



Year Three and Four		Topic – Forces and Magnets	Term: Autumn 2
Building on Prior Knowledge		Future learning	Key vocabulary
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 of everyday materials)		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Y5 - Forces) Identify the effects of air resistance, water resistance and friction, that act between 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)	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
Knowledge	Working Scientifically		
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 identify some magnetic materials. Describe magnets as having two poles (like and unlike poles). Predict whether two magnets will attract or repel each other, depending on which poles are facing.	Comparing how different things move and grouping them. Raising questions and carrying out tests to find out how far things move on different surfaces. Gathering and recording data to find answers to their questions. Exploring the strengths of different magnets and finding a fair way to compare them. Sorting materials into those that are magnetic and those that are not. Looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another. Identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets. Planning Find/suggest a way to compare things e.g. materials, magnets. Help to decide about how to set up a simple fair test and begin to recognise when a test is not fair. As a group, begin to make some decisions about the best way of answering their questions.		



Key Learning

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 will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they 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 that it attracts.