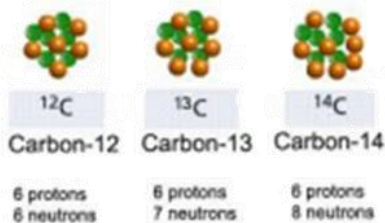


<b>Atomic number</b>	The bottom number on the periodic table, gives the number of protons and electrons.
<b>Atomic mass</b>	The top number on the periodic table, gives the total protons and neutrons together.
<b>Number of protons</b>	The atomic number.
<b>Number of electrons</b>	The atomic number.
<b>Number of neutrons</b>	Atomic mass minus atomic number.
<b>Number of protons and electrons</b>	Equal, because each negative electron is attracted to a positive proton in the nucleus.

### The History of the Periodic Table

- Throughout history scientists have tried to classify substances and many scientists attempted to construct a Periodic Table.
- Before the knowledge of protons, neutrons and electrons, scientists arranged the Periodic table by **atomic weight**. This meant the groups were not always correct.
- In 1869 Dimitri **Mendeleev**, a Russian Scientist, published his Periodic Table. It was slightly different to those that had been before. He still arranged elements by atomic weight but he also left gaps for where he predicted elements would be.
- He very accurately predicted the properties of elements that were not discovered until many years later; for example, Gallium.
- Mendeleev's Periodic Table is still different from the modern one as some of his masses were wrong due to the existence of **isotopes**
- Isotopes are elements with same number of protons and electrons but a different number of neutrons and therefore different atomic weights.

#### Isotopes of Carbon



#### Mendeleev's Periodic Table

Key Terms	Definitions
Dimitri Mendeleev	A Russian Chemist, who in 1869 published a Periodic Table containing gaps.
Periodic Table	The table which organises the 118 elements based on atomic structure
Isotope	Two atoms with the same number of protons and electrons but a different number of neutrons
Metal	An element which loses electrons to form a positive charge
Non Metal	An element which gains electrons to form a negative charge
Ion	An element with a positive or negative charge

The transition metals, in the central block of the periodic table are :

- good conductors of heat and electricity.
  - can be bent or hammered into shape.
  - copper is used in plumbing because it is resistant to corrosion (will not react with the water in the pipes) and electrical wiring because it is a good conductor of heat and electricity.
- Aluminium and titanium are useful metals because they have a low density and are resistant to corrosion.

### Groups in the Periodic Table

	Physical properties	Chemical Properties	Equation	Trends/Explanation
Group 1 (Alkali metals)	Soft, low density	React vigorously with water releasing hydrogen	Sodium + Water → Sodium Hydroxide + Hydrogen	More reactive as you go down, outermost electron further from the nucleus so it's easier to lose
Group 7 (Halogens)	Low melting point, exist as pair (Cl <sub>2</sub> )	React with group 1 metals to form compounds. Can carry out displacement reactions	Sodium + Chlorine → Sodium Chloride Sodium Bromide + Chlorine → Sodium Chloride + Bromine	Higher melting point as you go down the group (higher molecular mass). Less reactive as you go down the group.
Group 0 (Noble Gases)	Low melting point/boiling point Eight electrons in outer shell (except helium)	Unreactive, as they have a full outer shell	N/A	Higher melting point and boiling point as you go down the group (due to increase in density)

<b>Relative atomic mass, A<sub>r</sub></b>	The weighted average of the masses of all of the isotopes of an element.
<b>Isotopic abundance</b>	The percentage of an element that is made of a particular isotope.
<b>Calculating A<sub>r</sub></b>	- Multiply each mass by the decimal % - Add these up Note: (decimal % = %/100)