Beech Hill Primary School Knowledge Organiser

Topic:	Year group	Term
Magnets	3	Summer

Background knowledge

Children should understand that magnets create a force when around other magnets or magnetic materials. They should also identify the north and south poles of a magnet. Children will be familiar with everyday magnets from home or play activities. You can provide some fridge magnets to add context to the topic.

They explored magnets and non-contact forces in the previous step, and will develop this further in this step. Children will test different materials, both metals and non-metals, to see if they are magnetic or non-magnetic. This step links to learning from Year 1 and Year 2 where children explored the properties of materials. Children should make predictions before testing the materials. Materials should be sorted and grouped based on whether they are attracted by a magnet or not. Children should not test to see whether all metals are magnetic as this concept is explored within the next step.

Provide children with metallic objects that are both magnetic and non-magnetic. Many household items may be suitable for this investigation. Magnetic metals include iron, steel (which is mostly iron) and nickel. Children should conclude that some metals are magnetic and some metals are non-magnetic. Children do not need to know the names of all the different metals, but you could introduce some key ones such as iron, steel and aluminium.

Children should identify that north and south poles on a magnet attract each other and north and north or south and south repel. They should make simple predictions on whether two magnets would attract or repel based on the position of the poles. Ensure children are aware that magnets can attract magnetic materials and other magnets, but repulsion only occurs between magnets.

Common misconceptions

- Children may think magnets have to be the same type to attract each other, for example two bar magnets.
- Children may predict that all metals are magnetic. However, this is not the case.
- Children may think that all coins are magnetic. Clarify to them that depending on their composition, some coins are magnetic and other coins are non-magnetic. Since January

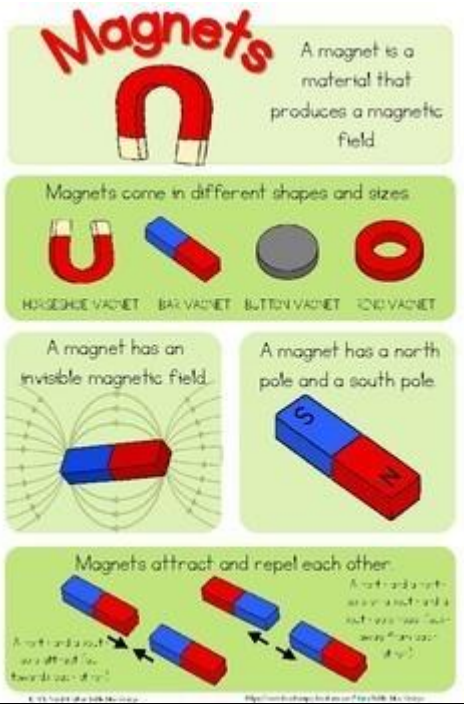
2012 the compositions of 5p and 10p coins have been made from a plated steel, making them magnetic.

What should I already know?
I can explore how shapes can be changed by squashing, bending, twisting and stretching.

National Curriculum Objectives / Key Skills	The Journey
Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Observe how magnets attract or repel each other and attract some materials and not others. Describe magnets as having 2 poles and predict whether 2 magnets will attract or repel each other, depending on which poles are facing. **<u>Working scientifically</u>** Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Identifying differences, similarities or changes related to simple scientific ideas and processes.	1. Magnets 2. Magnetic and non-magnetic materials 3. Investigate metals 4. North and south poles – attract and repel 5. Findings – plants growth

Setting up simple practical enquiries, comparative and fair tests. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. **Scientific enquiry** 	

Outcomes
An overview of what children will know / can do Working towards: I can sort materials into magnetic and non- magnetic. I can explain what happens when I put 2 magnets together. I can start to plan an investigation to determine the strongest magnet and state which is the strongest. I can state some uses of magnets. Expected: I can sort materials into magnetic and non- magnetic using the correct terms. I can explain what happens when I put 2 magnets together using the terms attract and repel. I can suggest an investigation to determine the strongest magnet and explain my findings. I can state some uses of magnets. Exceeding: I can sort materials into magnetic and non- magnetic using the correct terms. I can explain what happens when I put 2 magnets together using the terms poles, attract and repel. I can plan a fair test to determine the strongest magnet and explain my findings clearly. I can state some uses of magnets explaining how they work.

Key Vocabulary	Timeline / Diagrams
Magnet- a piece of rock or metal that can pull certain types of metals towards it. Magnetic field- the area around the magnet in which there is a magnetic force. Magnetic material- a material that is attracted to a magnet. Motion- moving from one place to another. Non- contact force- forces that don't need contact e.g. magnetism. Non- magnetic- a material that isn't attracted by a magnet. Pole- the end of a magnet where the magnet force is strongest. Repel- to push away. Attract- to pull towards.	  

Key people / places
Toyologist, magnet engineer. (STEM career.)

Assessment questions / outcomes

• What do magnets do? • Are all magnets the same strength? • How can the strength of a magnet be tested? • What different types of magnet are there? • What materials can a magnet attract? • What name is given to the two poles on a magnet? • Why is a magnetic force described as a "non-contact force"? • How are magnets used in real life? • How can we test a material to see if it is magnetic or not? • What materials are magnetic? • What materials are non-magnetic? • What do you notice about the materials that are magnetic? • Does it matter which pole of the magnet we use to test the material? • How can the results of an experiment be checked to see if they are correct? • How are magnets used in real life? • Are all metals magnetic? • Which metals are magnetic and which are not? • How are metals similar or different? • What are metals used for? • How can we test to see if all metals are magnetic or not? • How can different metals be separated by using a magnet? • How can magnets be used in real life? • What are the names of the two poles of a magnet? • What is a non-contact force? Why is a magnetic force described as a non-contact force? • What would happen if the north pole of one magnet was put next to the south pole of another magnet? • What would happen if the south pole of one magnet was put next to the south pole of another magnet? • What would happen if the north pole of one magnet was put next to the north pole of another magnet?