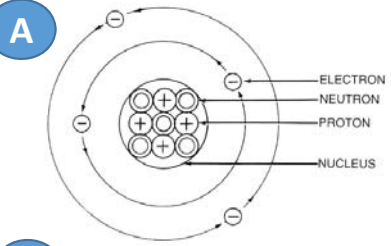


Chemistry Crib Sheet: Topic 1

- 1) Carbon dioxide — CO_2 4) Sodium chloride — NaCl 7) Calcium chloride — CaCl_2
 2) Ammonia — NH_3 5) Carbon monoxide — CO 8) Sodium carbonate — Na_2CO_3
 3) Water — H_2O 6) Hydrochloric acid — HCl 9) Sulfuric acid — H_2SO_4



Particle	Relative Mass	Charge
Proton	1	+1
Neutron	1	0
Electron	Very small	-1

(Electron mass is often taken as zero.)

I In the Early 1800s Elements were arranged by atomic mass
L In 1869 Dmitri Mendeleev left gaps and predicted new elements



- Chromatography**
Used to separate a mixture of dyes in ink.
- Filtration**
Used to separate insoluble solids from liquids (e.g. sand from water).
- Evaporation**
Used to separate a soluble salt from solution. The solution is heated strongly in an evaporating basin until dry crystals are left.
- Crystallisation**
Used to separate a soluble salt from solution. The solution is heated gently in an evaporating basin until crystals form; the remaining liquid is filtered out.
- Simple distillation**
Is used to separate a liquid from a solution - e.g. water from ink. A condenser is used to cool hot gas until it forms a liquid.
- Fractional distillation**
Used to separate a mixture of liquids with different boiling points.

B Nuclear symbol for sodium.

Mass number → 23
Atomic number → 11

Element symbol (see next page for more on symbols).

Na

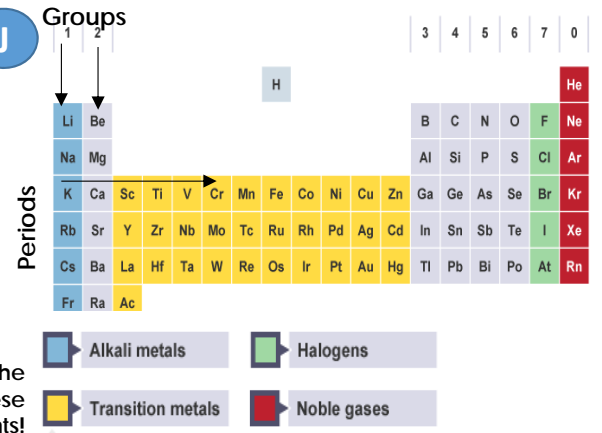
Mass no. = protons and neutrons
Atomic no. = Protons
No. of neutrons = No. of electrons

F Isotopes are the same except for extra neutrons

Carbon-12: 6 Protons, 6 Electrons, 6 Neutrons

Carbon-13: 6 Protons, 6 Electrons, 7 Neutrons

relative atomic mass (A_r) = $\frac{\text{sum of (isotope abundance} \times \text{isotope mass number)}}{\text{sum of abundances of all the isotopes}}$



C 1. Atom	The smallest possible piece of an element. Has a radius of 0.1nm (or $1 \times 10^{-10}\text{m}$).
2. Element	A substance in which all the atoms have the same atomic number.
3. Isotope	2 isotopes of the same element are atoms with the same number of protons but different numbers of neutrons.
4. Molecule	Two or more atoms bonded together
5. Compound	Two or more <u>different</u> atoms bonded together
6. Mixture	At least two <u>different</u> elements or compounds together. Can be separated easily.

G	Diagram	Configuration
Fluorine, F		2.7
Neon, Ne		2.8
Sodium, Na		2.8.1
Calcium, Ca		2.8.8.2

K Group 1 – ALKALI METALS

Learn the position of these elements!

- One electron in outer shell
- Form ionic compounds with non-metals
- React with water to produce hydrogen gas
- React with chlorine to produce a salt
- React with oxygen to form a metal oxide

Down the group
 Increasing reactivity
 Lower melting and boiling point
 Higher relative atomic masses

Group 7 – Halogens

- Seven electrons in outer shell
- Form molecular compounds
- Form ionic bonds with metals
- More reactive halogens will displace less reactive ones
- Fluorine – very reactive, gas
- Chlorine – fairly reactive, gas
- Bromine – dense, liquid
- Iodine – dark grey crystalline solid

Down the group
 Decreasing reactivity
 Higher melting and boiling point
 Higher relative atomic masses

Group 0 – Noble Gases

- Eight electrons in outer shell
- Not very reactive because of their stable outer shell
- Monatomic gases – single atoms not bonded to each other
- All colourless gases at room temperature
- Non-flammable

Down the group
 Higher boiling point
 Higher relative atomic masses

D	Energy Shell	Max no. of electrons
	First	2
	Second	8
	Third	8