



## Knowledge and Skills Progression – Science (Materials)



	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials  Identification and classification	Objects are made from different materials. Everyday materials include plastic, wood and glass. Explore and sort everyday items, with support, into groups of the same material.	Objects are made from different materials. Everyday materials include, wood, plastic, glass, fabric, metal and stone. Materials have different properties. Name and sort everyday items into groups of the same material.	A material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric. Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.	Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled. Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations.	Light can be reflected from different surfaces. Some surfaces are poor reflectors, such as some fabrics, while other surfaces are good reflectors, such as mirrors. Group and sort materials as being reflective or non-reflective.	Materials can be grouped according to whether they are solids, liquids or gases. Solids stay in one place and can be held. Some solids can be squashed, bent, twisted and stretched. Examples of solids include wood, metal, plastic and clay. Liquids move around (flow) easily and are difficult to hold. Liquids take the shape of the container in which they are held. Examples of liquids include water, juice and milk. Gases spread out to fill the available space and cannot be held. Examples of gases include oxygen,	Materials can be grouped according to their basic physical properties. Properties include hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. Compare and group everyday materials by their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism.  Some materials (solutes) will dissolve in liquid (solvents) to form a solution. The solute can be recovered by evaporating off the solvent by heating. Explain, following observation, that some substances (solutes) will dissolve in liquid	Heat energy is transferred in three different ways: conduction, convection and radiation. A material that allows heat energy to travel through it is a thermal conductor. Poor thermal conductors are known as thermal insulators. Insulation is important for the survival of many animals. Blubber is a layer of fat that acts as an insulator under the skin of some animals, such as walruses and whales. It is an adaptation that is essential for their survival. Animals with fur, such as polar bears and Arctic foxes, trap a layer of air close to their skin to insulate

						helium and carbon dioxide. Air is a mixture of gases. Group and sort materials into solids, liquids or gases.	(solvents) to form a solution and the solute can be recovered by evaporating off the solvent.	them from the cold. Investigate and identify good thermal insulators, describing their common features.
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Materials</b>	Different materials can be used for different things because they are hard, soft, bendy or waterproof. Waterproof items, such as Wellington boots, raincoats and umbrellas, protect us from the rain. Explore and talk about materials which are waterproof.	Some materials are magnetic, which means that they are attracted to (pull towards) a magnet. Some metals are magnetic. Other materials are non-magnetic, such as wood, dough and glass. Identify that materials have different properties and explore and sort magnetic and non-magnetic materials through play and exploration.	Materials have different properties, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid; waterproof or not waterproof. Investigate and describe the simple physical properties of some everyday materials, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid and waterproof or not waterproof.	A material's physical properties make it suitable for particular purposes, such as glass for windows and brick for building walls. Many materials are used for more than one purpose, such as metal for cutlery and cars. Compare the suitability of a range of everyday materials for particular uses, including wood, metal, plastic, glass, brick, rock, paper and cardboard .	There are three different rock types: sedimentary, igneous and metamorphic. Sedimentary rocks form from mud, sand and particles that have been squashed together over a long time to form rock. Examples include sandstone and limestone. Igneous rocks are made from cooled magma or lava. They usually contain visible crystals. Examples include pumice and granite. Metamorphic rocks are formed when existing rocks are heated by the magma under the Earth's crust or squashed by the movement of the Earth's tectonic plates. They are usually	Electrical conductors allow electricity to flow through them, whereas insulators do not. Common electrical conductors are metals. Common insulators include wood, glass, plastic and rubber. Describe materials as electrical conductors or insulators.	A material's properties dictate what it can be used for. For example, cooking pans are made from metal, which is a good thermal conductor, allowing heat to quickly transfer from the hob to the contents of the pan. Describe, using evidence from comparative or fair tests, why a material has been chosen for a specific use, including metals, wood and glass.  Some mixtures can be separated by filtering, sieving and evaporating. Sieving can be used to separate large solids from liquids and some solids from other solids. Filtering can be used to	Mirrors and lenses are used in a range of everyday objects (telescopes, periscopes, cards and on roads). The human eye has a lens that bends and focuses light on the back of the eye (retina) so that we can see. Describe, using diagrams, how light behaves when reflected off a mirror (plane, convex or concave) and when passing through a lens (concave or convex).

				<p>very hard. Examples include slate and marble. Compare and group rocks based on their appearance, properties or uses.</p> <p>Some materials have magnetic properties. Magnetic materials are attracted to magnets. All magnetic materials are metals but not all metals are magnetic. Iron is a magnetic metal. Compare and group materials based on their magnetic properties.</p>		<p>separate small solids from liquids. Evaporating can be used to separate dissolved solids from liquids. Separate mixtures by filtering, sieving and evaporating.</p>	
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