



Materials (Chemistry) and Magnets (Physics)

Year 1

End Points:

- Objects around us are made from types of materials.
- Some everyday materials that objects are made from include wood, plastic, glass and metal.
- Each material can be used to make many different things, for example plastic can be made into cups, plates, toys, chairs.
- Properties of materials are things we can measure, see or feel.
- Materials have different properties that make them useful for different tasks.
- Some materials will be better suited to certain purposes than others.
- Certain materials are attracted to magnets.
- We cannot see the force of magnetism.

This unit is an introduction to every day materials and their properties. Knowledge and understanding from this unit will be built upon in Year 2 – Materials and Matter, Year 3 – Forces and Magnets, and in Year 5 – Materials where children will study further properties of materials including solubility, and conductivity. In this unit pupils will learn to distinguish everyday objects from the material they are made from. They will recognise everyday materials such as wood, plastic, glass, metal and rock. They will become familiar with key vocabulary used to describe everyday materials, such as soft, hard, flexible, strong, opaque and transparent. They will compare and group together materials based on their properties.

Pupils will begin to understand that scientists and engineers study the properties of materials before making decisions. They will study the engineer John Dunlop, of Dunlop Tyres, who invented the inflatable rubber tyre. They will think carefully about the different materials used to make bicycles and why they were chosen. Throughout the science curriculum, pupils will encounter many scientists and engineers, and their knowledge of the achievements of people within this field will build.

Within this unit, there is a lesson introducing children to the property of magnetism. This knowledge goes beyond the requirements of the national curriculum at magnets are not featured until Year 3. However, in order to give children some prior knowledge of magnets and how they behave before they reach Year 3, we have introduced magnets within this Year 1 unit. Pupils will reflect on magnetism as a force we cannot see, but that we can see things that happen because of it. This is a concept that pupil will build upon in Year 2 Electricity and Year 3 Forces and Magnets.

An investigation has been planned for Lesson 5 of this unit. If you have space within your timetable to spread this investigation over two

lessons, it will give pupils more time to think carefully about planning and undertaking each stage. Pupils will have frequent opportunities throughout the science curriculum to plan and undertake investigations, however this investigation helps pupils begin to think scientifically and consider important disciplinary knowledge, for example, how do scientists work?

The assessment task in this unit has been designed to allow pupils to apply their knowledge of materials and their properties in a designing task. Pupils will design a playground. They will think about the different materials they will need to build their playground and the suitability of these materials for the purpose they are needed for. Pupils will build on this knowledge when they design a garden area with a water feature in Year 2- Materials and Matter.

Lesson Sequencing:

In lesson one, children will learn to recognise everyday materials, understanding that the objects around us are all made from materials and that a single material can make a variety of objects. This knowledge is built upon in the second lesson when children will identify the properties of materials as things we can measure, see or feel. They will learn that the properties of materials make them useful for different purposes. In lesson three, they will retrieve knowledge from lesson two to help them explain why certain materials are chosen for specific objects. Lesson four will enable children to sort materials based on whether they are magnetic or not. In lesson five, children will use knowledge learnt to investigate which materials would be suitable for a particular purpose. In the assessment lesson, children will identify the different materials needed for a playground.

Misconceptions:

- Only fabrics are materials
- The word 'rock' describes an object rather than a material
- 'Solid' is another word for hard.
- A material is something used for building, clothing or stationery.
- Confusing absorbent with waterproof (e.g. paper towel soaking up water)

Working Scientifically criteria met in this unit:

- Asking simple questions and recognising that they can be answered in different ways
- Observing closely, using simple equipment
- Performing simple tests
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions