Electromagnets

3. Electromagnets

CONCEPT 1

LESSON GUIDE

MAKING ELECTROMAGNETS

PRECISE LEARNING POINTS

KNOW

I know what an electromagnet is and how it is made.

APPLY

I can apply my knowledge to explain how the strength of an electromagnet can be changed.

EXTEND

I can extend my knowledge to explain the magnetic field around an electromagnet.

NOTES

This is very practical topic. Pupils are already aware of the effects of magnetism. Making the link between that (magnets on the fridge/ones they have bought) and electricity generating this effect is a difficult one. You want them to understand that it is the current (flow of charge = electrons) in the wire that is making the magnetic field around the current carrying wire. This means that anything that conducts electricity can become a magnet – not just 3 magnetic materials as they have learnt before.

How this creates a field and how we use it will be seen again in the AQA GCSE P7 topic.

You should make it clear to the pupils that a field is made around the wire like the picture below. The thumb is the direct of the current (Positive to Negative terminal) and the fingers show the direction of the field.

Then we want to make them think of how we could increase the magnetic field strength. They might come up with more current, but you want to push them down the path of more wires. We call this arrangement of *more* wires a Solenoid, which is an electromagnet. The diagram below shows how it is just the magnetic field from one wire *joining* another to make it an overall stronger magnetic field.