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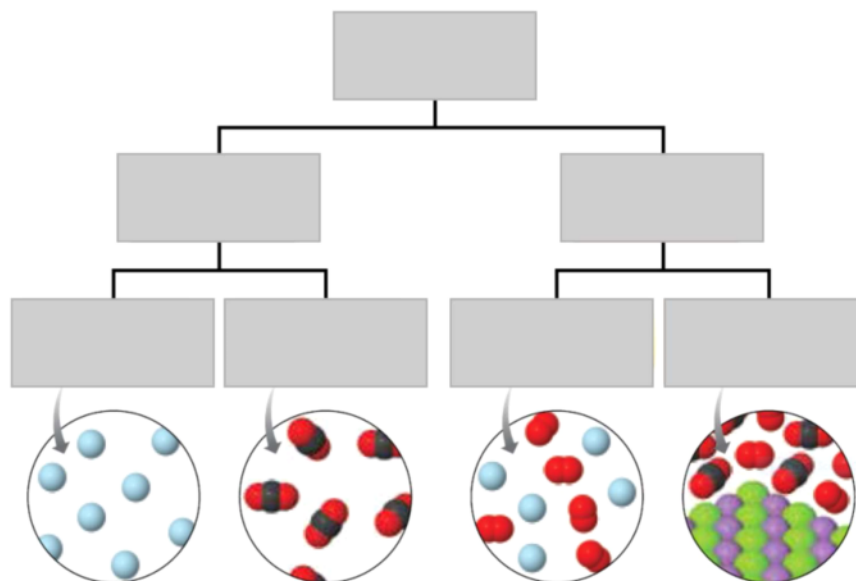
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Science 9 – Chemistry Topic 2.1 - C1 Matter and its interactions make up our world.

Matter: anything that has Mass and takes up space (Volume) and includes all solids, liquids and Gas

- Classification of matter is based on properties
 - **Pure substance:** made up of one type of particle; cannot be separated by physical means
 - **Mixture:** made up of two or more pure substances; can be separated by physical means



Pure Substances: Compounds and Elements

- **Elements:** made up of one type of atom; cannot be broken down into simpler substances (example: Gold, Oxygen, Carbon)
- **Compound**: made up of two or more elements; can be broken down into simpler substances
 - example: water H_2O is made of the atom Hydrogen and Oxygen 
 - Table Salt $NaCl$ is made of the atom Sodium and Chlorine

Mixtures: Homogeneous and Heterogeneous Mixtures

- **Homogeneous** mixtures (solutions): mixed uniformly; cannot see their components
 - Example: air (Nitrogen, oxygen, hydrogen), steel (Iron and other elements)
 - Example: Soda – mixture of Sugar, Corn Syrup and CO_2 in Water
- **Heterogeneous** mixture: have different components that you see
 - Particles are large, visible, clumps
 - Example: beach sand, salad dressing, a box of candy ^ ^

Properties of Matter

Matter can be described by

- **Physical properties:** characteristics that can be observed with your Senses or measured without changing is chemical identity (examples: color, texture)
- **Chemical properties:** describe the ability of matter to react with another substance to form different substances (examples: combustibility, lack of reactivity)

Physical Properties		Chemical Properties
<ul style="list-style-type: none">• Colour• state of matter• texture• hardness• melting point• boiling point	<ul style="list-style-type: none">• malleability• viscosity• Solubility.• density.	<ul style="list-style-type: none">• Combustibility.• reactivity with acid.• reactivity with oxygen.• lack of reactivity.

Use P.157 – 163 from the Science Prob 9 (old) textbook to complete the extra Properties of Matter Note

Chemical Reactions

Chemical reaction: one or more pure substances interact to form a different substance or substances

- Elements can react to form compounds
- Compounds and elements can react to form new compounds
- Compounds can break apart to form elements and simpler compounds
- Example: In a forest fire, compounds in plants react with oxygen in the air to form many compounds, including carbon dioxide, carbon monoxide, and water, as well as the element carbon.