



Year 8 Science knowledge organiser

Module – Matter

Topic – Elements and the periodic table

Length of topic – Approx. 10 lessons

Method of assessment – Summative assessment

Links to prior learning

KS2 Year 5 Properties of Materials topic

- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

Knowledge to be taught.

- The elements in a group all react in a similar way and sometimes show a pattern in reactivity.
- As you go down a group and across a period the elements show patterns in physical properties.
- Most substances are not pure elements, but compounds or mixtures containing atoms of different elements. They have different properties to the elements they contain.

Skills to be covered

- Use particle diagrams to classify a substance as an element, mixture or compound and as molecules or atoms.
- Name simple compounds using rules: change non-metal to -ide; mono, di, tri prefixes; and symbols of hydroxide, nitrate, sulfate and carbonate.

Working scientifically strands covered

Analyse patterns	✓
Discuss limitations	✓
Draw conclusions	✓
Present data	✓
Communicate ideas	✓
Construct explanations	✓
Critique claims	
Justify opinions	
Collect data	
Devise questions	
Plan variables	
Test hypothesis	
Estimate risks	✓
Examine consequences	
Review theories	✓
Interrogate	

Assessment

Pupils will need to show they can:

- Identify each substance involved as an element, compound or mixture.
- Explain the properties each substance has and how this changes through the reaction.
- Use a particle diagram to describe what happens during the reaction.
- Use a symbol equation to describe the reaction.

Facts

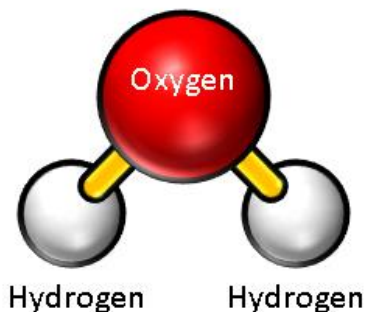


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Everything is made from atoms, including you. Atoms are tiny particles that are far too small to see, even with a microscope.

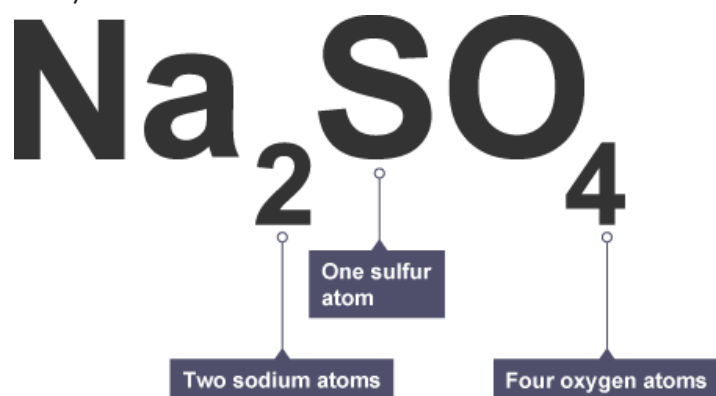
Water is a compound.

Salt water is a mixture of salt and water – two compounds.

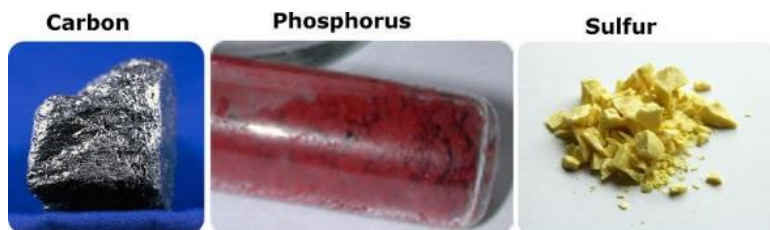


Each element is given its own chemical symbol, like **H** for hydrogen or **O** for oxygen.

We use numbers to show when a molecule contains more than one atom of an element. The numbers are written below the element symbol.



Metals are generally found on the left side of the table, non-metals on the right.



Group 1 contains reactive metals called alkali metals.

Group 7 contains non-metals called halogens.

Group 0 contains unreactive gases called noble gases.

Keywords

Atom: The smallest particle of an element that can exist.

Atomic number: The number of protons in the nucleus of an atom. Also called the proton number.

Chemical formula: Shows the elements present in a compound and their relative proportions.

Chemical properties: Features of the way a substance reacts with other substances.

Compound: Pure substances made up of two or more elements strongly joined together.

Elements: What all substances are made up of, and which contain only one type of atom.

Groups: Columns of the periodic table.

Molecules: Two to thousands of atoms joined together. Most non-metals exist either as small or giant molecules.

Periodic table: Shows all the elements arranged in rows and columns.

Periods: Rows of the periodic table.

Physical properties: Features of a substance that can be observed without changing the substance itself.

Polymer: A molecule made of thousands of smaller molecules in a repeating pattern. Plastics are man-made polymers, starch is a natural polymer.