C.E.SCHOOL	**Year** 3	**Topic:** Forces and magnets
	National Curriculum links: • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identifysome magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	

Prior learning	**Future learning**
• Explore how things work. (Nursery – Forces) • Explore and talk about different forces they can feel. (Nursery – Forces) • Talk about the differences between materials and changes they notice.(Nursery – Forces) • Explore the natural world around them. (Reception – Forces) • Describe what they see, hear and feel whilst outside. (Reception –Forces) • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses ofeveryday materials)	• Explain that unsupported objects fall towards the Earth because of theforce of gravity acting between the Earth and the falling object. (Y5 - Forces) • Identify the effects of air resistance, water resistance and friction, that actbetween moving surfaces. (Y5 - Forces) • Recognise that some mechanisms, including levers, pulleys and gears,allow a smaller force to have a greater effect. (Y5 - Forces) • Magnetic fields by plotting with compass, representation by field lines.(KS3) • Earth's magnetism, compass and navigation. (KS3)

WHAT PUPILS NEED TO KNOW OR DO TO BE SECURE	
Show understanding of a concept using scientific vocabulary correctly	
Key learning	**Possible evidence**
A force is a push or a pull. When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g.ice skater compared to walking on ice in normal shoes. A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic. The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. If two like poles, e.g. two north poles, are brought together they willpush away from each other – repel. If two unlike poles, e.g. a north and south, are brought togetherthey will pull together – attract. For some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees.Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object thatit attracts.	• Can give examples of forces in everyday life • Can give examples of objects moving differently on different surfaces • Can name a range of types of magnets and showhow the poles attract and repel Can draw diagrams using arrows to show theattraction and repulsion between the poles ofmagnets
Key vocabulary	
Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron,steel, poles, north pole, south pole	

Common misconceptions
Some children may think: • the bigger the magnet the stronger it is • all metals are magnetic.

Apply knowledge in familiar related contexts, including a range of enquiries

Activities	Possible evidence
• Carry out investigations to explore how objects move on different surfaces e.g. spinningtops/coins, rolling balls/cars, clockwork toys, soles of shoes etc. • Explore what materials are attracted to a magnet. • Classify materials according to whether they are magnetic. • Explore the way that magnets behave in relation to each other. • Use a marked magnet to find the unmarked poles on other types of magnets. • Explore how magnets work at a distance e.g. through the table, in water, jumping paper clips upoff the table. • Devise an investigation to test the strength of magnets.	• Can use their results to describe how objectsmove on different surfaces • Can use their results to make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun onthat surface • Can use classification evidence to identify thatsome metals, but not all, are magnetic • Through their exploration, they can show how likepoles repel and unlike poles attract, and name unmarked poles • Can use test data to rank magnets

Lesson 1 **LO: to name and identify different materials**	**Key Assessment Questions** Can children recognise different materials and identify them by a picture? Can children match a material to its name?
Lesson 2 **LO: to identify materials used to make objects**	**Key Assessment Questions** Can children name specific objects? Can children name the materials which specific objects are made from? Can children explain the difference between objects and materials?
Lesson 3 **LO: to describe properties of everyday materials**	**Key Assessment Questions** Can children choose words which describe how materials look? Can children choose words which describe how materials feel?

Lesson 4 **LO: to identify which materials have certain properties**	**Key Assessment Questions** Can children identify which materials the objects are made from? Can children test materials to see how they behave? Can children choose words which describe how materials behave?
Lesson 5 **LO: to test materials and observe findings.** **LO to use an investigation to help make a decision** TAPS science lesson umbrella planning https://pstt.org.uk/resources/curriculum-materials/assessment	**Key Assessment Questions** Can children record what they see? Can children test different materials by dropping water onto them, in a fair way? Can children record what happens? Can children use what they know to choose a suitable material for an umbrella? Can children explain why the chosen material would be a good choice?
Lesson 6 **LO: to sort materials by their properties**	**Key Assessment Questions** Can children group together objects with the same properties? Can children explain how I have sorted the objects?

If completing topic over a term, objectives can be covered over more than one lesson ensuring scientific enquiry skills (working scientifically) are being developed