Rolls-Royce

Cub Scout Scientist Badge

Making a compass

Compass

Leader's notes

Make a simple compass and show the effects of metallic and magnetic materials upon it

What you need:

- Piece of paper
- Felt-tipped pen
- Plate or saucer
- Water
- Piece of cork (a slice from a wine bottle cork is ideal)
- Sewing needle
- Magnet.

Safety:

Needles are sharp, so please be careful.

What to do:

1. Take the needle and magnet. Stroke the magnet against the needle. It is important that the needle is always stroked in the same direction. The more times the needle is stroked the more molecules are pulled in line and the stronger the magnetised needle will become.

2. Fill the plate with water and place the cork on top of the water. The cork will float.

3. Rest the magnetised needle on the cork. The cork will rotate and the needle will point in a North-South direction.

4. Use the felt-tipped pen to mark the sheet of paper with the points of a compass (North, South, East and West). Gentle lift the saucer and place on top of the paper. Make sure 'North' is aligned with the magnetised part of the needle.

Compass

How does it work?

The Earth acts like it has a magnet inside it. The magnetised end of your needle is attracted to the North Pole of the Earth because the 'magnet' inside the Earth has its south end facing towards the North Pole.

Opposite poles attract, so this explains why the north end of the compass needle points toward the south end of the magnet within the Earth - the North Pole.

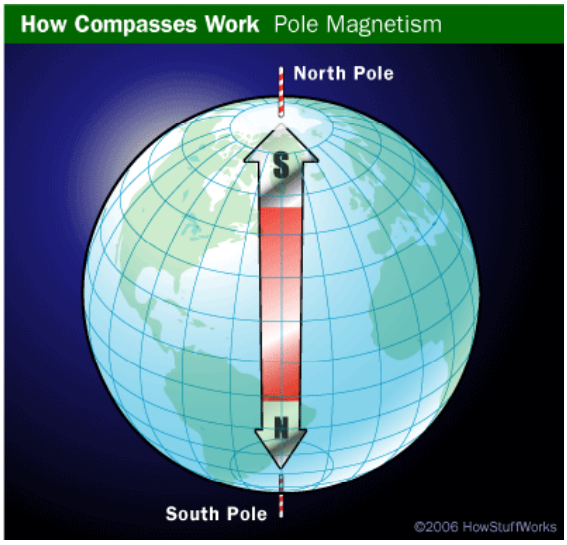

Image taken from http://www.howstuffworks.com/compass.htm

Further ideas:

Why don't you investigate why a compass is needed? Think of as many situations as you can when a compass would be useful and talk about why.

ACTIVITY

Make a simple compass and show the effects of metallic and magnetic materials upon it

Name	
Cub Pack	

Answer the questions to explain what you did, use the words at the bottom to help.

I collected these things:

I rubbed the pin with a _magnet_ .

The _pin_ became magnetised.

Next I floated a piece of _cork_ in some water.

I put the _pin_ on the cork and it turned to point _North_ .

Useful words:

pin cork magnet North

Draw a picture of your finished compass here and label the important parts.

Extras:

What are compasses used for?

Finding which direction is North

Who might use a compass?

A hiker or mountaineer, pilot or captain of a ship

Why do they point North?

They are magnets and line up with the Earth's magnetic field

What happens if you put a magnet near your compass?

It is attracted to (turns) to point at the magnet

What happens if you put another pin next to your magnetised pin?

It is attracted (turns) to point at the pin