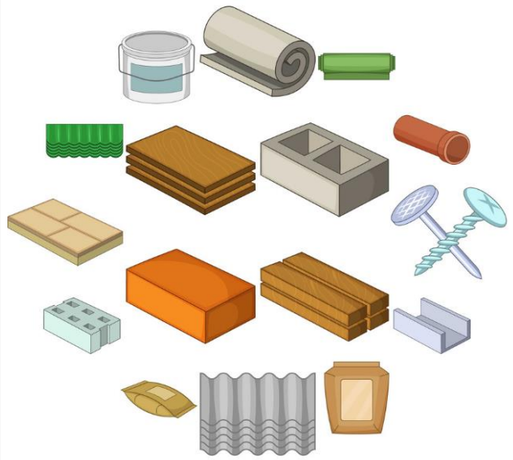
PROPERTIES AND CHANGES OF MATERIALS KNOWLEDGE ORGANISER YEAR 5

What you should already know…



-Materials are the substances that things are made from.

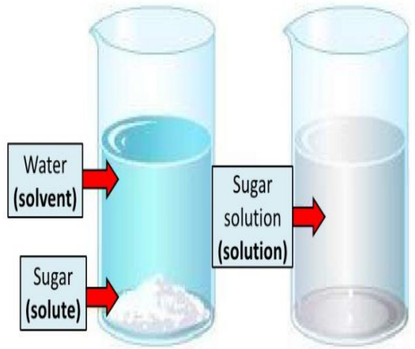
-The properties of materials make them useful for different purposes.

-Materials have more than one property and can be natural or man-made. Properties can include the hardness, whether it conducts electricity, the shininess, or whether it is magnetic.

-There are three main states of matter – solids, liquids, and gases.

Solutions and Separation

A solution is a specific type of mixture where one substance is dissolved into another.



-A solvent is a substance that dissolves a solid, liquid, or gaseous solute.

-A solute is the substance dissolved in the solvent. When it dissolves, it looks as though it has disappeared, but in fact it has been broken down to become a part of the liquid.

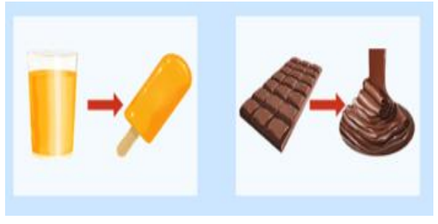
-One example of a solution is salt water. You cannot see the salt, and the solution will remain if left alone.

Grouping Materials by Properties

PROPERTY	YES	NO
ELECTRICAL CONDUCTOR	Copper, aluminum, gold, silver, steel, sea water	Glass, air, plastic, rubber, wood, oil, diamond
MAGNETIC	Steel, nickel, cobalt, iron, uranium, platinum	Paper, glass, plastic, rubber, wood, wool
TRANSPARENT	Glass, water, clear plastic	Wood, rubber, oil, steel, copper, iron, silver
WATERPROOF	Plastic, rubber, metal, glass	Tissue, sponge, fabric

Reversible and Irreversible Changes

REVERSIBLE CHANGES



IRREVERSIBLE CHANGES

-There are many ways in which materials can be changed, for example through heating, cooling, or mixing with other substances.

-Some changes can be reversed (e.g. the material can be returned to its previous form). These are known as reversible changes. An example of this is the freezing of water into ice – it can be melted to become water again.

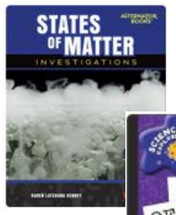
-Other changes are irreversible. This means that that the changes cannot be 'undone.' Examples of this include cooking, baking, frying and burning materials. For example, you can fry a raw egg to cook it. You can't return it back to a raw egg again.

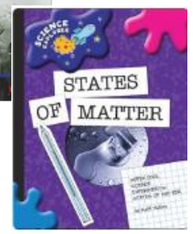
Reversible Changes

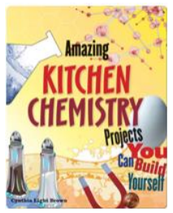
Dissolving **Mixing** **Changes of State**

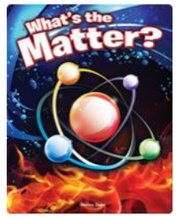
Burning **Rusting** **Decaying**

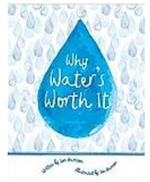
Irreversible Changes

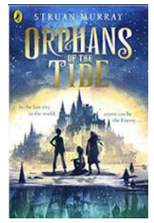


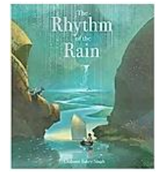


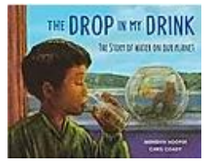


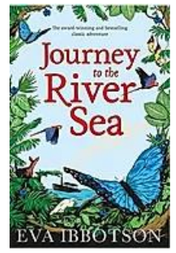












Reading Recommendations

Key Vocabulary

Thermal conductivity	**Thermal conductivity** is the ability of a material to conduct heat. Metals are good at heat conduction. They are good conductors of heat.
Solubility	**T**he ability of a substance (the **solute**), to mix into a liquid (the **solvent**).
Filtering	The process of materials passing through a filter.
Magnetism	The force of magnets is a basic force of nature, like electricity and gravity.
Electrical Conductivity	**Electrical Conductivity** is the measure of a material's ability to allow the transport of an electric charge.
Evaporation	The process of turning from liquid into vapour.
Opaque	Not able to be seen through; not transparent.
Translucent	**Permitting light to pass through but diffusing it so that persons, objects, etc**., on the opposite side are not clearly visible: Frosted window glass is translucent but not transparent.
Transparent	The property of allowing light to pass through something. An object that is transparent can be seen through.
Particle	**Particles** are tiny bits of matter that make up everything in the universe.
Insoluble	Incapable of being dissolved.
Residue	A substance that remains after a process such as combustion or evaporation.
Irreversible	not able to be undone or altered. Impossible to change back to previous state.
Absorbent	A material able to soak up liquid easily.