Lesson plan

Overview	Children will test a range of materials to see if they are attracted to a magnet or not.
Age group	KS2, Year 3
Subject	Science
Learning objectives	• **Some:** I know that magnets attract metals that contain iron. • **Most:** I understand what a magnet and magnetism is. • **All:** I can compare a variety of everyday materials on the basis of whether they are attracted to a magnet.
National Curriculum	**Forces and magnets** Pupils should be taught to: • 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
Resources	Magnets – one per pair of children if possible. Range of objects made from different materials.
Lesson structure	**Introduction** Ask children what a magnet is. Brainstorm key words and ideas that relate to magnets (north, south, repel, attract). What is magnetism? Remind children it is an invisible force. Relate this to pushes and pulls that they have previously looked at. **Task** Give children a range of objects and a magnet. Ask children to test to see if the objects are attracted to a magnet. Discuss the results to see if there are any patterns that can be seen. For example, are fabrics attracted to magnets? Are plastics attracted to magnets? Are the objects attracted to magnets made from metal? Are all metals attracted to magnets? Children can be asked to suggest some 'rules' to predict which materials will be attracted to magnets and which will not. **Plenary** Which materials are attracted to magnets? What do these materials have in common? (They are ferrous (iron-containing) metals.)

Teacher information

Iron-containing metals (ferrous metals) can become magnetised when their atoms all orientate themselves in a specific direction. This can actually be achieved by running a magnet many times one way along the length of a nail or pin.

Magnets have a North and South pole. Opposite poles will attract (N-S) and like poles will repel (N-N or S-S). A compass contains a magnet that can spin freely and so the pointer is always attracted by the Earth's magnetic field to point to the North Pole.

Some objects may be only partly magnetic. For example, a screwdriver with a plastic handle – the shaft will be magnetic and the handle not. Another example could be a drinks can whose sides are made from steel and so are magnetic while the top is made from aluminium and so is non-magnetic.