Describing the Characteristics of Matter

We describe Chemistry as the science concerned with the properties, composition, and behaviour of matter.

We describe the **Physical and Chemical Properties of Matter** and the Physical and Chemical Changes that Matter can go through when it is heated, cooled, combined or separated. Chemistry is the Science of TRANSFORMATION!

We should recall the properties of Solids, Liquids and Gases and be able to describe their different properties and the simple molecular motions and arrangements of the particles.

State	Solid	Liquid	Gas
Diagram			
Arrangement of particles	Regular arrangement	Randomly arranged	Randomly arranged
Movement of particles	Vibrate about a fixed position	Move around each other	Move quickly in all directions
Closeness of particles	Very close	Close	Far apart

Physical and Chemical Properties

If any of the following words are new to you, be sure you look up the meaning of the word. You should be able to explain what each of these properties are and provide an example.

Physical Properties of matter are usually those that we can observe with our senses. A substance's physical property allows us to identify the substance without causing a change in the composition of the substance.

Some examples of Physical Properties **are:**
- physical state (solid, liquid or gas at certain temperatures and pressures)
- colour
- odor
- solubility in water
- density
- melting point
- boiling point
- hardness
- ductility
- hardness
- malleability
- conductivity

Chemical Properties of matter are those that relate to how the substance changes in composition or how it interacts with other substances.

Some examples of Chemical Properties **are:**
- Heat of combustion
- Reactivity with water
- pH
- oxidizing ability
- paper burns
- iron rusts
- gold does not rust
- wood rots
- nitrogen does not burn
- silver does not react with water
- sodium reacts with water

In each of these, the substance's chemical property is its tendency to:
  i.   react
  ii. tarnish
  iii. corrode
  iv. explode