

KS3 Physics – Magnetism – Learning Objectives

	Beginning	Developing	Secure	Embedding	Extending	Excelling
Magnetic Behaviour	Name some places where magnets are found. Explain how a magnet may be used to determine whether or not an object is magnetic.	Explain the difference between a magnet and a magnetic material, and give some examples of magnetic materials. Recall the interactions between two magnetic poles.	Explain how a piece of iron can be magnetised using a permanent magnet.	Explain why steel is used to make permanent magnets. State how the magnetism of a magnet may be destroyed.	-	-
Magnetic Fields	-	Recall that a magnetic field is the area around a magnet in which the magnetic force can be felt; the field is strongest close to the magnet's poles.	Recall that field lines can represent the shape of a magnetic field; the closer the lines, the stronger the field. Recall that iron filings may be used to show the field.	Plot a field around a bar magnet using a plotting compass.	-	-
Magnetic Earth	Recall that the Earth has a magnetic field.	Describe how the Earth behaves as if there was a large bar magnet inside, with the poles aligned almost along the axis (the Earth's North Pole is actually like a magnet's south pole). Explain how a simple compass can be made by magnetising a small pin or needle.	Explain the cause of the Earth's magnetic field.		-	-
Electromagnetic Fields	-	Recall that when current flows through a wire, a magnetic field is made around the wire. Discuss some of the health effects caused by magnetic fields of overhead cables.	Sketch the shapes of a field around a straight wire, loop of wire and a coil of wire, and use the right hand grip rule to determine the direction of the magnetic field. Compare the advantages and disadvantages of electromagnets and permanent magnets.	Determine the north and south poles of a solenoid from the direction of the current's flow.	-	-
Making Electromagnets	-	Describe how an electromagnet can be made using a coil of wire and power supply.	Complete an experiment to show how changing a variable can affect the strength of an electromagnet (varying the current and/or the number of turns), and devise a way to test the strength of a magnetic field. Recall the ways in which an electromagnetic field can be increased or reversed.	-	-	-
Electromagnetic Devices	Name some places where electromagnets can be found.	Describe the functions of the parts of a loudspeaker, and explain how the speaker can be adjusted to give a louder sound, or a sound with a different frequency. Explain the stages in the operation of an electric bell, and suggest how the bell can be made to ring faster or louder. Explain the stages of operation of an electromagnetic relay, and where one may be used.	Design a useful device that uses an electromagnet to carry out its function. Name the main parts of an electric motor, and explain their functions. Describe the motor effect.		-	-

** Objectives covering more than one grade are assessed based on the level of scientific detail and language used by the learner.*