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Put glue on this side

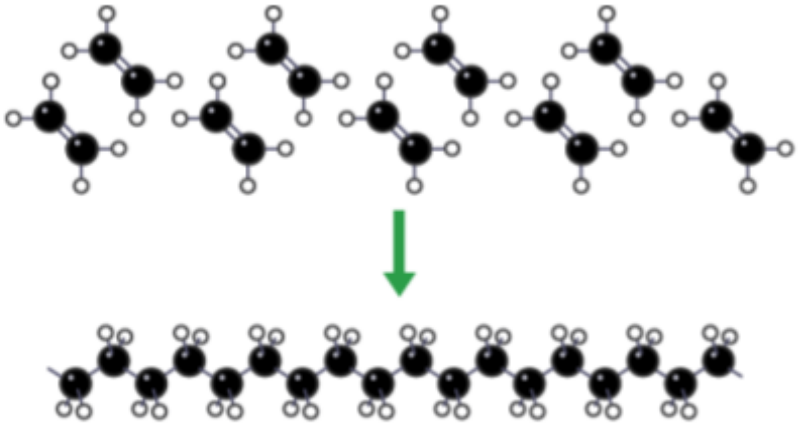
WPS Science

Knowledge organiser
Y8 Chemistry

8C8 Using Materials

Key terms & definitions		
1	**Polymer**	A large molecule produced from many small molecules joining together
2	**Monomers**	Small molecules that join together to make a polymer
3	**Ceramic**	A tough, hard material produced by baking a starting material in an oven or kiln
4	**Composite**	A substance made from two or more materials
5	**Reactivity**	A measure of the tendency of an element to undergo chemical reactions
6	**Ore**	A rock containing metals from which metals can be extracted
7	**Displacement Reaction**	A reaction in which a more reactive element takes the place of a less reactive element in a compound
8	**Finite**	Resources that cannot be reused and will eventually run out
9	**Renewable**	Resources that are, or can be, replenished as they are used
10	**Recycling**	The process of converting waste materials into new materials and objects

Making Polymers

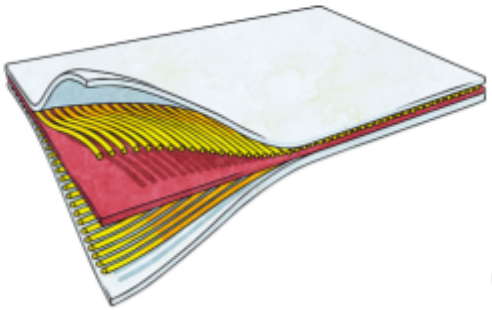


In polymerisation reactions many small molecules called **monomers** join to make a larger molecule called a **polymer**

Composites

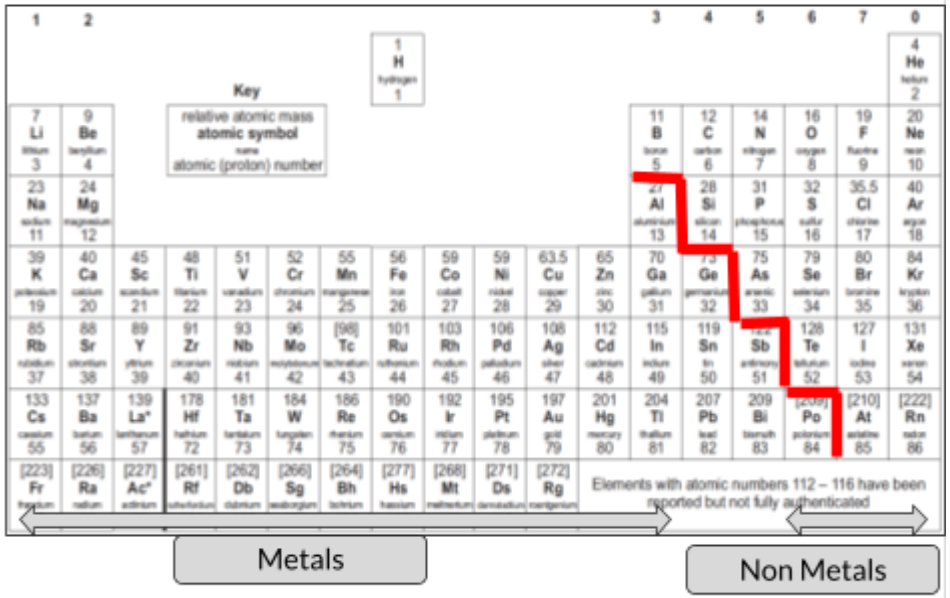
Composites contain two or more materials.

Each material gives a particular property to the composite

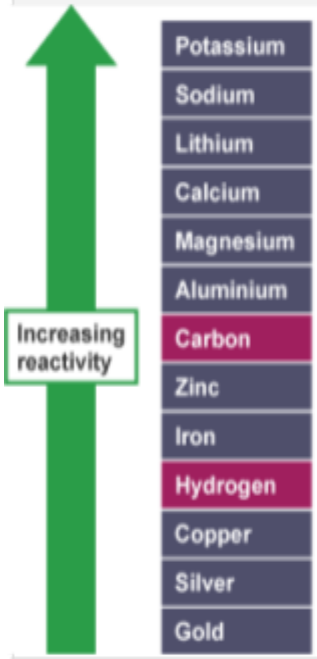


Polymers	Ceramics	Composites
Polythene	Tiles	Fibreglass
PVC	Bricks	Steel-reinforced concrete
Lycra	Pottery	Breathable fabrics

Metals and Non Metals



Reactivity Series



Extracting Metals

Metals **less reactive t**han carbon can be extracted from their ores using **carbon**.

Metals **more reactive t**han carbon can be extracted from their ores using **electrolysis.**

Displacement reactions

A reaction in which a more reactive element takes the place of a less reactive element in a compound

sodium + **copper chloride** → **sodium chloride** + **copper**

element compound compound element

sodium is more *reactive* than copper so
sodium *displaces* copper from copper chloride

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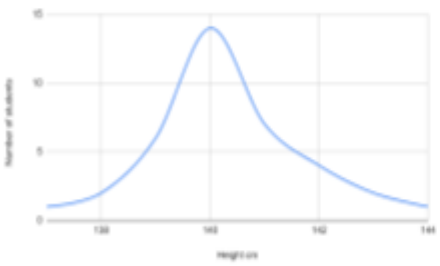
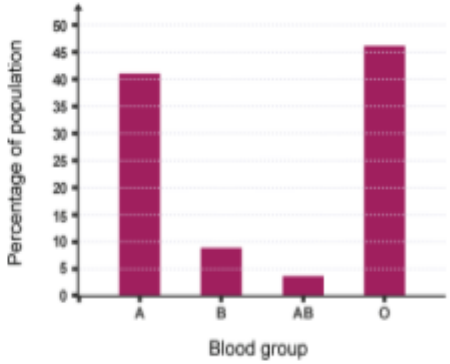
WPS Science

Knowledge organiser
Y8 Biology

8B8 Evolution

Key terms & definitions		
1	**Continuous Variation**	Differences in the characteristics of individuals that have a large range of possible values
2	**Discontinuous Variation**	Differences in the characteristics of individuals that fall into one of a limited number of categories
3	**Sampling**	A process by which a small group of individuals are selected to represent a larger group to which they belong
4	**Mutation**	A change in the structure of a gene
5	**Adaption**	A feature of an organism that helps it survive and reproduce
6	**Species**	A group of similar organisms that can breed to produce fertile offspring
7	**Natural selection**	Survival of the fittest
8	**Evolution**	A change in the inherited characteristics of a population over time
9	**Extinction**	When there are no members of a species left
10	**Biodiversity**	Biodiversity is a measure of the number of different species of animals and plants in an area.

Continuous Variation	Discontinuous Variation
Continuous variation is differences in the characteristics of individuals that have a large range of possible values	Discontinuous variation is differences in the characterististics of individuals that fall into one of a limited number of categories
Examples: Height, Weight	**Examples**: Hair colour, eye colour
Graph: Line graph 	**Graph**: Bar Chart 

Gene mutations

Gene → **Protein**

A gene provides the information to a make a protein. The protein carries out a job in our cells.

Mutated gene → **Mutated protein**

A mutated gene, makes a different mutated protein that carries out a slightly different job in our cells compared to the normal protein. This might change a characteristic of an individual.

A mutation is a change in the structure of a gene

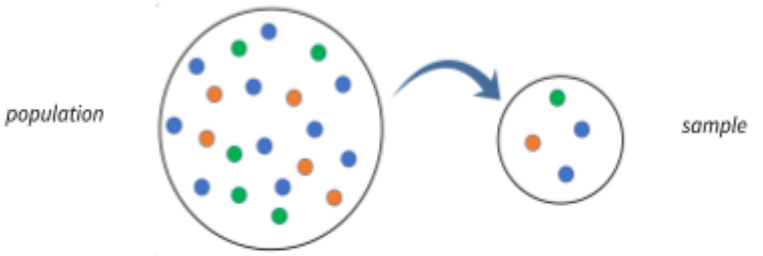
Adaptations

Mutated gene → Mutated protein → New trait

If the trait makes the organism more likely to survive and reproduce, the trait is called an **adaptation**

Sampling

Sampling is a process by which a small group of individuals are selected to represent a larger group to which they belong



Natural Selection

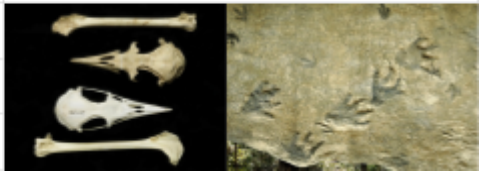
Step one: A random mutation gives an organism a new feature.

Step two: The organism is fitter, making it more likely to survive and reproduce

Step three: When the organism reproduces it passes it's mutated gene on to the offspring

Step four: The process is repeated for many generations

Extinction

Why it occurs?	What evidence is there?
A new disease	The fossil record shows extinct species
A new predator	
A change in the environment	
Competition from a different species	