Year 5
Spring Term 2 Knowledge Organiser
Properties and Changes of Materials

Unit	Summary
Materials 	• **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.** • **Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.** • **Use knowledge of solids, liquids and gasses to decide how mixtures might be separated, including though filtering, sieving and evaporating.** • **Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.** • **Demonstrate that dissolving, mixing and changes of state are reversible changes.** • **Explain that some changes results 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 Ideas/ Vocabulary: Materials	
Material	The substance or substances of which a thing is made
Properties	Materials have different properties that make them useful for different jobs. For example: waterproof, flexible or absorbent.
Thermal Conductor	Some materials are good conductors of heat. This means heat can travel through them easily.
Thermal Insulator	Some materials are insulators of heat. This means they do not allow heat to travel through them very easily.
Electrical conductor	Some materials are good conductors of electricity. This means electricity can travel through them easily.
Dissolving	Some substances dissolve when you mix them with water for example sugar or salt.
Mixture	Mixtures are created by combining materials together.
Solids, liquids, gases	Solids, liquids and gases have different properties. Liquids and gases can flow. Solids keep their shape. Gases can be squashed.
Reversible change	Reversible changes, like melting and dissolving, can be changed back again.
Irreversible chemical changes	A change is called irreversible if it cannot be changed back again. For example you cannot change a cake back into its ingredients again.

Key Facts: Materials

A material is any substance that has a name. For example: chalk, paper, wood, iron, air, water, clay, plastic, rubber, stone, leather, wax. Everything is made up of materials. When we want to make something we need to choose the best material for the job. The property of a material is something about it that we can measure, see or feel and helps us decide whether or not it is the best material.

Some substances dissolve when you mix them with water. When a substance dissolves, it looks like it disappears. But in fact it has just mixed with the water to make a transparent (see-through) liquid called a solution. When you mix sugar with water, the sugar dissolves to make a transparent solution. Salt dissolves in water too. Heat can help some substances dissolve faster in water. Salt, for example, will dissolve quicker in hot water than in cold water. A mixture made of solid particles of different sizes, for example sand and gravel, can be separated by sieving.

All matter exists as solids, liquids, or gases. These are called the states of matter. Matter can change from one state to another if heated or cooled. If ice (a solid) is heated it changes to water (a liquid). If water is heated, it changes to steam (a gas). The particles of ice, water, and steam are identical, but arranged differently.

Scientific Thinking and Investigation

- Pupils will work scientifically and ask relevant questions and use different types of scientific enquiries to answer them.
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Pupils should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision
- To research information about materials