

Physical Science Reference Guide

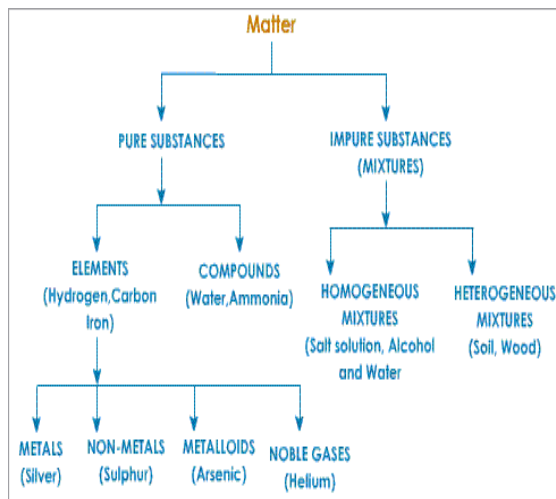
Physical Change: no new substance is produced; may involve a change of state; is usually reversible



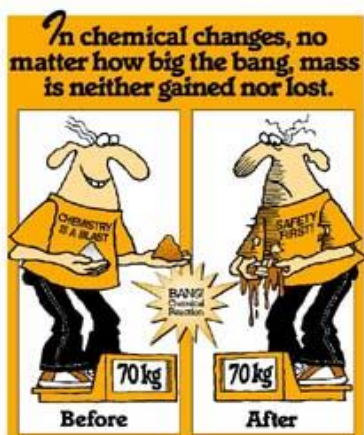
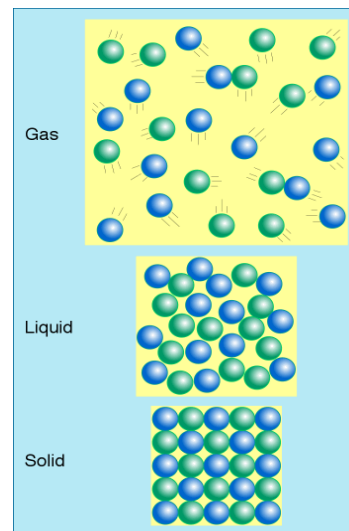
Chemical Change: one or more new substances are produced; usually involve heat or light being released, an odor, a color change, and/or a gas being formed; difficult to reverse



Matter



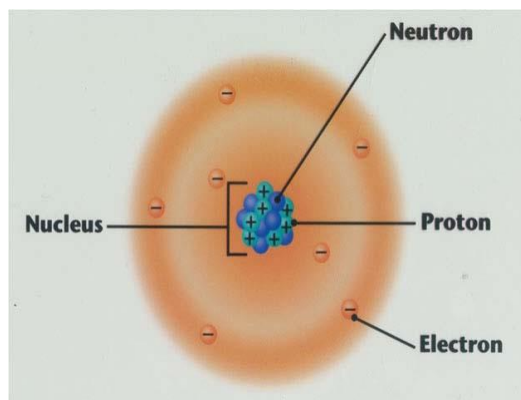
Phases of Matter



LAW OF CONSERVATION OF MATTER: Matter cannot be made or destroyed by ordinary chemical means.

Atomic Structure

Atoms are the smallest unit of an element



Factors in an Experiment

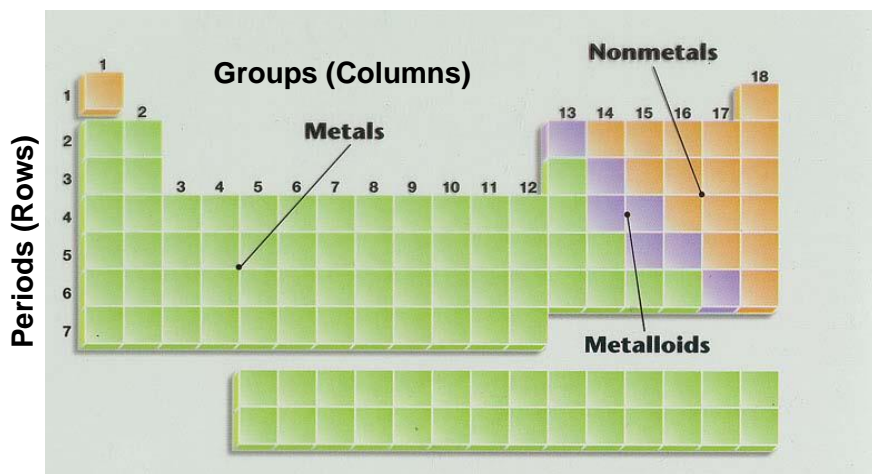
Dependent Variable: factor being measured (also called outcome variable), always indicated on the y axis when graphed

Independent Variable: factor being altered (also called the test variable), always indicated on the x axis when graphed

Control: standard used for comparison to the experimental data

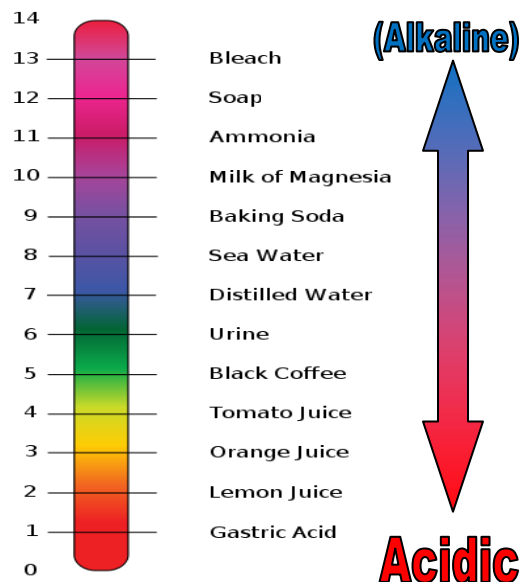
Constant: factor(s) that do(es) not change so that a relationship between the independent and dependent variables can be established

Periodic Table



Atomic Number = number of protons/electrons
Atomic Mass = number of protons + number of neutrons

pH Scale



Law of Conservation of Energy

Potential energy

Increasing P.E. Decreasing P.E.

Decreasing K.E. Increasing K.E.

Kinetic energy Kinetic energy

Heat Transfer

Always from Warmer to Cooler objects

90°C 10°C

Light

- White light is made up of many colors
- Visible light is part of a broader electromagnetic spectrum

DIAGRAM OF THE ELECTROMAGNETIC SPECTRUM

Red Green Purple

Visible

Radio Microwave Infrared Ultra-Violet X-Ray Gamma Ray

Higher Energy
Higher Frequency

Higher Wavelength

Unbalanced Forces Create or change motion

300 N 150 N

← Net Force

← Motion

Mass ≠ Weight

Mass = amount of matter in a substance measured in kilograms (kg)

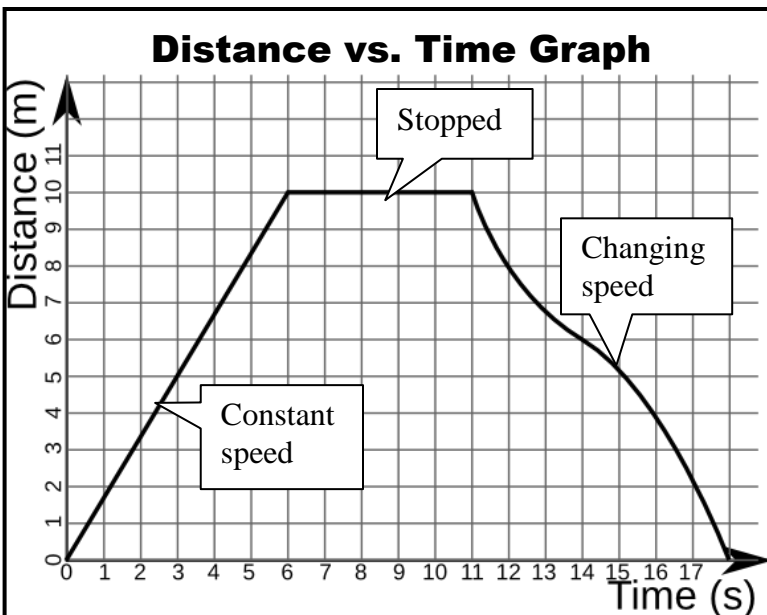
Weight = force on that matter by gravity measured in Newtons (N)

Gravity on Earth is 6 times greater than gravity on the Moon.

Weight changes when gravity changes. Mass does not change.

Mass = 120 kg
Weight = 1176 N

Mass = 120 kg
Weight = 192 N



Density

$$d = \frac{m}{v}$$

Density of Water = 1 g/mL

3 g/mL 0.5 g/mL