

Year 5 Science Autumn 2 Unit

Properties of Materials

Key Scientific Skills	Year 5 Properties of materials
Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	
Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	
Use test results to make predictions to set up further comparative and fair tests	
Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	
Identify scientific evidence that has been used to support or refute ideas or arguments	

Lesson Sequence

1. Explore properties of materials
2. Explore thermal conductors and thermal insulators
3. Explore hardness of materials
4. Discover materials that are soluble in water
5. Investigate the solubility of materials
6. Explore how mixtures can be separated by filtering, sieving, evaporating or magnets

Progression of Knowledge

Unit	YEAR 1	YEAR 2	YEAR 5
Materials	Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	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 gases to decide how mixtures might be separated, including through 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 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

Properties of Materials

conducts energy	
insulates energy	
transparent	
waterproof	
durable (strong)	
magnetic	

Everyday Materials

Metal saucepans **conduct** heat to warm food.

Wooden spoons and plastic handles **insulate** heat so hands do not get burned.

Rocket Words

conductive	a material that allows heat and/or electricity to pass through it
magnetic	material that is attracted to a magnet
thermal	using or producing heat
conduction	heat moving from one object to another through contact
hardness	resistance to scratching and pressure
force	when an object is acted upon by a pull or push motion in a specific direction
dissolve	to mix with a liquid and become part of the liquid
solute	a substance that can be dissolved in liquid
solvent	a substance that can dissolve in a solute, water is a solvent
substance	any material, such as sugar
filtering	the separation of a mixture using a tool with small holes to separate particles
evaporation	the process where a liquid changes into a gas

Separating Materials

Sieving

Filtering

Magnetism

Magnetic metals:

- iron
- nickel
- steel

Soluble Materials

Some solids **dissolve** in water (**SOLUBLE**).



Some solids do not **dissolve** in water (**INSOLUBLE**).

