Year 5 Materials
(Chemistry)

Prior and future learning

Prior Knowledge	What's next?
• I can compare and group materials together, according to whether they are solids, liquids or gases. • I can observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	• Chemical reactions as the rearrangement of atoms. (KS3) • Representing chemical reactions using formulae and using equations. (KS3) • Combustion, thermal decomposition, oxidation and displacement reactions. (KS3) • Defining acids and alkalis in terms of neutralisation reactions. (KS3) • The pH scale for measuring acidity/alkalinity; and indicators. (KS3)

Track your learning

How I will show what I have learned	☹	😐	🙂
I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.			
I know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.			
I use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving andevaporating			
I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic			
I can demonstrate that dissolving, mixing and changes of state are reversible changes			
I can 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.			

Key knowledge I need to understand

- Materials have different uses depending on their properties and state (liquid, solid, gas).
- Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.
- Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.
- Mixtures can be separated by filtering, sieving and evaporation.
- Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

Possible texts to read:
Itch– *Simon Mayo*

Scientist: Ruth Benerito (Chemist who developed wrinkle-free cotton fabric).

Working scientifically assessment: dissolving, insulation layers, sugar cubes.

Link to maths curriculum:
Statistics:

- Interpreting data showing how the temperature of water cools when in containers wrapped in different materials (*Solve comparison, sum and difference problems using information presented in a line graph).*
- Extending a table to compare the temperature of water cooling when in containers wrapped in different materials (*Complete, read and interpret information in tables, including timetables).*

Number:

- Rounding the numbers on a stopwatch that measures in tenths and hundredths of a second to the nearest second when dissolving. (*Round decimals with two decimal places to the nearest whole number and to one decimal place*).

Key Vocabulary I need to know	
Viscosity	How fast or slow something will flow.
Thermal insulator	Something that does not allow heat to travel along.
Thermal conductor	Something that allows heat to travel along
Solubility	The ability to dissolve in water.
Dissolve	To become incorporated into a liquid so as to form a solution.
Solution	A liquid mixture in which the minor component (the solute) is uniformly distributed within the major component (the solvent).
Soluble	A substance able to be dissolved, especially in water.
Change of state	When a substance changes from solid to liquid or liquid to gas or vice versa.
insoluble	The substance doesn't dissolve in the solvent.
Solute	A substance that dissolves in a solvent.
Solvent	A substance which allows things to dissolve e.g. water
Filter	Something that holds back solid particles in a solution.
Reversible	Something that can be changed back into its original form e.g. melting chocolate.
Non-reversible	Something that can NOT be changed back into its original form e.g. cooking eggs.
Molecular structure	The location of the atoms, groups or ions relative to one another in a molecule.
Molecule	a group of atoms bonded together.