



HANDS-ON EXPERIMENTS

FINDING NORTH



Scientists and astronomers have devised lots of ways of finding the direction of the North pole. It's hugely important, not only for navigation but also for studying the stars, magnetic fields or the geometry of the Earth.

In this experiment, you'll make a simple magnetic compass and then use it in a series of investigations - you'll find that 'North' is not a simple idea!

Procedure

What you'll need: A bowl or cup (shallow is better), a needle or pin, a bar magnet, a disc of cork or styrofoam or the top of a plastic milk jug, water. You can also use your sundial from earlier.

- Magnetise the needle by rubbing it along the bar magnet. You'll need to do this in the same direction not back and forth. After rubbing it around 40 times, the needle should be magnetised. Test this by touching it against another needle,
- You'll need a slice of the cork or polystyrene so that you have a thin disc about the same size as your needle.
- Fill the shallow bowl with water and place the disc in the center with the needle on top or drive it through the diameter.
- Spin the disc, it should come to rest with the needle pointed towards north.
- Check that the direction you've found is correct using a map or compass.

Investigation

- Magnetic compasses can be affected by interference, other magnets are an obvious source of interference but try to find other objects that will cause your compasses to align incorrectly.
- If you have an electronic device with a compass in (like a phone), test to see if it's also affected by the same objects. If not, can you find out why?
- You can use your sundial with a watch as another method of finding north. Align the sundial so that the shadow points to the correct time - the 12 'o'clock marker should be pointing due north.
- Another way to find north is to use an analog watch or clock face. Align the face so that the hour hand is pointing towards the sun, the line halfway between the current hour and the 12 will be pointing south and you can then work out the rest of the compass points.
- These four different methods do not point to the same north! One points to magnetic north, two to celestial north and one points to true north. Can you determine which? Investigate the accuracy of the different methods and how well they agree with each other.

VIDEOS FOR THIS RESOURCE AT:

INTRODUCTION:



Clickable Link:

<https://youtu.be/BN-YJsgBYEI>

CONCLUSION:



Clickable Link:

<https://youtu.be/-QlrzHu2jLE>

