

Final Science Review

June 19th 2016

Mr. Tam





- I can determine the concentration of an aqueous solution (g/L, percentage or ppm)



0.15 g of potassium chloride, KCl, is dissolved in 500 mL of water. Determine the concentration of this solution ...

(a) in g/L:
$$C = \frac{0.15 \text{ g}}{0.5 \text{ L}} = 0.3 \text{ g/L}$$

(b) in % m/v:
$$C = \frac{0.15 \text{ g}}{500 \text{ mL}} \times 100\% = 0.03 \%$$

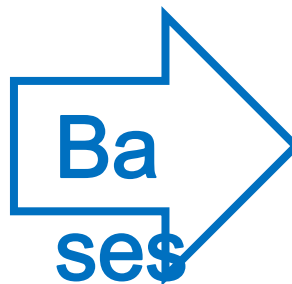
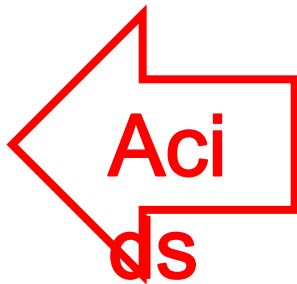
(c) in ppm:
$$C = \frac{150 \text{ mg}}{0.5 \text{ L}} = 300 \text{ ppm}$$



- I can describe the pH scale (acidity, alkalinity, neutrality, increasing and decreasing values, logarithmic nature of the scale)

pH

More H^+



more OH^-
less H^+



0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

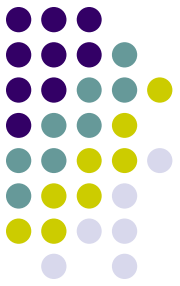
STRONG

weak

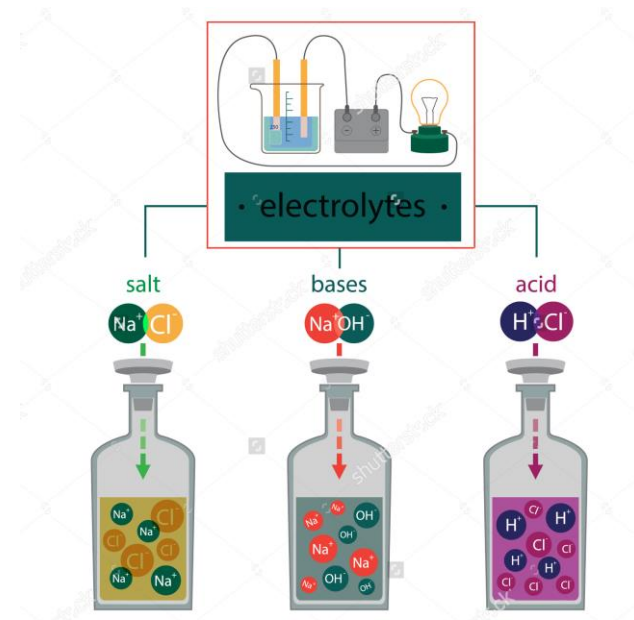
weak

STRONG

Neutral

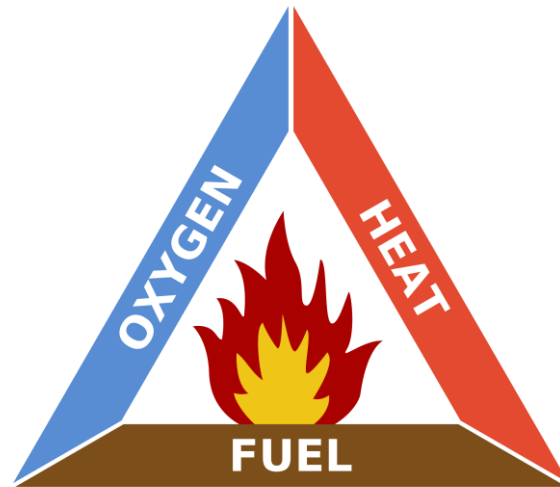


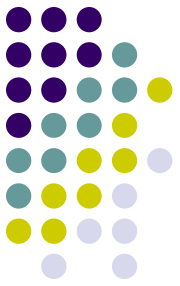
- I can describe the mechanism that allows aqueous solutions to conduct electricity (electrolytic dissolution of a solute, formation of mobile ions)



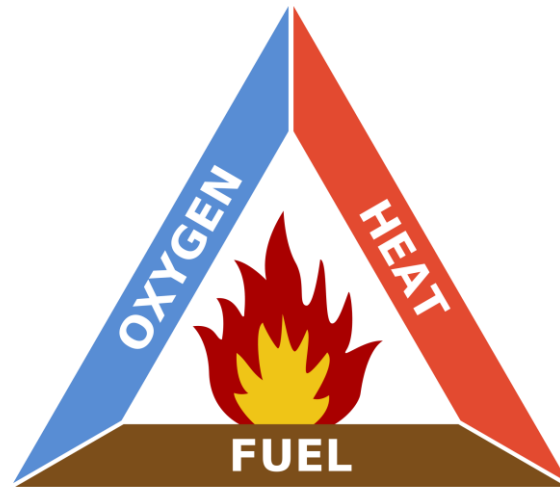


- I can describe the recognizable manifestations of rapid combustion



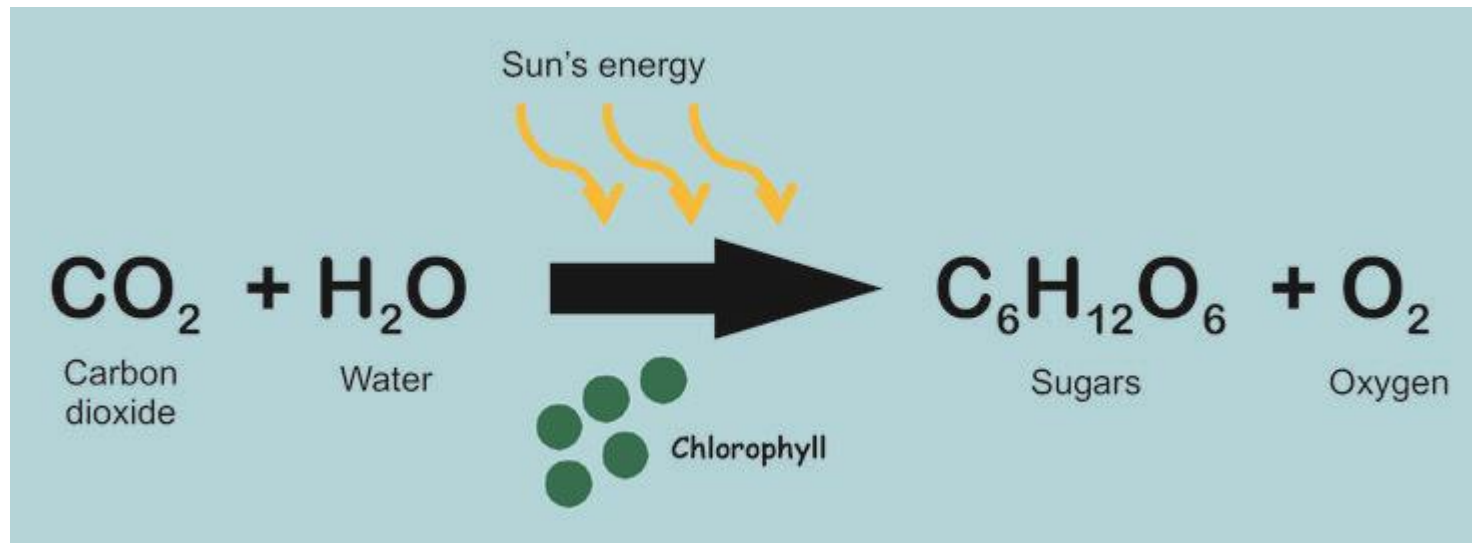


- I can explain a combustion reaction using the fire triangle



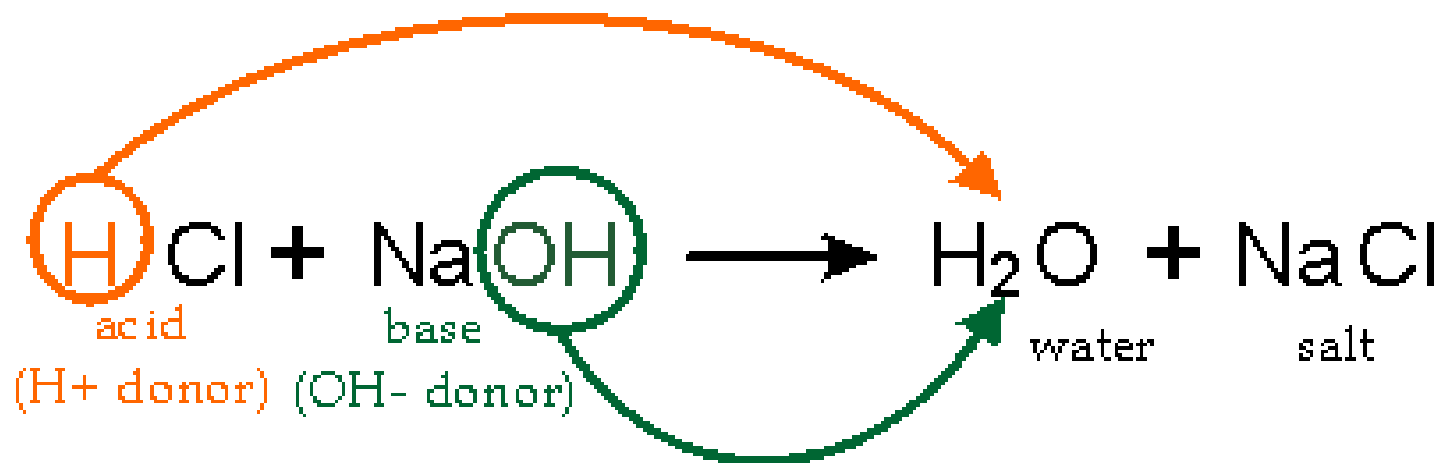


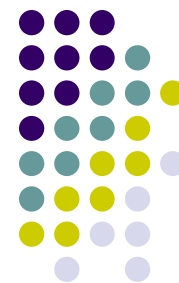
- I can represent the photosynthesis reaction and cellular respiration in a balanced equation.



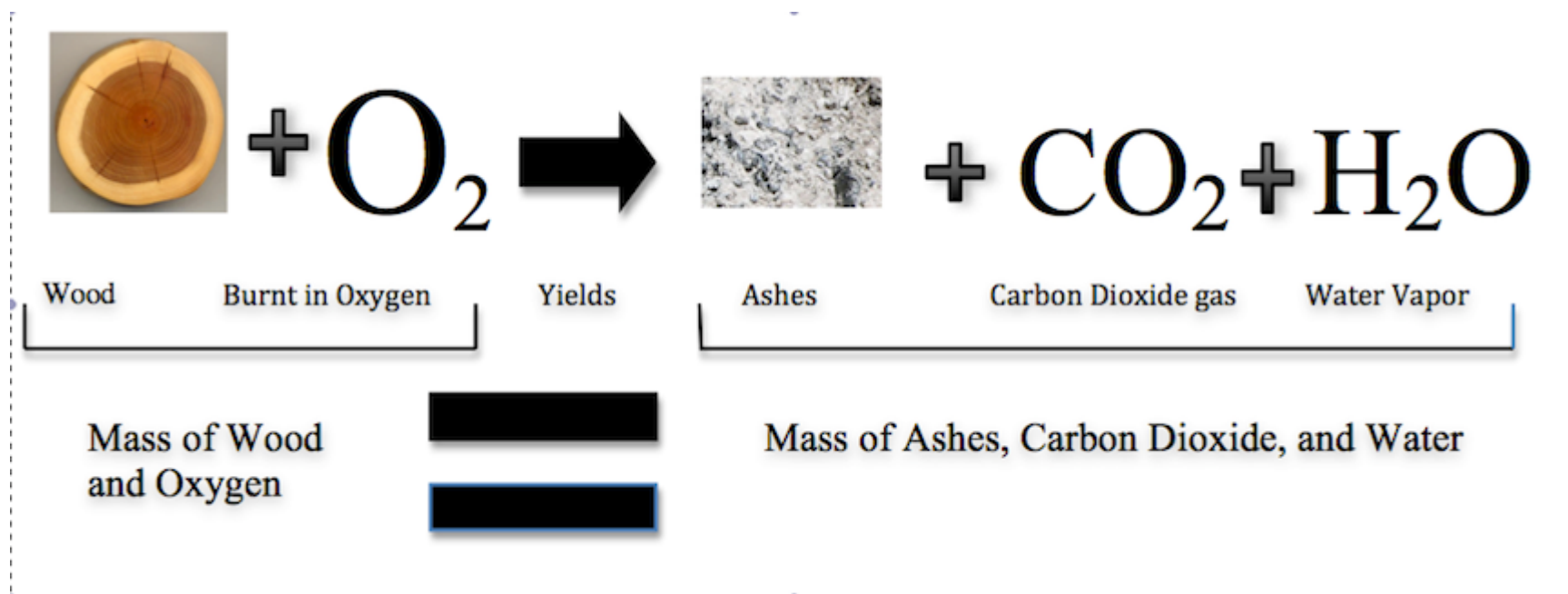


- I can name the products (salt and water) formed during acid-base neutralization reactions



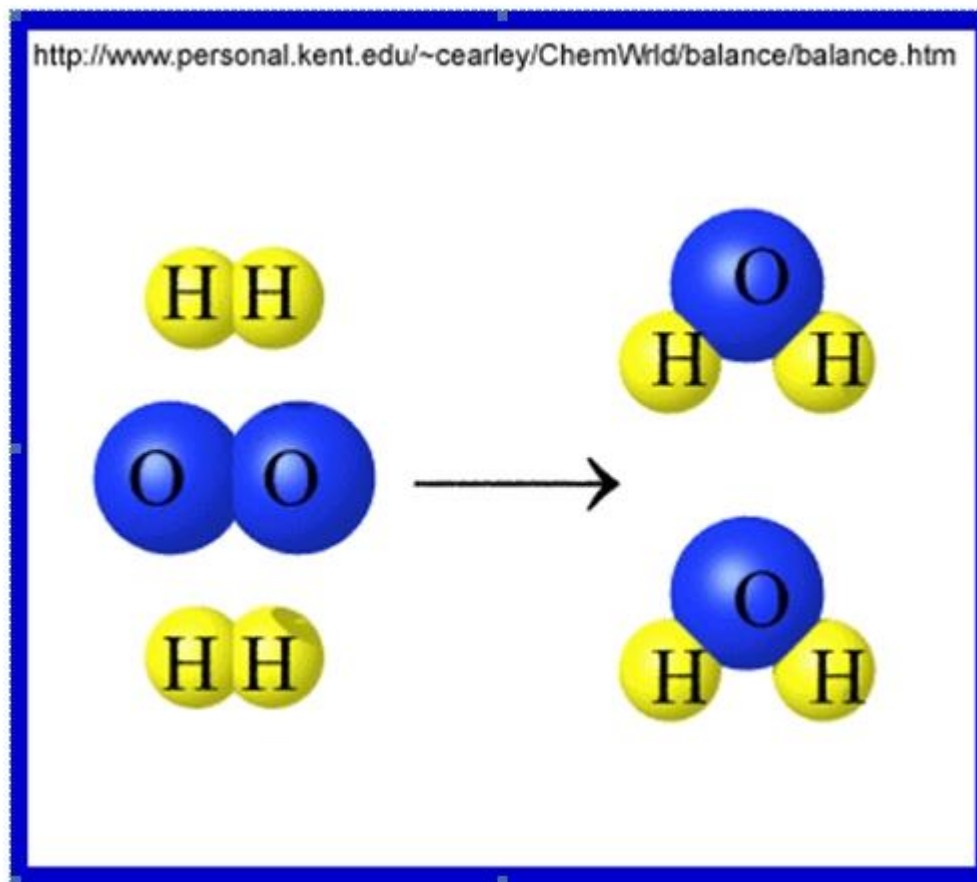


- I can describe the law of conservation of mass during a chemical reaction





- I can represent the conservation of mass using the particle model.





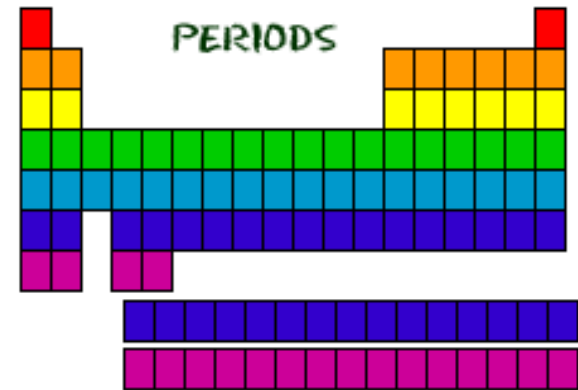
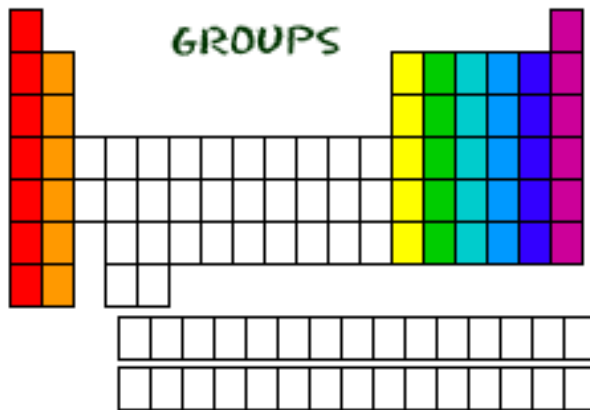
- I can balance chemical equations



$$\begin{array}{ccc} \mathbf{C=1} & & \mathbf{C=1} \\ \mathbf{H=4} & = & \mathbf{H=4} \\ \mathbf{O=4} & & \mathbf{O=4} \end{array}$$



- I can locate the groups and periods in the periodic table

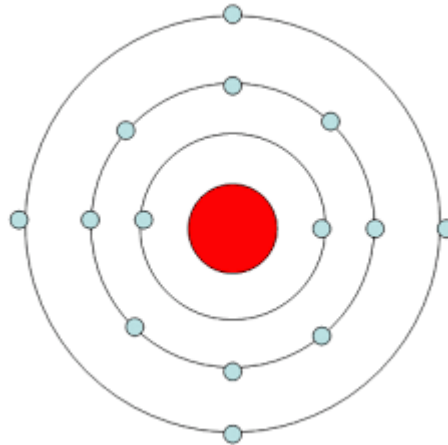




- I know that the number of electron shells in an element is the same as the number of its period.

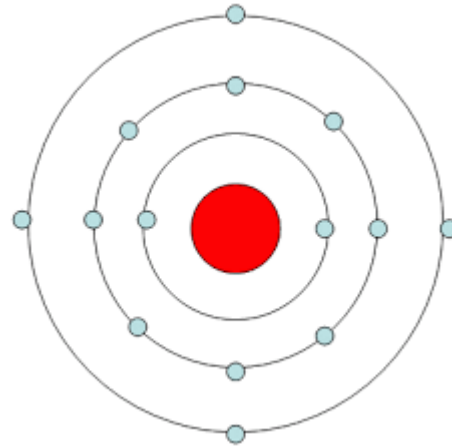


- I can describe the Rutherford-Bohr atomic model



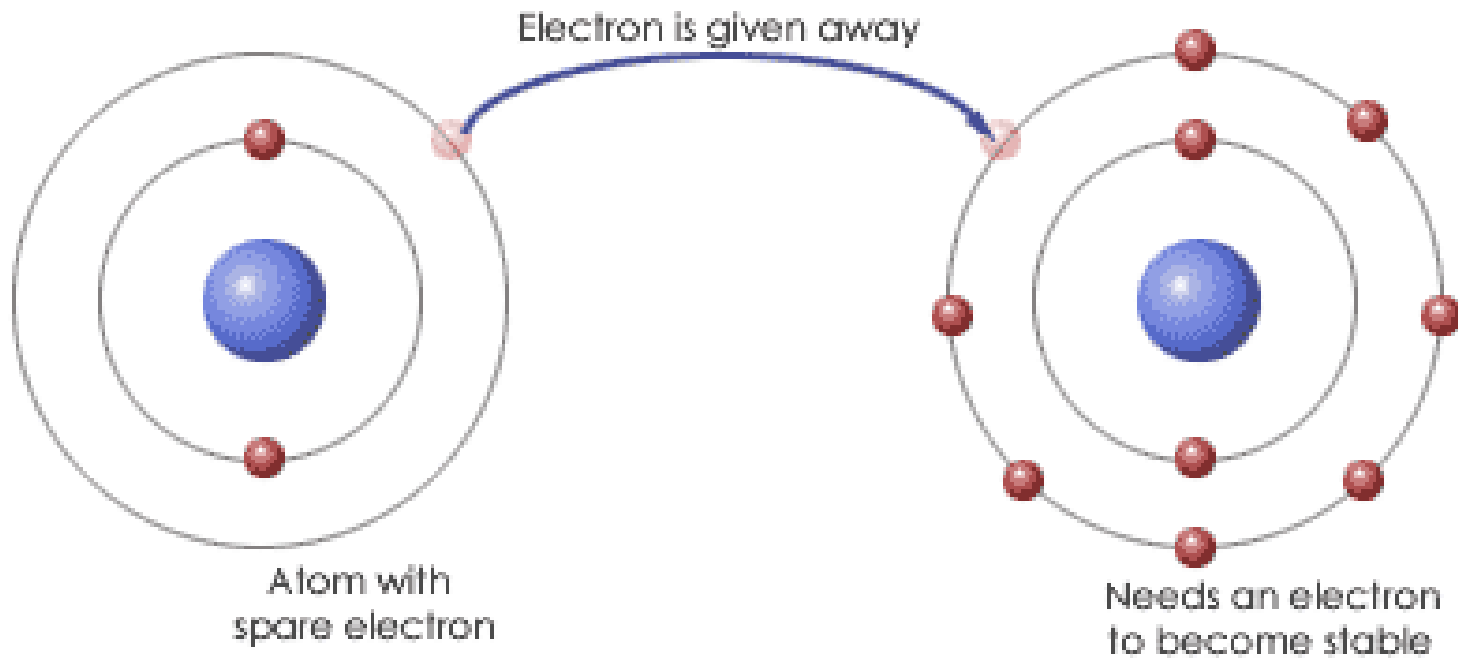


- I can represent atoms using the Rutherford-Bohr model.



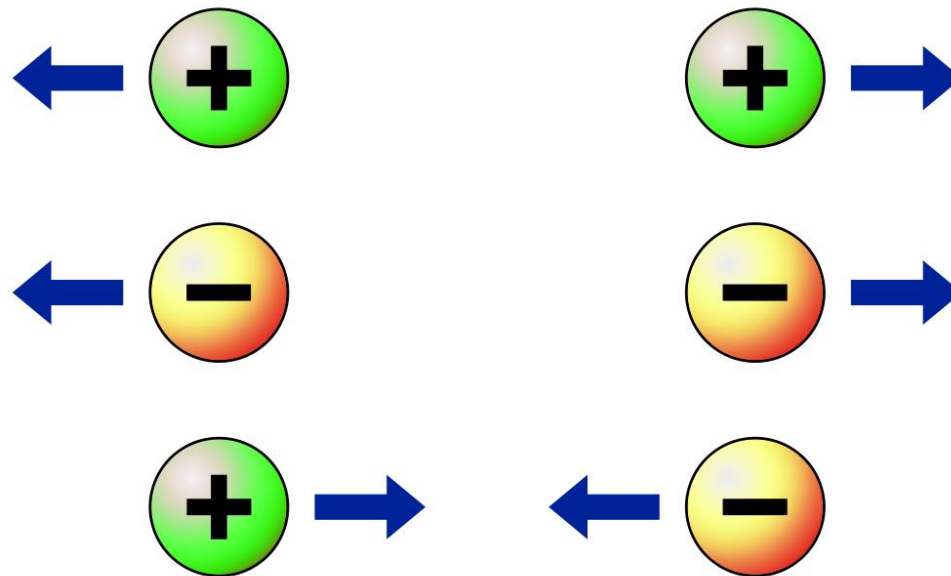


- I can describe the concept of ion



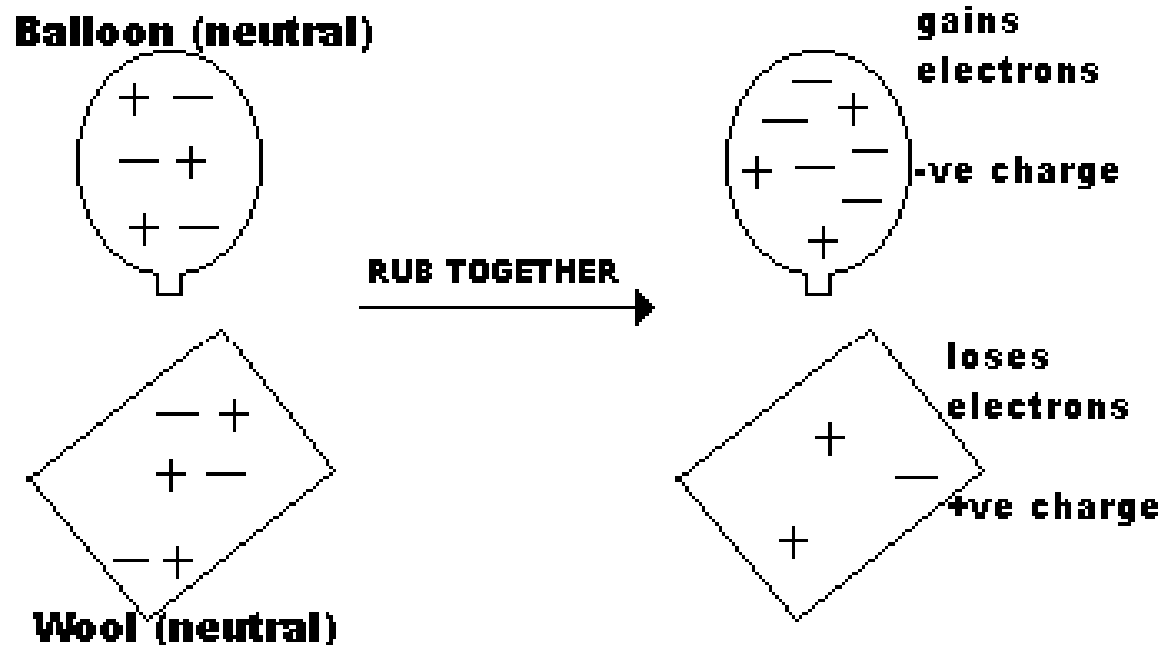


- I understand that two objects with similar electrical charges will repel each other and that two objects with opposite electrical charges will attract each other.



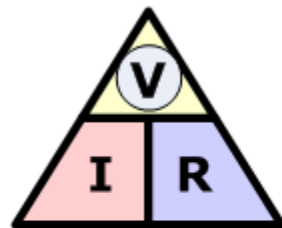


- I can describe static electricity as the transfer of electrons from one body to another.

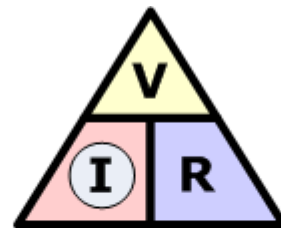




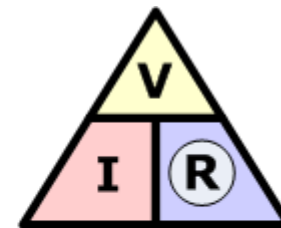
- I can use the equation ($V = RI$) to calculate voltage, resistance and current intensity in an electrical circuit



$$\textcircled{V} = I \times R$$



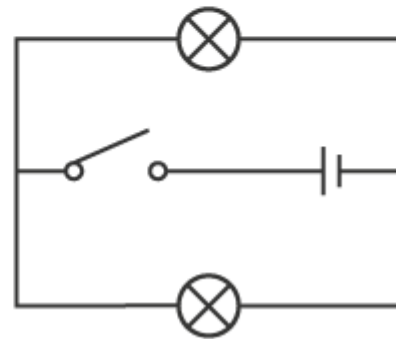
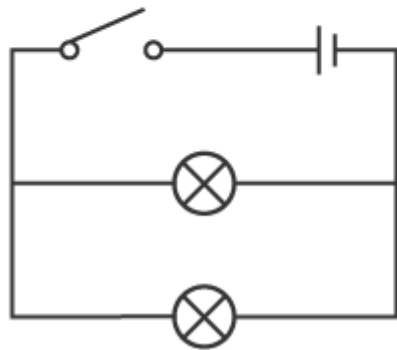
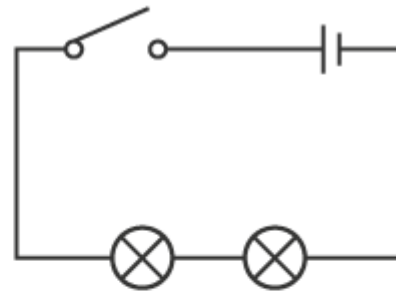
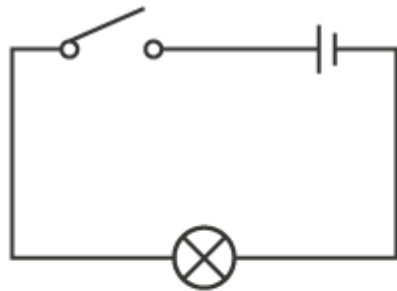
$$\textcircled{I} = \frac{V}{R}$$



$$\textcircled{R} = \frac{V}{I}$$

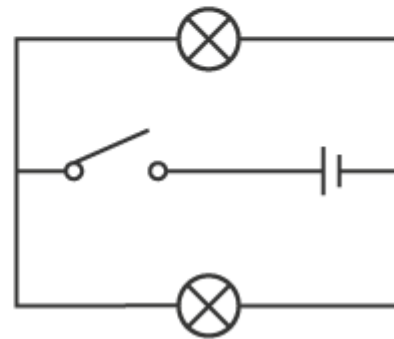
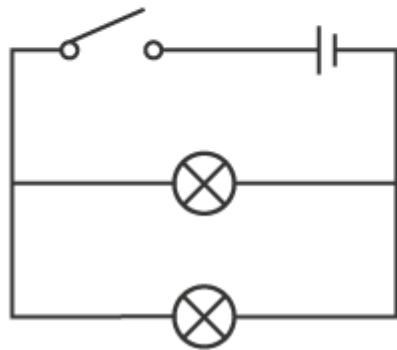
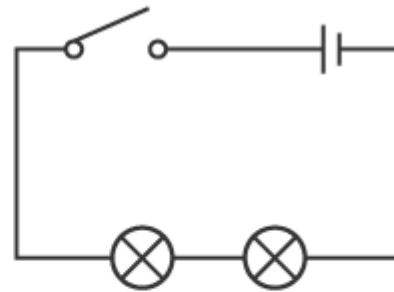
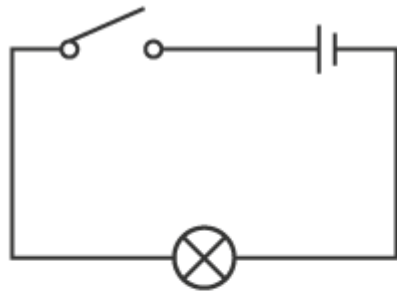


- I can describe the function of different components of an electrical circuit



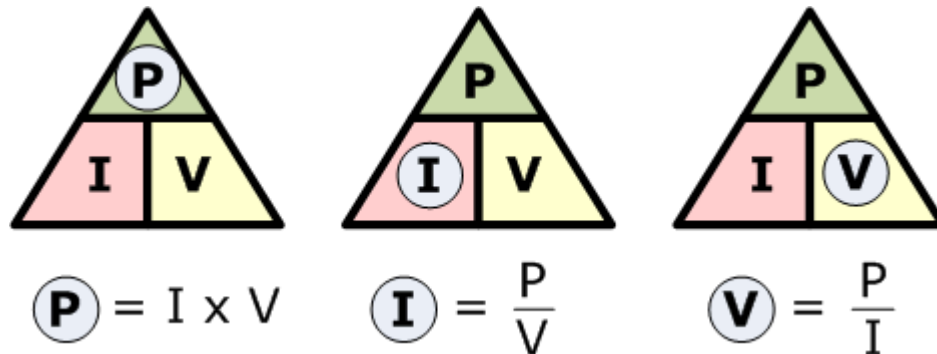


- I can identify the two main types of electrical circuits (series, parallel).





- I can use the equation $P = VI$ to calculate power, voltage and current intensity in an electrical circuit.





- I can use the equation $E = P\Delta t$ to calculate the electrical energy consumed, the power of an electrical appliance and the amount of time it is in operation.

energy used = power x time applied

energy is in joules (J)

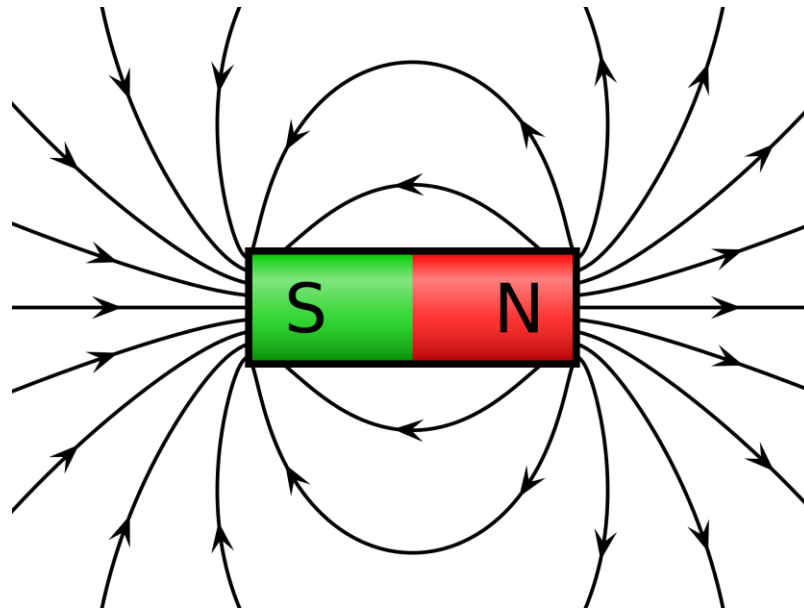
power is in watts (W)

time is in seconds (s)



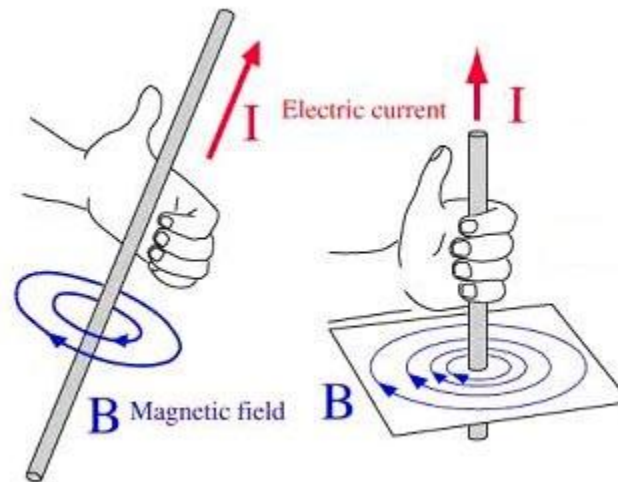


- I can describe and interpret the magnetic field of a magnet and the behaviour of a compass in the magnetic field of a magnet





- I can describe and interpret the magnetic field produced by a current-carrying wire (left-hand rule).





- I can determine the energy efficiency of a device by using the formula:
- Energy Efficiency =
$$\frac{\text{amount of useful energy}}{\text{of energy consumed}} \times 100$$
 amount