

## Matter

All matter is created of tiny particles called atoms.

A group of atoms that are bonded together is called a molecule.

Pure substances can be elements or compounds.

Water ( $H_2O$ ) Salt ( $NaCl$ ) Baking Soda( $NaHCO_3$ ) are all pure substances.

## Physical Properties & Changes

Freezing point, melting point, boiling point, ductility, density, malleability and magnetism are all PHYSICAL PROPERTIES.

Cutting, chopping, bending, breaking, melting, boiling, evaporating, freezing, and sublimation are all PHYSICAL CHANGES.

Salt dissolving in water and sugar dissolving in water result in the formation of mixtures, a physical change.

Mixtures can be separated by physical means.

As a substance changes from a gas to a liquid, the distance between the molecules decreases, and the temperature of the substance decreases.

As a substance changes from a solid to a liquid, the distance between the molecules increases, and the temperature of the substance increases.

Matter expands when heated because the particles move farther apart.

## Chemical Properties, Changes & Reactions and the Law of Conservation of Matter

The ability to rust, burn, tarnish, & reactivity are all CHEMICAL PROPERTIES.

Rusting, burning, tarnishing & reacting are all CHEMICAL CHANGES.

Chemical reactions result in the formation of new substances.

Balanced equations illustrate the law of conservation of matter.

In chemical reactions the mass of products must equal the mass of reactants.

Both sides of a balanced chemical equation must have the same number of each type of atom.

Each element has a unique atomic number and a unique atomic mass.

### Periodic Table

The periodic table is set up according to atomic number (number of protons).

The atomic number is the number of protons.

The mass number is the number of protons plus the number of neutrons.

The periodic table displays metals, nonmetals, and metalloids.

The periodic table is divided in to horizontal rows based on electron shell configuration.

The periodic table is divided in to vertical groups based on similar properties.

The metals are most reactive and are on the left side and middle of the periodic table.

As the periodic table goes from left to right, reactivity decreases.

The noble gases are basically nonreactive because their outer electron shells are full.