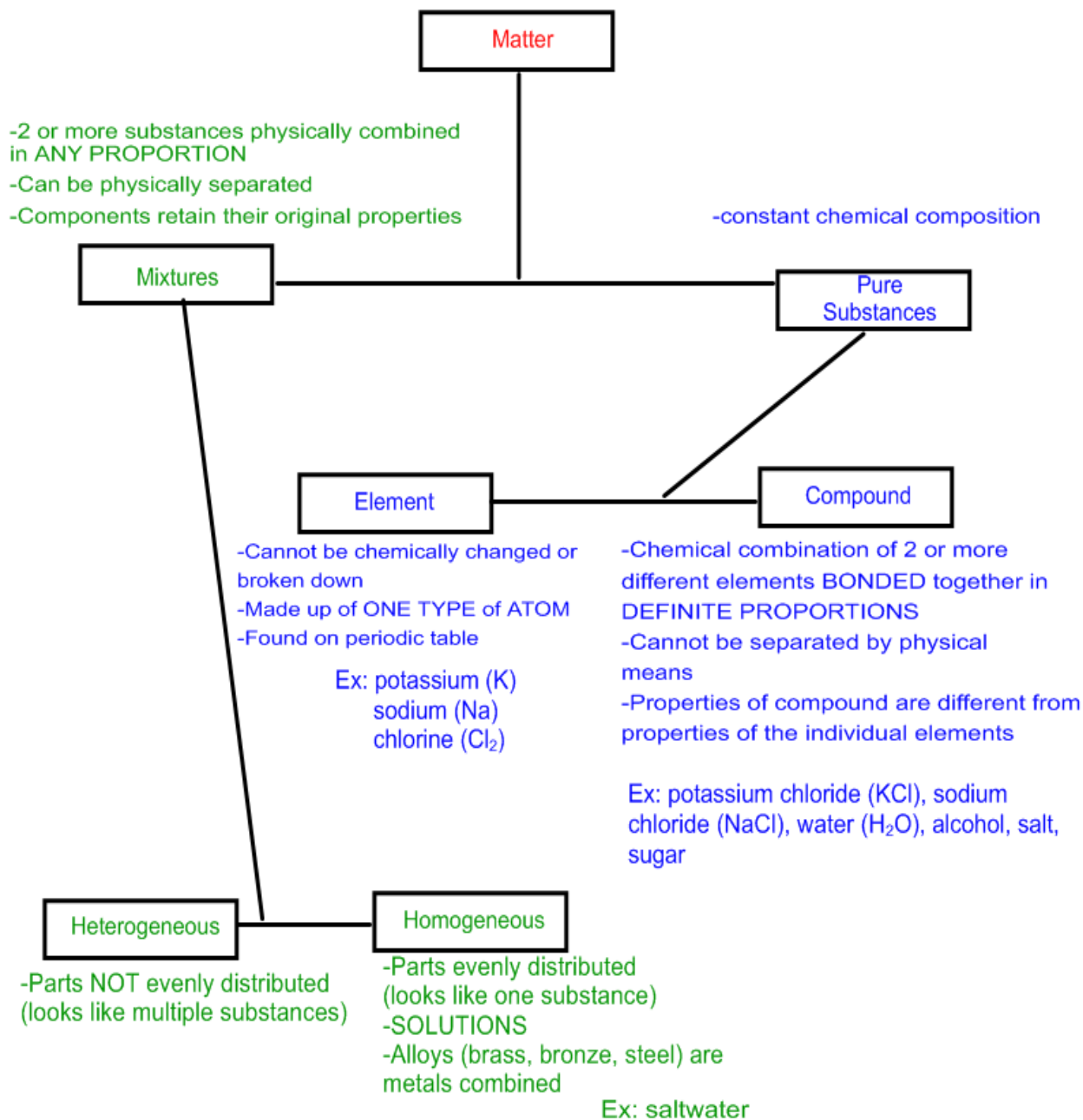
- _____: TWO or MORE pure substances mixed together evenly. It looks the SAME throughout.
 - Also known as a SOLUTION.
 - AIR is considered a homogeneous mixture (solution) NOT a compound!
- Ex: salt water, soda, coffee, sweet tea, Kool-Aid, pudding, icing, whip cream
- _____: a homogeneous mixture made by melting two or more elements together with at least one of them being a metal. Ex: brass, steel, sterling silver, bronze

Heterogeneous Mixtures

- _____: TWO or MORE substances mixed UNEVENLY together. You CAN see the different components. Ex: Fruit salad, pizza, granite, nails and screws, cereal
 - _____ is a type of heterogeneous mixture.
 - A suspension has LARGE PARTICLES that will stay mixed up for as long as the mixture is in motion.
 - If it is at rest, the particles will fall and settle to the bottom of the container.
 - Can easily be separated through filtering.
 - Ex: sand water, Italian salad dressing, snow globes
- ❖ _____: Somewhere between a solution and suspension; in other words it may look like a homogeneous mixture, but in actuality is a heterogeneous mixture.
 - Heterogeneous mixtures where the medium sized particles are dispersed throughout but are not heavy enough to settle out.
 - Appears cloudy and opaque.
 - Cannot be separated by filtering.
 - Ex: milk, fog, smoke, Jell-O, blood
- How can light be used to tell the difference between COLLOIDS and SOLUTIONS?
 - Tyndall effect
 - A beam of light is shine through a solution, such as air, not visible.
 - Light passing through a colloid, such as fog, will be scattered by the larger particles and the light bean will be visible.

Practice II: Determine whether the following is a HO (homogeneous mixture) or HE (heterogeneous mixture). If the example is a heterogeneous mixture, be sure to indicate if it's a colloid or suspension when appropriate.

- | | | | |
|---------------------------------|-------------|-------------------|--------------------|
| ___ 1. Thousand Island dressing | ___ 4. Air | ___ 7. Bronze | ___ 10. Sand |
| ___ 2. Soil | ___ 5. Milk | ___ 8. Mayonnaise | ___ 11. Sand water |
| ___ 3. Sugar water | ___ 6. Fog | ___ 9. Chex -Mex | ___ 12. Sweet Tea |



HOMEWORK: Classification of Matter

Classify each of the following as PURE SUBSTANCE or MIXTURE. If it's a pure substance, on the following column indicate if it's *element* or *compound*. If it's a mixture, on the following column indicate if it's homogeneous or heterogeneous mixture. Also indicate if it's a colloid or suspension when appropriate.

		PS or M	Types?
1.	chlorine (Cl ₂)	Pure Substance	Element
2.	pure water		
3.	soil		
4.	Lemonade		
5.	oxygen		
6.	carbon dioxide		
7.	rocky road ice cream		
8.	alcohol		
9.	smoke	Mixture	Heterogeneous mixture- colloid
10.	iron		
11.	muddy water		
12.	milk		
13.	vanilla ice cream		
14.	sulfur		
15.	nitrogen monoxide		
16.	sand and water		
17.	human body		