Pure Substances and Mixtures

Pure Substance/Mixture Graphic Organizer

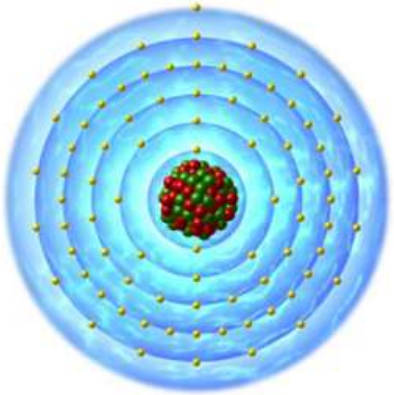
- You will use the information is this PowerPoint to complete your graphic organizer.
- You will only write down the information in **red.**
- **Wait** to be told **WHERE** to write the information in your organizer.

PURE SUBSTANCES

Compositions are definite (they never change). They can either be an element, molecule or compound.

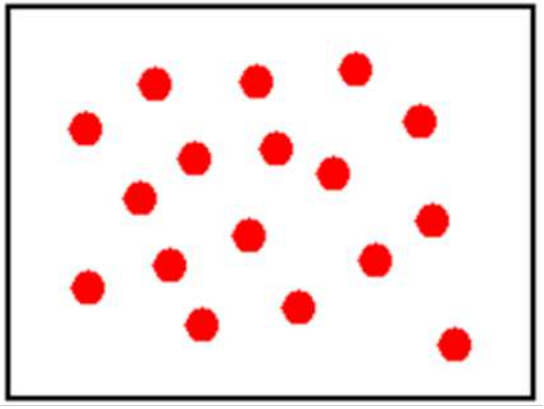
Atoms

- Pure Substance
- The smallest unit of matter.
- Made up of protons, neutrons and electrons.
- Keeps it's physical and chemical properties.
  - For example, one ATOM of gold would still have the properties of gold. (malleable, lustrous, etc.…)

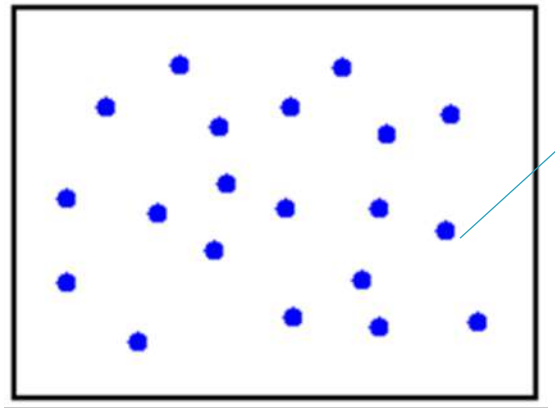


Elements

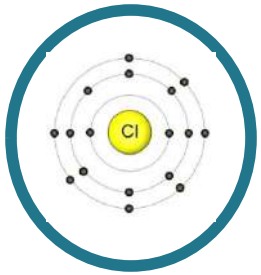
- Pure Substance
- Elements are made of one type of atom.
- Cannot be broken down into simpler substances.
- Found on the periodic table.
- Example: Chlorine, Lead, Gold



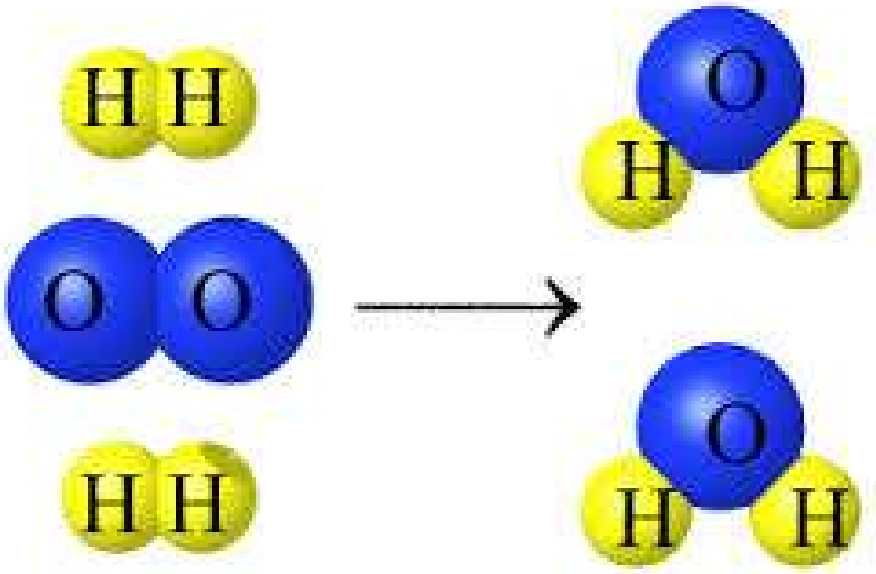
Sample of the Element Lead



Sample of the Element Chlorine



Elements Combine in Chemical Reactions to Form Molecules

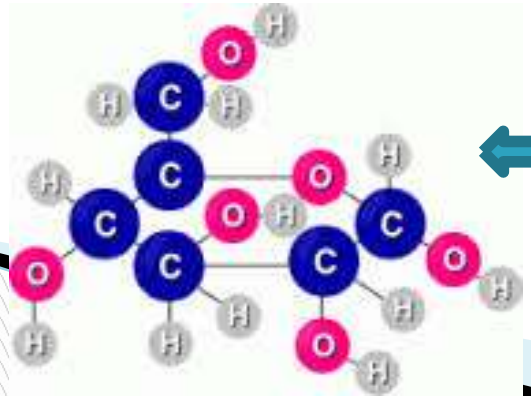


Oxygen and Hydrogen bond together to form water.

Molecules and Compound

- Pure Substances
- When elements chemically bond together, it creates molecules.
- Molecules can be the same element bonded together or many different types of elements bonded together.

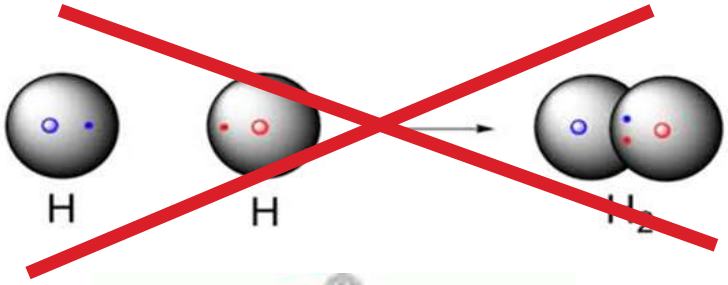
2 hydrogen atoms bonded together



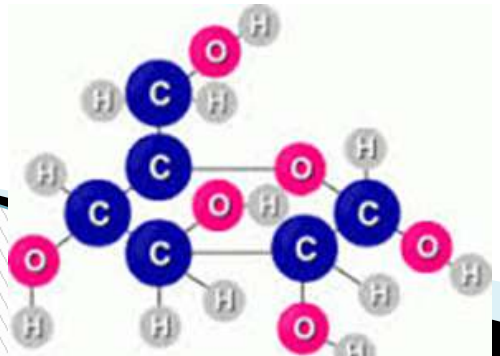
Carbon, oxygen and Hydrogen bond to create a molecule of sugar.

Molecules and Compounds

- Some molecules are called compounds.
- Compounds are molecules that are made up of more than 1 type of atom.
- For example (from previous slide)



NOT a Compound



Compound

ALL compounds are molecules, but not all molecules are compounds.

Some compounds have those scientific names like…..

- Carbon Dioxide
- Iron Oxide (rust)
- Sodium Chloride (salt)
- Sodium Bicarbonate (baking powder)
- Dihydroxyaluminum sodium carbonate (Rolaids)

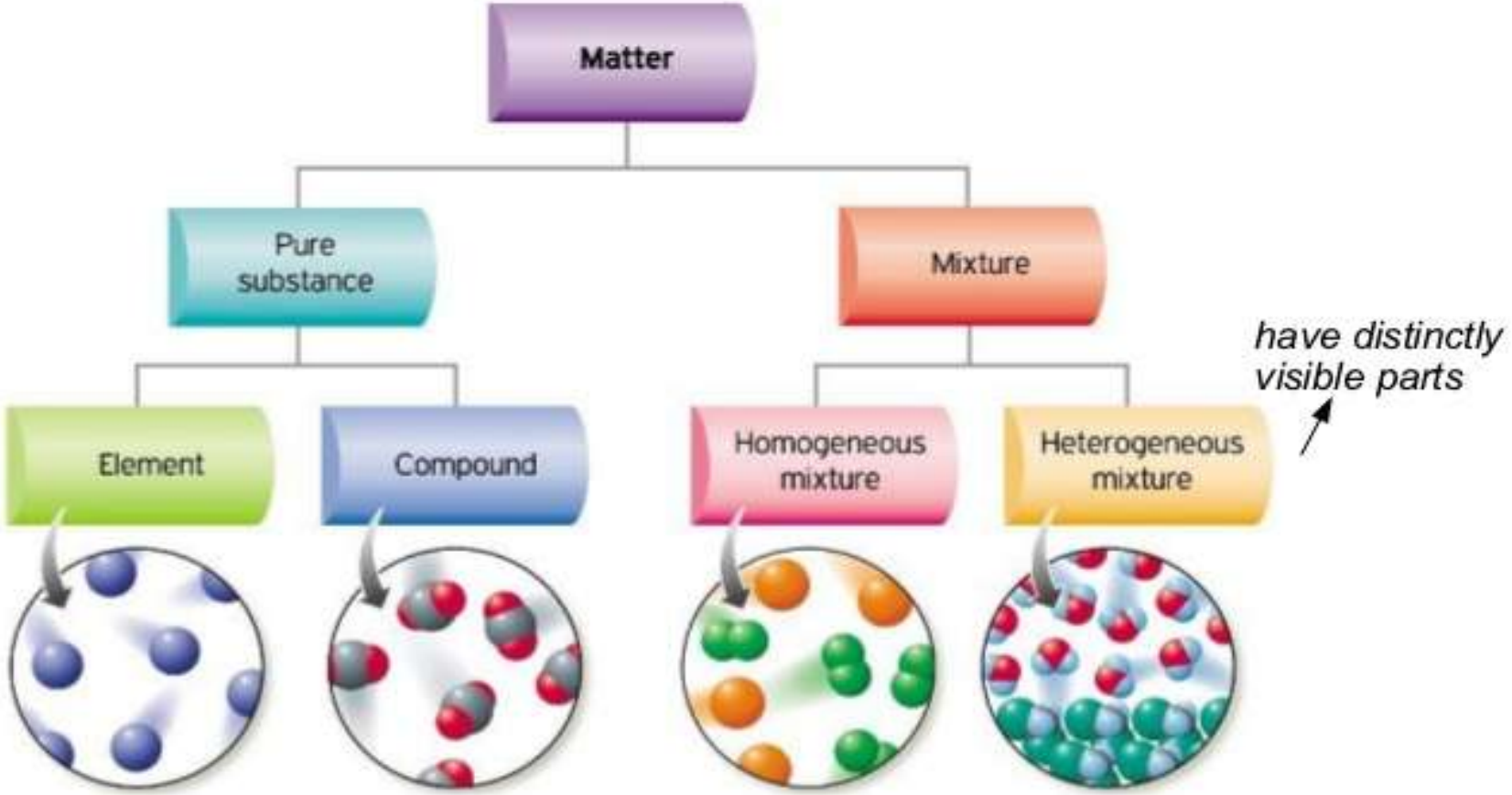
Mixtures

- **Not Pure Substances**
- Made up of 2 or more substances that are NOT chemically bonded.
- Each substance keeps it's own identity.
- For example:
  - Air
  - Ocean Water
  - Soil
  - Trail mix

2 types of Mixtures

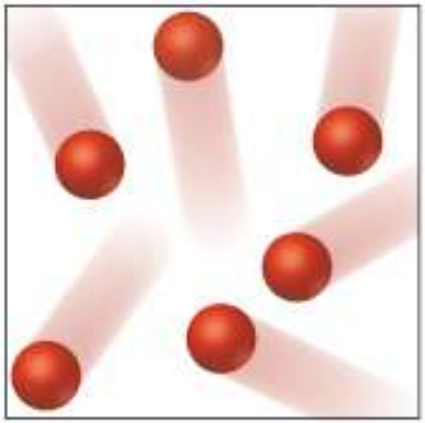
- Heterogeneous Mixture – can see the different substances
  - Trail mix, Italian dressing, soil
  - "Shake well before use"

- Homogeneous Mixture – appear to be same throughout (can not see different substances)
  - Air, milk, lemonade

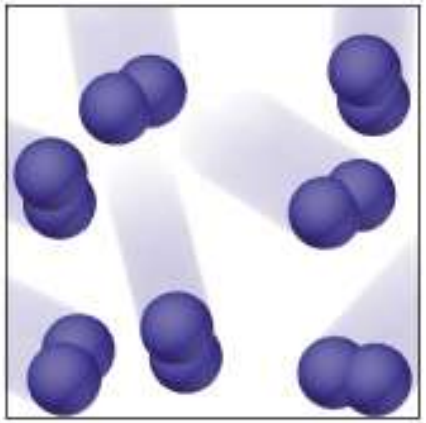


Look at a Periodic Table. There are 113 elements in the Periodic Table

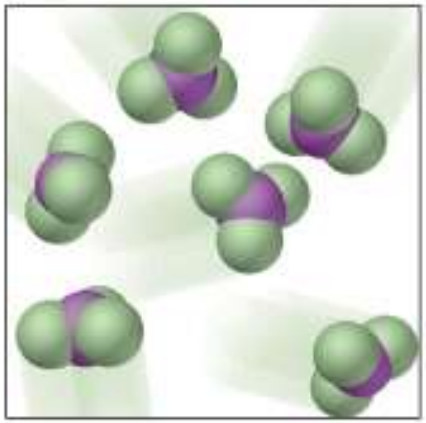
Most materials we encounter in the world are mixtures. The air we breathe is a mixture of oxygen, nitrogen, and other gases. The oceans are mixtures of water, salts and other substances



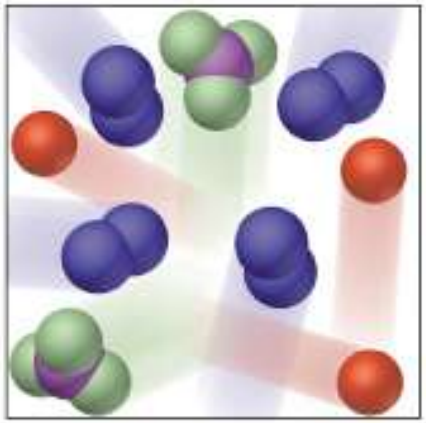
(a) Atoms of an element



(b) Molecules of an element



(c) Molecules of a compound



(d) Mixture of elements and a compound