

Knowledge Organiser

Year Group	Subject	Topic
5	Science	Properties of Materials

The Big Picture

In this unit the children will learn about the properties of materials. They will learn about specific properties of materials that can be tested for, namely: magnetism, transparency, hardness, electrical conductivity and insulation. The children will work scientifically to test various everyday items using magnets and torches to practise sorting materials into different groups based on their qualities. They will plan for and conduct an experiment to investigate which materials are the best thermal insulators before recording and evaluating results. Building on knowledge of electrical circuits from Year 4, the children will also build series circuits to test and group materials based on their electrical conductivity. Children will make predictions before investigations and will practise data analysis skills of their results to make evidence-informed conclusions.


Enquiry Question

*How can we test materials to find their properties?
How would you know if a material is a conductor of electricity?
What components are needed to complete a circuit?*

*What is a thermal insulator?
Which material is the best insulator of heat?
Why is glass a suitable material for a window?*

electrical insulator


does not let electricity pass through it



Rubber is an electrical insulator.

electrical conductor

lets electricity pass through it




Metal is an electrical conductor



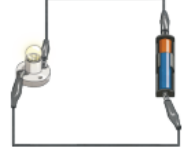
transparent translucent opaque

Series Circuit

A **circuit** where the components are connected in a loop.
Electricity flows through each component in a single pathway.




Complete Circuit




Electricity can flow. The components will work.

Incomplete Circuit

There is a break in the **circuit** that prevents the **electricity** from flowing. The components will not work.



Materials can be tested in a **circuit** to see if they are **electrical conductors** or **electrical insulators**.



10p = metal = **electrical conductors** test **circuit** ruler = plastic = **electrical insulators**

Key Vocabulary	
Transparent	An object or material that lets all light pass through it.
Translucent	An object or material that lets some light pass through it.
Opaque	An object or material that does not let any light pass through it.
Magnetism	A non-contact force created by a magnet.
Electrical conductor	A material that lets electricity pass through it.
Electrical insulator	A material that does not let electricity pass through it.
Circuit	A complete path that allows electrical energy to flow.
Thermal insulator	A material that does not let heat pass through it quickly/efficiently/easily.