Invisible Forces
Magnetism and Static Electricity

About the overview
The diagram below shows the science concepts outlined in this book. The arrows show the links between the concepts and how they might build in sequence. A “big idea” shows how a fully developed understanding of the concepts might look. Such an understanding might not be achieved until level 7 or 8. The big ideas are included to help you build appropriate concepts with your children, whatever their age.

Big Idea
Static and current electricity are related but different. They both involve the movement of electrons.

The flow of electrons through a conductor creates a magnetic field.

Current electricity is the flow of charges around a circuit. Static electricity is the build-up of charges into a stationary pattern.

Static electricity does not need contact to apply a force.

Static electricity can make lightweight things “jump” and “stick”.

Many types of materials can be rubbed to make static electricity.

The space where a non-contact force exerts an influence is called its field. Fields are more concentrated where there is a stronger force.

The Earth has a magnetic field, which we can detect by using a compass.

Magnetic forces are caused by unlike poles attracting each other and like poles repelling each other. Electrical forces are caused by unlike charges attracting each other and like charges repelling each other.

Magnetism is related to electricity, but it is different. Both generate forces that may be experienced without contact.

Magnetism does not need contact to apply a force.

Magnets can make some things move without touching them.

We can make iron, cobalt, or nickel objects into temporary magnets by using other magnets.

We can use iron, cobalt, or nickel (or their alloys) to make magnets.

We can feel the effect of the force between two magnets. (We call this force “magnetism”.)

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We can use iron, cobalt, or nickel (or their alloys) to make magnets.