



Post-activity Resources

Stuart Street
Cardiff Bay
Cardiff
CF10 5BW

Tel: 029 20 475 475
www.techniquest.org



STEM
AMBASSADORS
ILLUMINATING
FUTURES

Introduction

This post-visit material has been designed to help you follow up your Techniquest activity. It includes an outline of the show, and suggested follow-up questions to help clarify your pupils' understanding of the topic.

Copyright

Teachers may reproduce the material which follows without infringing copyright, as long as copies are made for use in their own schools. The permission of Techniquest must be obtained before reproducing the material for any other purpose.

Electricity and Magnetism Show Outline

- 1 Current Electricity
 - generating electricity
 - using electricity
- 2 Circuits
 - human circuit
 - switching a bulb on and off
 - circuit diagrams
- 3 Conductors and Insulators
- 4 Magnets
 - repelling and attracting
 - magnetic fields
 - testing metals with a magnet
 - electromagnets

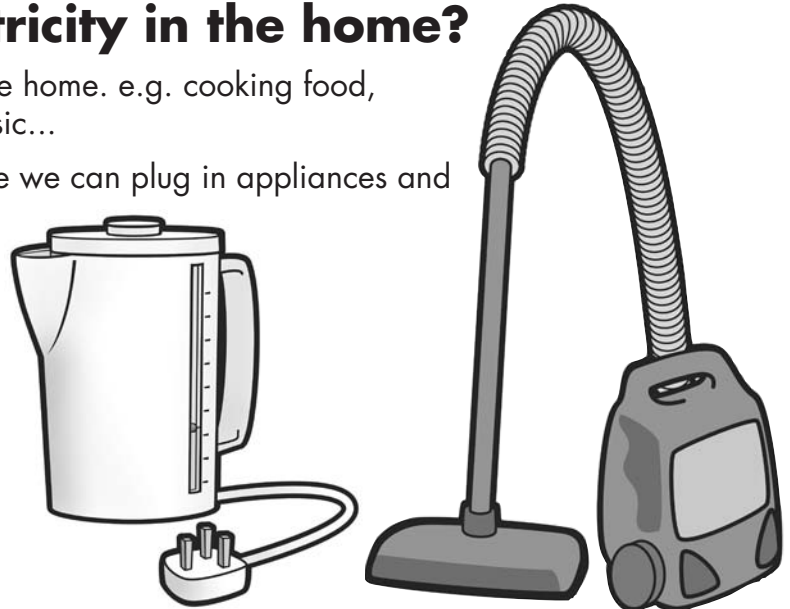


Questions for classroom discussion

When do you use electricity in the home?

We use electricity in many activities in the home. e.g. cooking food, cleaning the house, lighting, playing music...

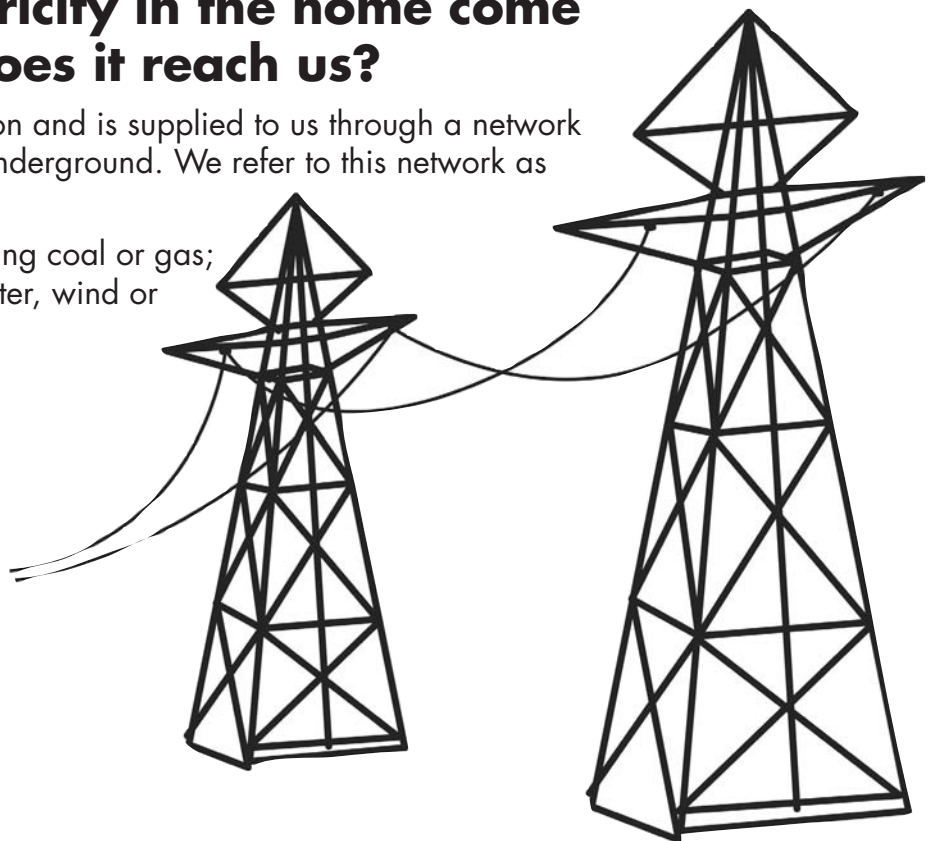
Electricity travels to the plug socket where we can plug in appliances and use the electricity to power them.



Where does electricity in the home come from, and how does it reach us?

It is generated in a power station and is supplied to us through a network of cables, either overhead or underground. We refer to this network as the 'National Grid'.

Electricity is often generated using coal or gas; but can be generated using water, wind or solar power.



What is the difference between a conductor and an insulator?

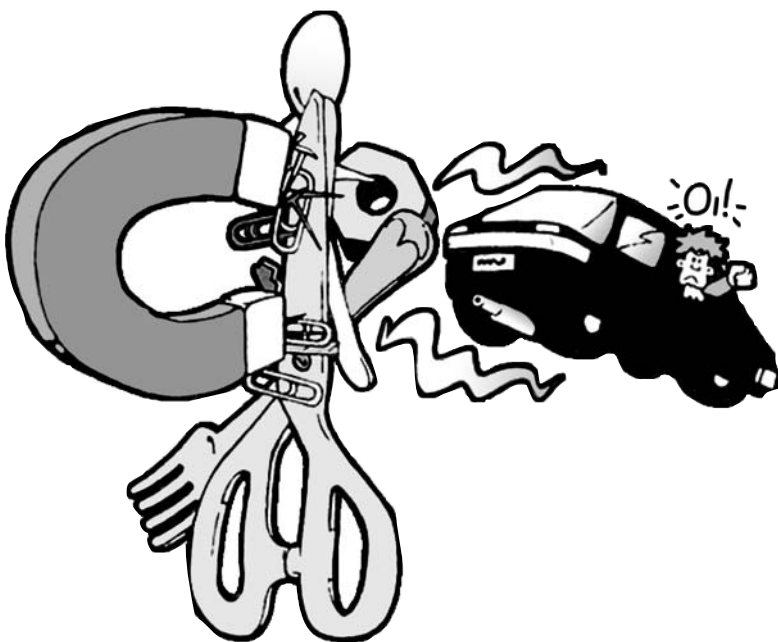
A **conductor** is a material that electricity can travel through easily.

An **insulator** is a material that electricity cannot travel through easily.

Which of these materials are conductors/insulators?

wood	insulator
copper	conductor
aluminium	conductor
steel	conductor
plastic	insulator

Which metal objects are attracted to a magnet?

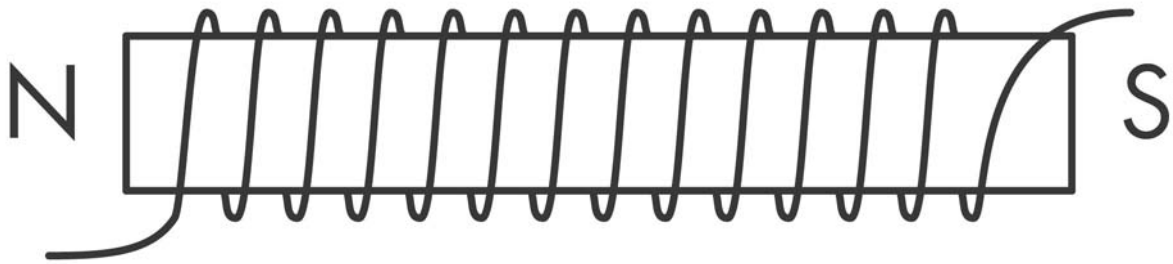


Choose from steel can, aluminium can, old 2p coin (copper), new 2p coin (steel).

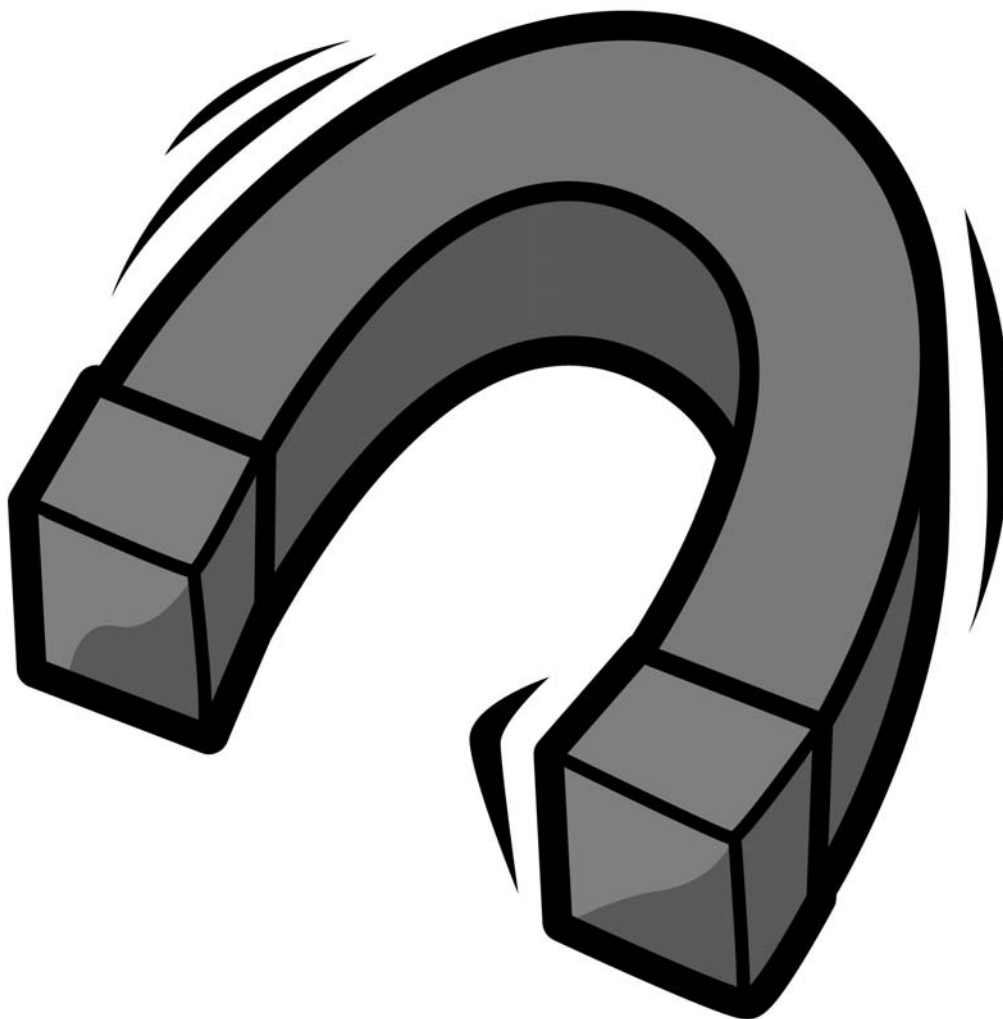
Answer: Only the steel can and the new 2p coin (steel).

Not all metals are attracted to a magnet. The most common examples that do are iron and steel, although some types of stainless steel do not (this is because stainless steel contains large amounts of other metals such as chromium and manganese).

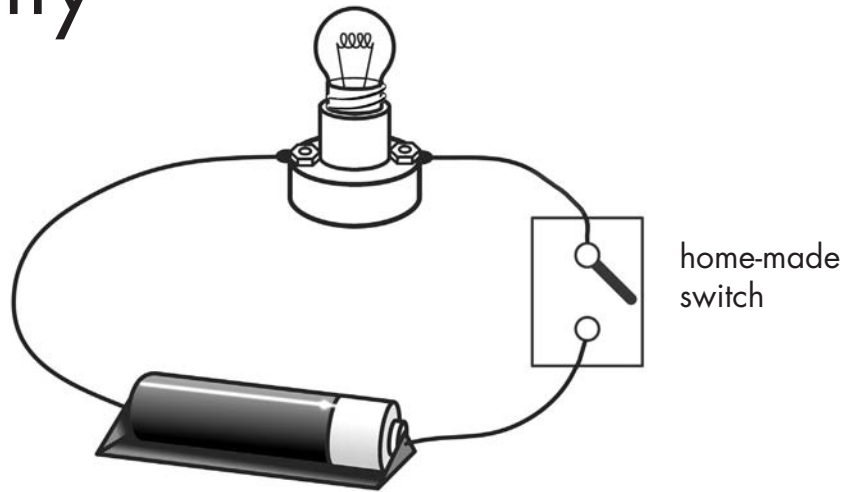
What is an electromagnet?



It is a magnet made by passing an electric current through a coil of wire surrounding an iron bar. The advantage of this type of magnet is that it can be switched on and off when required. Electromagnets are used in many appliances in the home: the hot and cold water valves in a washing machine, electric door bells, television sets and electric motors.

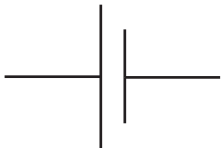




Electricity



Draw a circuit diagram to show this circuit.

Use these symbols

 battery
 bulb
 switch

Can you make the circuit shown in the diagram?

Place an extra wire in the circuit so you are able to test the materials (in the box below) to see if they are insulators or conductors.

Circle the materials which are good conductors of electricity.

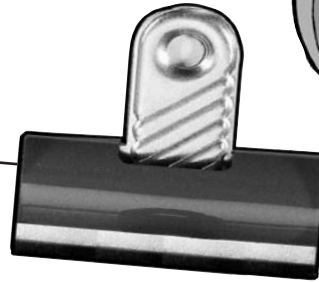
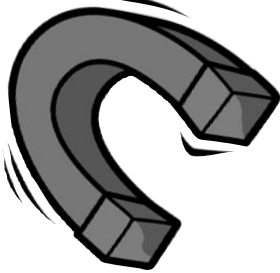
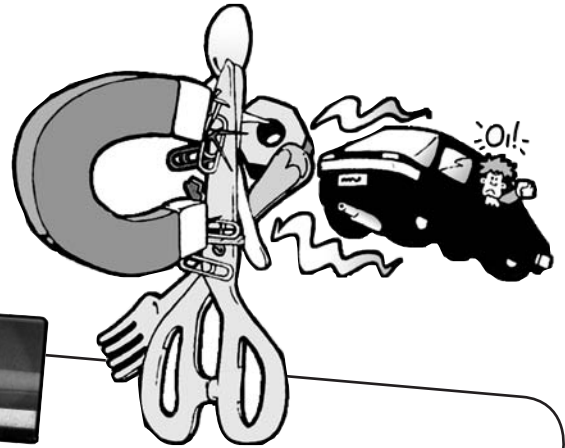
wood **copper** **plastic** **aluminium** **steel**

Predict and Test

Which metal objects will stick to a magnet?

You will need: **a magnet, a collection of metal objects (see list below)**

Remember to predict what will happen before you **test** and tick the box



OBJECT	I GUESS IT WILL BE		I FOUND OUT THAT IT WAS	
	magnetic	non-magnetic	magnetic	non-magnetic
	old 2p coin (copper)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
new 2p coin (steel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
metal scissors (steel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
spoon (stainless steel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
paper clip (steel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
brass door key	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Find some more objects to test and add them to your table				
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>