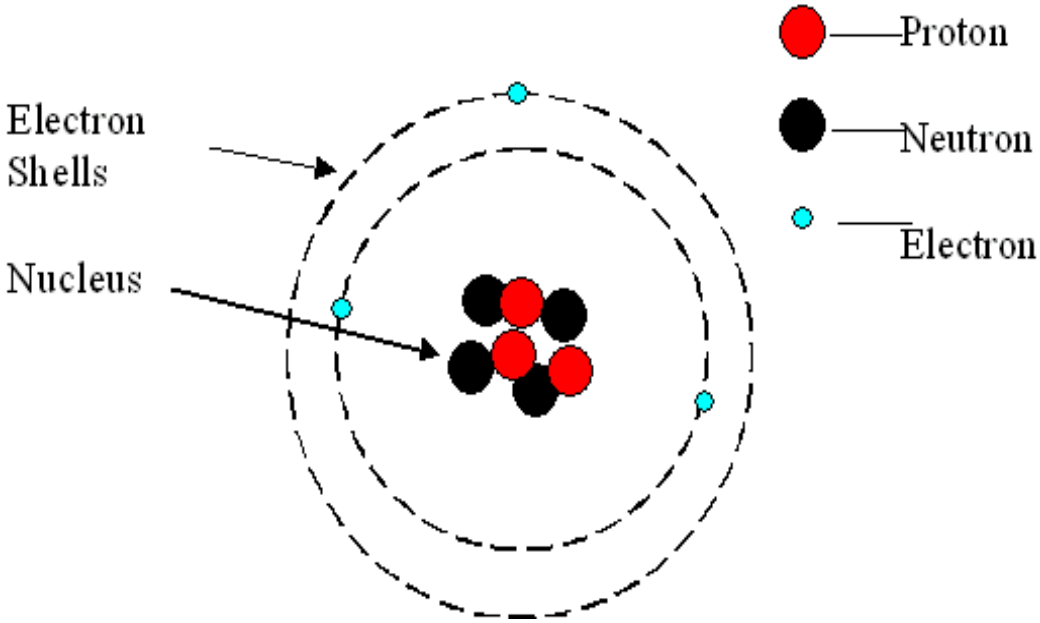
Elements, Compound and Mixtures
Guided Notes

Atom: An atom is the _____of an element which exhibits the _____and_____ characteristics of that element.

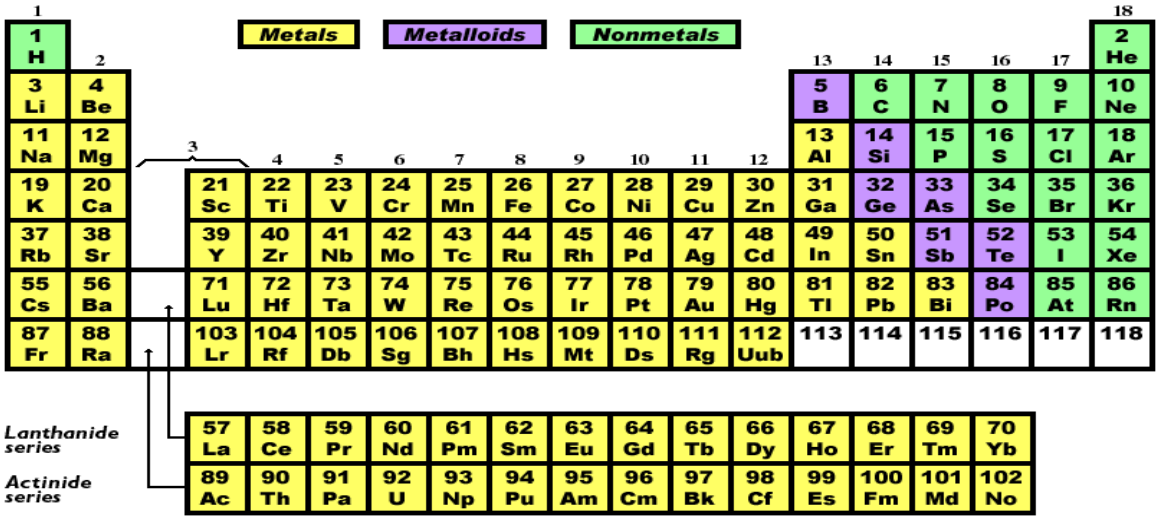


Element: A _____ that cannot be separated into simpler substances by _____ or _____ means.

Elements only contain ONE type of atom. Examples are lead (Pb), silver (Ag), hydrogen (H_2), oxygen (O_2).

Elements are organized by physical and chemical properties on the Periodic Table.

Elements can be divided into nonmetals, metals and metalloids.

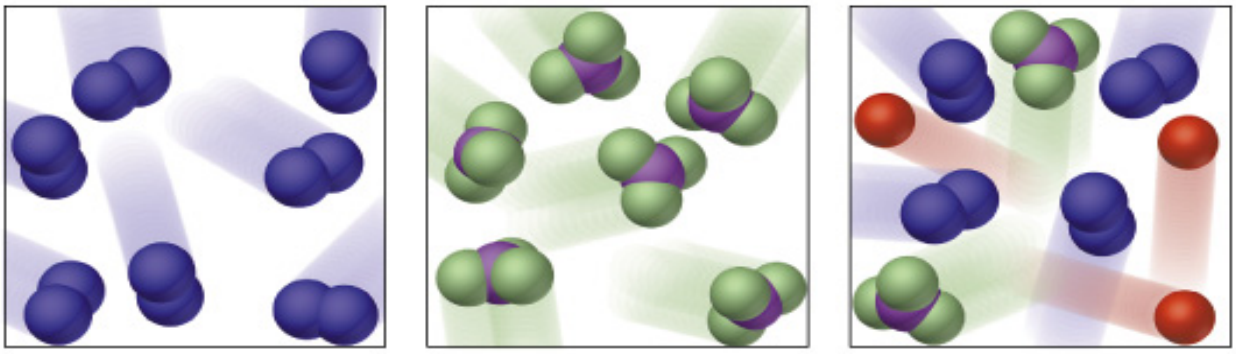


Compound: A _____ composed of _____ or more _____ elements that are _____.

- Can be broken down into a simpler type of matter (elements) by _____ means (but not by _____ means)
- Has properties that are _____from its component elements.
- Always contains the same _____ of its component atoms.

EXAMPLES:
carbon dioxide (CO_2),
calcium oxide (CaO),
sodium hydroxide (NaOH).

All compounds are _____, but not all molecules are _____.



(b) Molecules of an element

(c) Molecules of a compound

(d) Mixture of elements and a compound

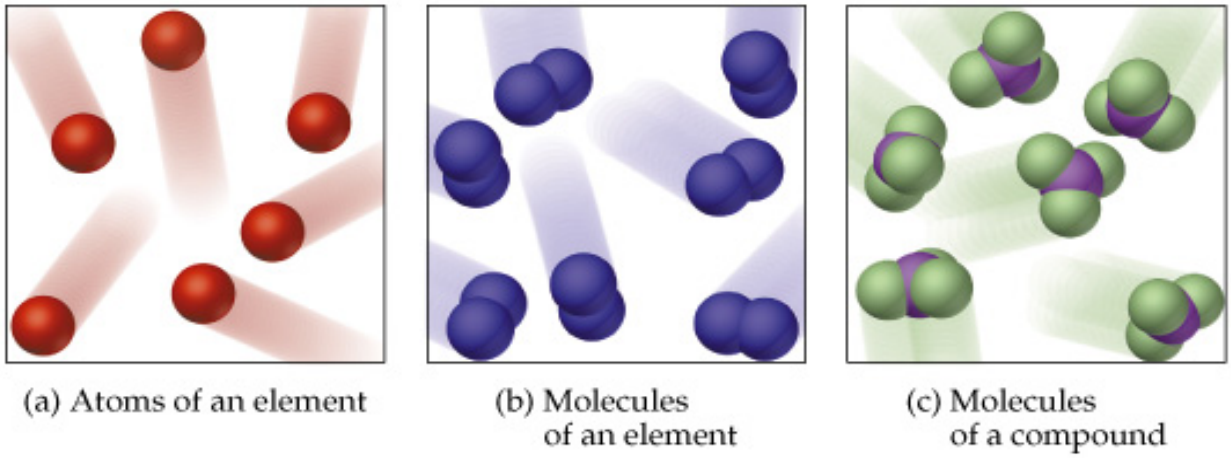
Molecules are the _____ parts of a substance that still retain the properties of that substance

Note: *A compound is always a molecule, but molecule is not always a compound. Elements can be _____, but not _____. Individual _____ are not molecules.*

- Molecules of elements- H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2, P_4, S_8
- Molecules of compounds - Na_2O, KOH, $CaSO_4$, HBr, H_2CO_3

PURE SUBSTANCES consist of the same type of _____

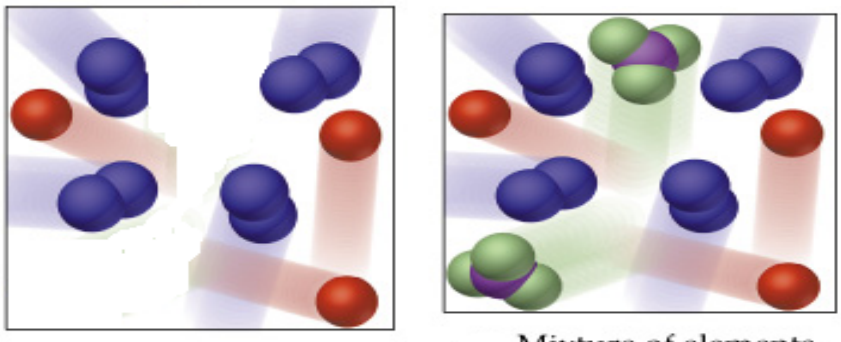
- All of the below are pure substances because all of the molecules are the same.
- Note that _____ are pure substances--it doesn't matter that not all of the atoms are the same element!



(a) Atoms of an element (b) Molecules of an element (c) Molecules of a compound

MIXTURES consist of DIFFERENT TYPES of MOLECULES

- All of the below are _____because **the _____ are NOT the same.** *Note that mixtures can consist of elements--they don't have to consist of compounds!*



Mixture of elements Mixture of elements and a compound

Other terms used:

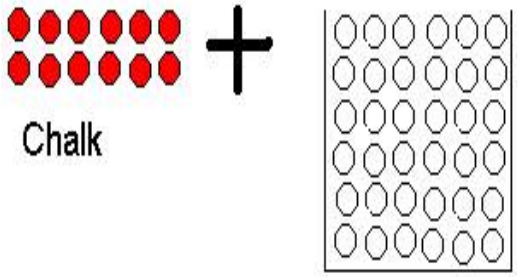
- _____one atom--(Ag)
- _____two atoms N_2, O_2, F_2, H_2, CO
- _____three atoms (H_2O, O_3)

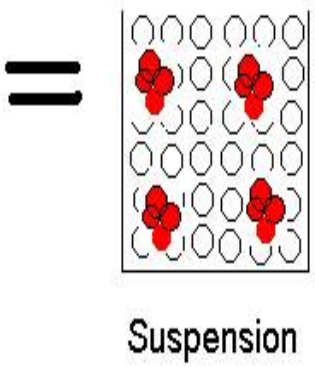
MIXTURES

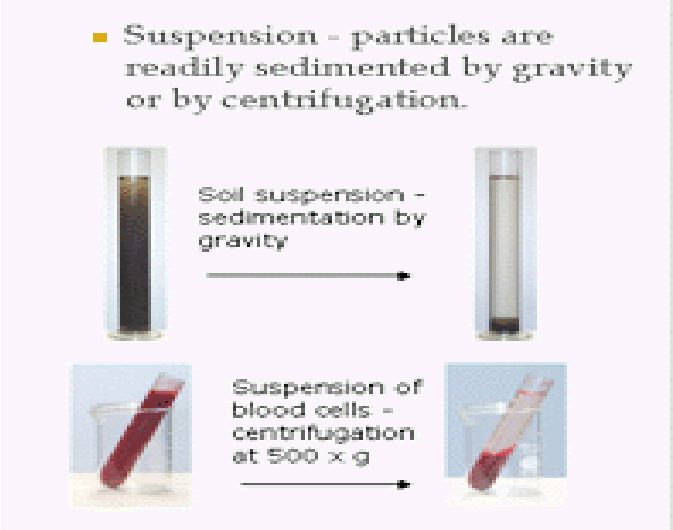
Mixture: A _____ of 2 or more different substances ____bonded together. All mixtures can be broken down or seperated by _____ means. Mixtures are ____ pure substances.

- Homogeneous--Uniform throughout. The same throughout.
  Examples: Milk, lemonade, Gatorade, Air
- Heterogeneous--NOT uniform throughout. Different throughout.
  Examples: Oil and vinegar, dirty water

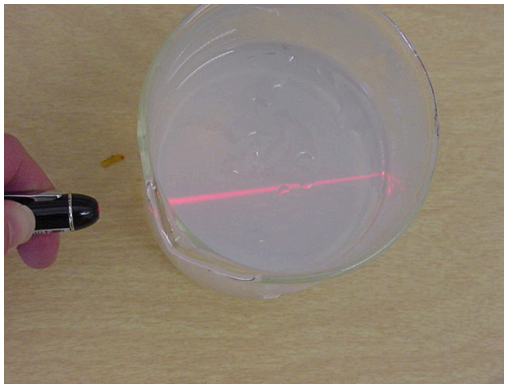
Suspension: a mixture in which particles of a material are dispersed throughout a liquid or gas but are large enough that they _____.



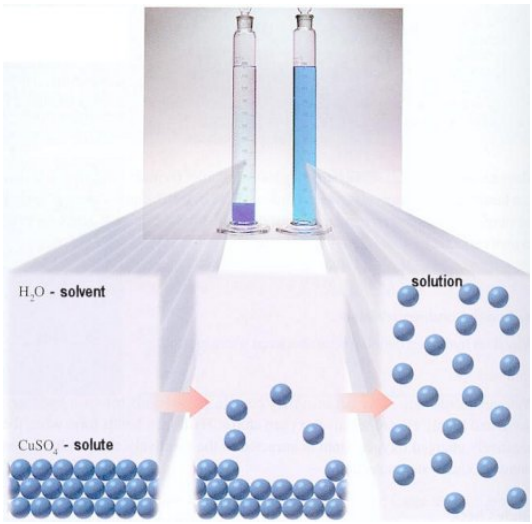




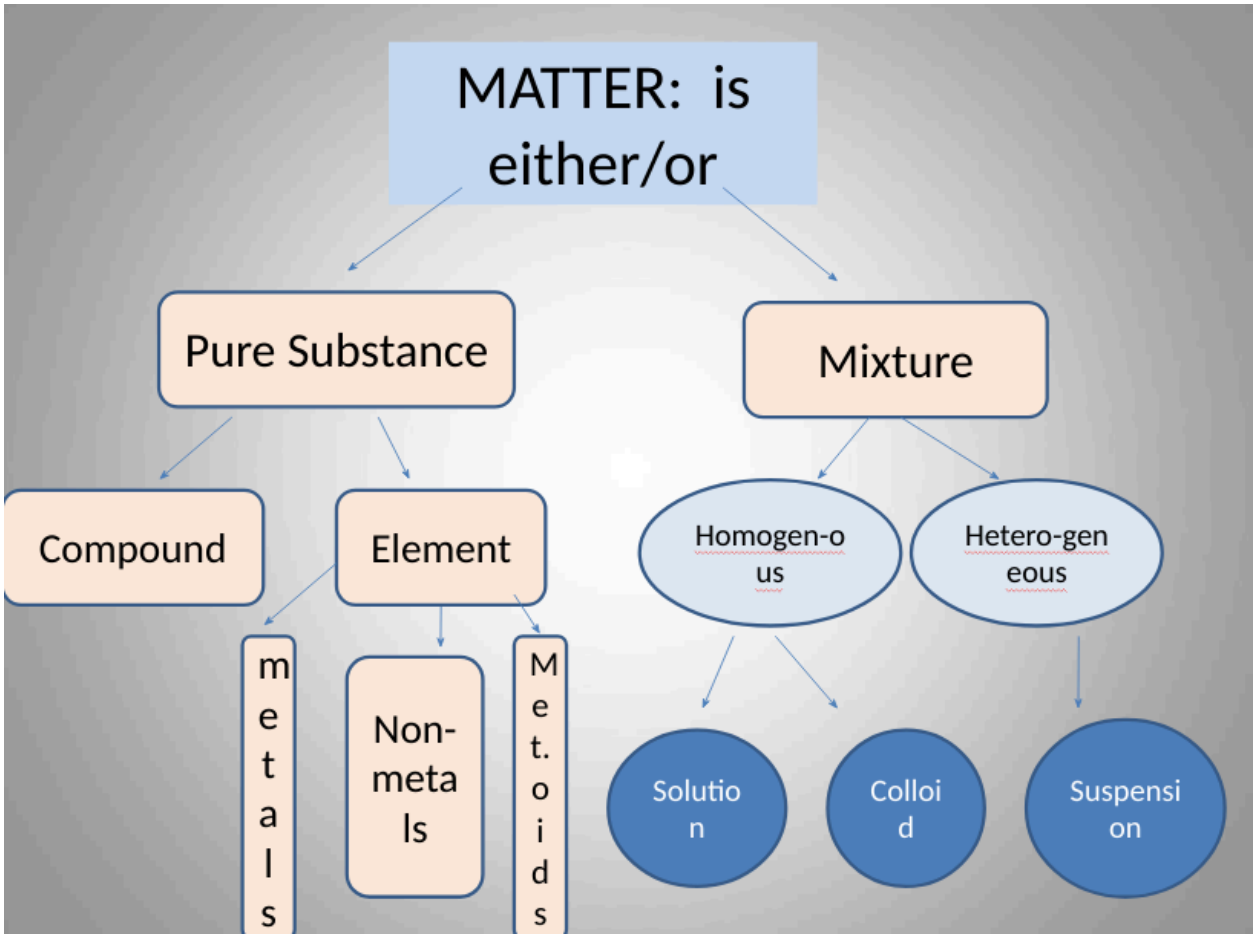
Colloid: a mixture in which the particles are dispersed throughout but are _____ heavy enough to settle out.

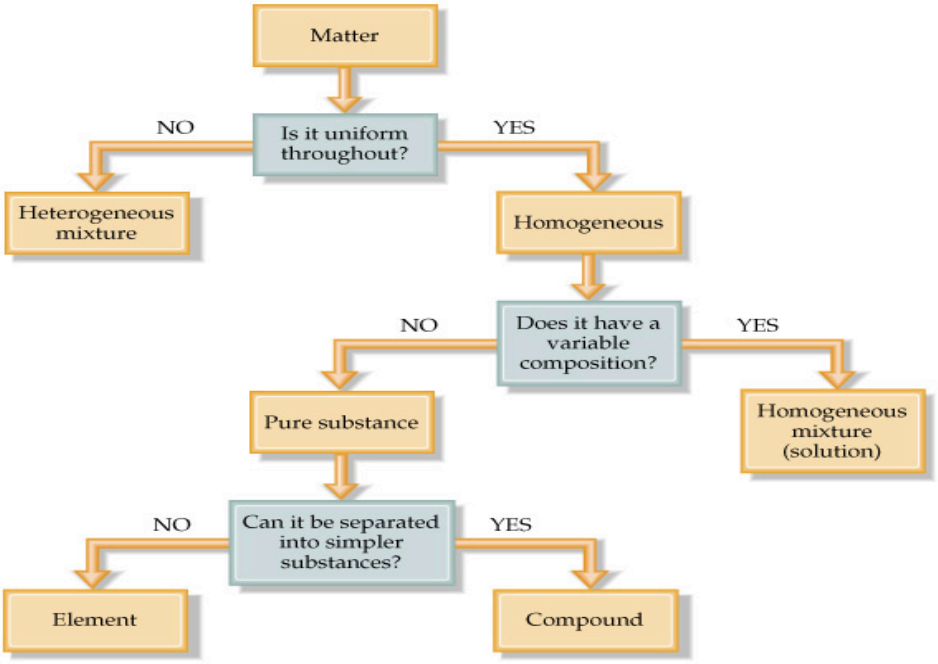


Solution: A homogeneous mixture that appears to be a single substance but is composed of particles of two or more substances that are distributed evenly amongst each other.



TYPE OF MIXTURE	Homo-geneous or Hetero-geneous?	Are particles dissolved or not?	Do the particles scatter light?	Relative size of particles	Can the particles settle out?
Solution					
Suspension					
Colloids					


MATTER: is either/or
Pure Substance
Mixture
Compound
Element
Homogen-o us
Hetero-gen eous
m e t a l s
Non-meta ls
M e t. o i d s
Solutio n
Colloi d
Suspensi on


Matter
Is it uniform throughout?
NO
YES
Heterogeneous mixture
Homogeneous
Does it have a variable composition?
NO
YES
Pure substance
Homogeneous mixture (solution)
Can it be separated into simpler substances?
NO
YES
Element
Compound