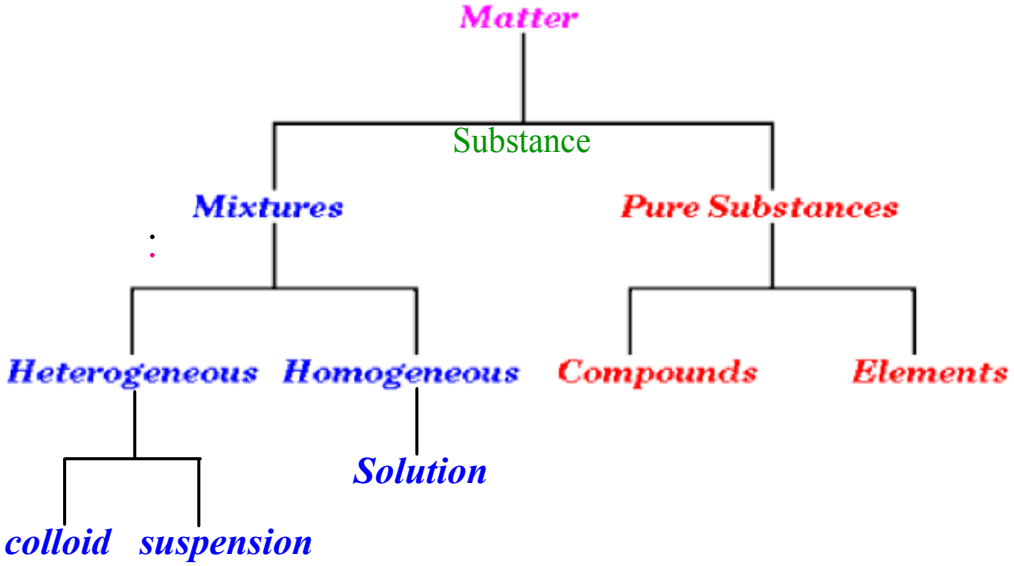
MATTER

☆ Matter is ANYTHING that takes up space and has mass
*even the air

Classification of Matter

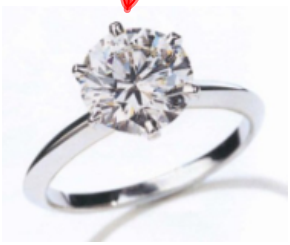


Element

- Any substance that consists of only one type of atom

24kt Au-Gold
Ag-Silver

Diamond (carbon)



copper

Compound

- Two or more elements that are ***chemically*** combined as a result of a chemical reaction
- can only be separated by a chemical reaction

NaCl

O_2
N_2

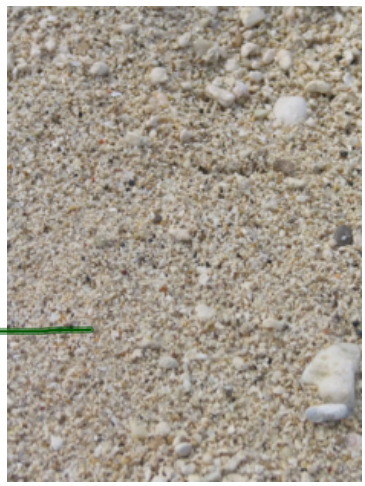
H_2O

Mixture

☆ two or more substances that are ***not*** chemically combined

☆ ***can be*** physically or mechanically ***separated***

heterogeneous
composition
will vary
-soup mix
mixed nuts



Beach Sand

homogeneous
composition
will not vary
Soda
Salt-water
Air

Pure Substance

Any element or compound that has FIXED composition
(it has a chemical formula)

Examples: 12kt gold = compound

H_2O

24kt gold = element

Solution-homogeneous mixture with particles too small to see.

☆The particles never settle

EX: Vinegar, Soda, air

Suspension- liquid containing particles large enough to settle.

(you'd have to shake them)

OJ- Italian dressing, Salsa

swamp water, paint

pepto bismol

Colloid = mixture with particles big enough to see , but they don't settle

Tyndall Effect -

The scatter of light within a solution

Example: high beams in fog

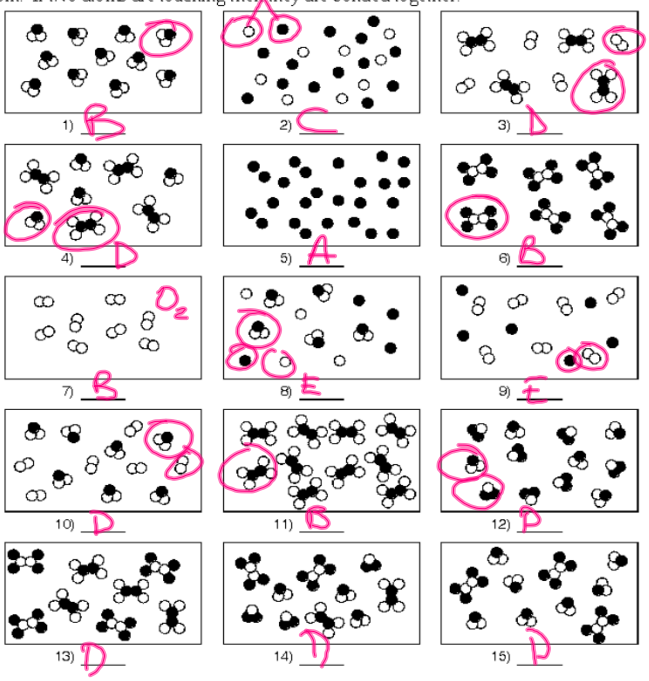
_____ 1. mixture containing a liquid in which visible particles settle	~a. Tyndall effect
_____ 2. contains two or more gases, liquid, or solid substances blended evenly throughout the mixture.	~b. colloid
_____ 3. substance in which all atoms are alike	~c. heterogeneous mixture
_____ 4. any material made of two or more substances that can be physically separated	~d. mixture
_____ 5. the scattering of light by colloidal particles	~e. element
_____ 6. mixture with larger particles that never settle	~f. suspension
_____ 7. a mixture in which different materials can be easily distinguished that are unevenly mixed.	~g. solution
_____ 8. homogeneous mixture of particles so small they cannot be seen and will never settle to the bottom of their container	~h. homogeneous mixture
_____ 9. substance in which two or more elements are combined in a fixed proportion (ratio)	~i. compound

Elements, Compounds, and Mixtures

assify each of the pictures below by placing the correct label in the blanks below.

A= Element
B= Compound
C= Mixture of elements
D= Mixture of compounds
E= Mixture of elements and compounds

Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together.



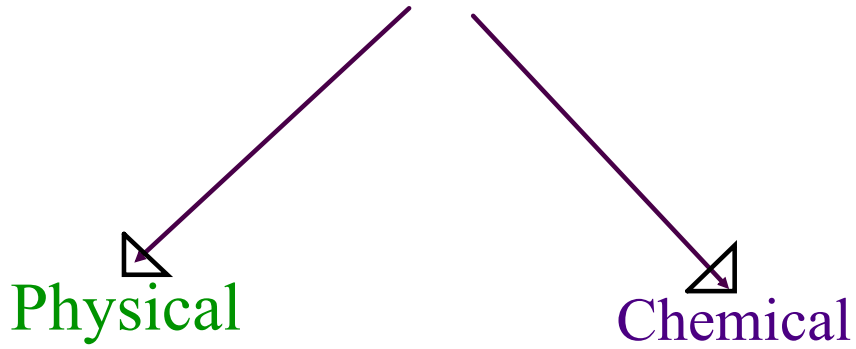
Intrinsic Properties = Properties that stay the same no matter how much of that substance that you have
(intensive)

Examples- Density, temperature, color texture, smell, etc....

Extrinsic Properties = Properties CHANGE depending on how much of that substance you have
(extensive)

Examples- Mass, volume, length, width area, etc.....

All matter has identifiable properties



Physical Properties

-Used to describe an object using senses
-describes how matter feels, smells, tastes....
-used to compare one thing to another.
Ex: color, texture, smell, size, shape, state, freezing pt. boiling pt. density, conductivy
Viscosity: the resistance to flow

Chemical Properties

☆ -describes how a substance reacts chemically.
(How easy it changes into something else)
Ex: Flammability or how easy it:
- rusts
- reacts with acid

☆ To observe a chemical property you must DESTROY the substance

Physical Changes:

☆ Do not alter the composition

☆ Only alter form or appearance

☆ you still have the same"stuff"

☆ Changes in State
solid- liquid- gas

examples:

Breaking, cutting, crumpling, drying (wet-2-dry), changing size or shape, dissolving (salt-water)

Chemical Changes

- ☆ changes that produce new substances
- ☆ happen as a result of a chemical reaction

examples: burning, rusting } Change in color

Observations smoking, bubbling, giving off heat
getting hot or cold on its own
giving off light (light stick)

LAW OF CONSERVATION OF MASS

"Matter (mass) is neither created nor destroyed"
any process OR REACTION will not change the total "matter content" of the system.

Example: If you burn a piece of wood and weigh it before you burn it & then capture all of the gases & ash from burning it, it will weigh the same.

Label each of the following as a physical property, physical change,chemical property, or chemical change.

sharpening a pencil PC

flammability of a substance CP

size of an object PP

inflating a tire PC

freezing point PP

drawing copper into wire PC

corrosion of bicycle frame CC

fragrance of a flower PP

formation of water when hydrogen burns CC

boiling water PC

Identify each of the following as a Physical or Chemical Change.

Put a P next to Physical Changes/Put a C next to Chemical Changes

1. Eggs turn into an omelette. _____
2. Water evaporates into steam. _____
3. A piece of cork is cut in half. _____
4. A bicycle chain rusts. _____
5. Food is digested in the stomach. _____
6. Water is absorbed by a paper towel. _____
7. Hydrochloric Acid reacts with zinc. _____
8. A piece of an apple rots on the ground. _____
9. A tire is inflated with air. _____
10. A plant turns sunlight, CO_2, and water into sugar and oxygen. _____
11. Sugar dissolves in water. _____
12. Milk sours. _____


raw egg becomes cooked egg
cake mix becomes cake
paper becomes ash
steel becomes rust