Year 9 Triple - C1: Periodic table

Lesson 1 - Introducing Particles

Keywords:

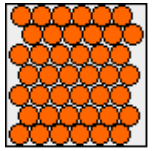
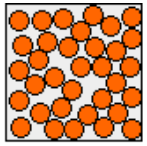
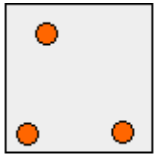
Matter: anything that has mass

Particle: tiny piece of matter such as an atom, ion or molecule.

Particle model: scientific idea used to explain the properties of solids, liquids and gases.

State: the form that a substance has, solid, liquid, gas, under given temperature and pressure.

Minimum Knowledge

State	Diagram	Arrangement of particles	Relative distance between particles	Main movement of particles
Solid		regular	very close	vibrate about fixed positions
liquid		random	close	move around each other
gas		random	far apart	move quickly in all directions

Lesson 2 - Chemical and Physical Changes

Keywords:

Physical changes: change such as a change of state, that does not result in new substances being made

Chemical Change: change that produces new substances

Chemical reaction: process in which substances react to form different substances

E.g methane + oxygen → Carbon dioxide + water

Minimum Knowledge

Physical changes mean **no new substances are formed,** they are usually reversible. e.g solid Ice becomes liquid water when it melts.

Chemical changes mean **a new chemical is formed**, they are usually not reversible.

Lesson 3 - Changing state

Keywords:

Melt- to change state from the solid state to the liquid state

Boil- to change state from liquid to gas state

Condense-to change from the gas state to liquid

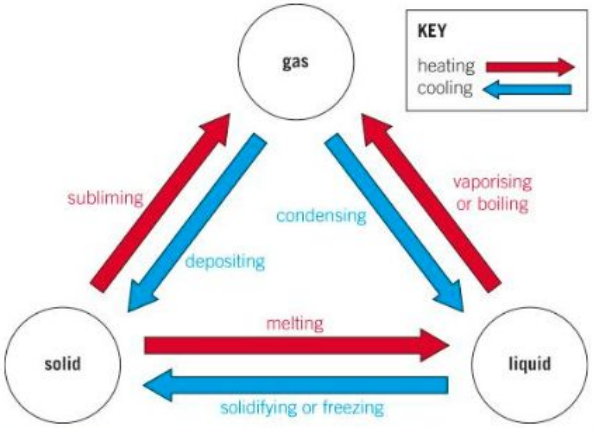
Freeze-to change state from liquid to solid state

Sublime - to change state directly from solid to gas state

Minimum Knowledge

Some bonds break when a substance melts, all remaining bonds break when a substance boils,

Some bonds form when a substance condenses, many bonds form when a substance freezes.



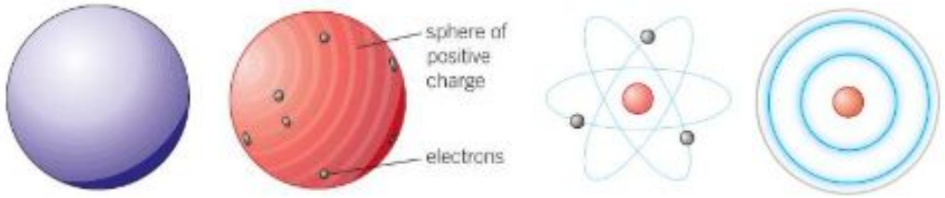
Lesson 4 - Developing the atomic model

Keywords:

Plum Pudding Model: J.J. Thomson's model of the atom, the plums are the electrons.

Minimum Knowledge

Dalton's atoms were solid spheres, Thomson's model was the plum pudding model, positive spheres with electrons dotted around inside, Rutherford planetary model shows a nucleus with electrons orbiting like planets. Bohr showed electrons occupy fixed energy levels.



Dalton Thomson Rutherford Bohr

Lesson 5 - 6 Periodic Table

Keywords:

Atomic number-number of protons in the nucleus of an atom.
Chemical symbol-letter or letters used to represent elements
Mass number- number of protons and neutrons in a nucleus of an atom

Minimum Knowledge

Mendeleev arranged all the known elements in order of atomic weight, and grouped together elements with similar chemical properties.

The group to which the element belongs corresponds to the number of electrons in its outer shell, i.e group 1 has one electron, group 7 has seven, group 0 has a full outer shell, the period an element is in corresponds to the number of shells of electrons it has.

Lesson 7 - Limits of the particle model

Keywords:

Electrostatic Forces: Static forces of attraction created by opposite charges.

Minimum Knowledge

The particle model doesn't show us:

- The forces between the particles
- The size of the particles
- The space between the particles

Lesson 8 - Isotopes and Ions

Keywords:

Chemical Symbol - Shows you the chemical symbol, number of protons and mass number.
Mass Number - Total number of protons and neutrons in an atom.
Isotope - An atom of the same element that has more or less neutrons e.g. C-12 and C-14
Ion - An atom that has either gained (non-metal) or lost (metal) electrons and now has a positive or negative change

Equations:

Mass = Number of protons + Number of neutrons
Charge = Number of protons - Number of electrons (often a negative answer)