



HANDS-ON EXPERIMENTS

SUNDIAL



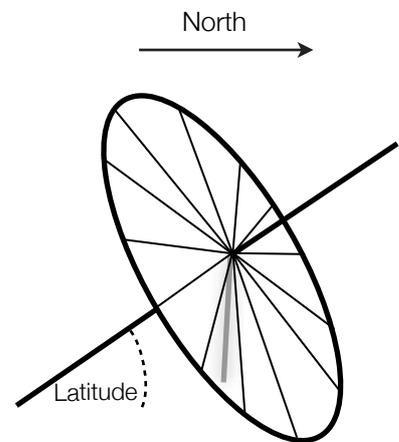
Sundials in one form or another have been used for thousands of years to help people keep track of time across the day. Some varieties can even be used as calendars.

Designing a sundial requires an understanding of how the sun moves through the sky and knowledge of the predictable pattern it follows. This experiment guides you through constructing an Equatorial Sundial - the simplest version.

Procedure

What you'll need: Cardboard, a pencil or wooden skewer, a protractor, a way to find north.

- Draw a circle on the cardboard and then add 24 lines from the center to the edge, each 15 degrees apart. Number each of the lines from 1 to 24.
- Cut out the circle and stick the skewer through the centre so that it's about halfway through.
- Do some research to find out what the angle of latitude is where you are. Use the protractor to adjust the pencil and tilt the sundial so that it makes the same angle with the ground as the angle of latitude. It might help to design a stand to hold the sundial at this angle.
- Make sure the sundial is facing North, with the number 12 at the bottom and the hour markers running anti-clockwise. The shadow of the stick should now point to the correct time.



Investigation

- If you tried this experiment in Summer, what will happen to the shadow in Winter?
- Clock time is adjusted to time at Greenwich in London. Can you work out the difference between a sundial in Cardiff and clock time?
- How would you make a sundial that could be kept flat on the ground? This is called a horizontal sundial although the stick (called a gnomon) will still need to be at an angle. You can work out how to draw the hour lines of a horizontal sundial using the mathematics of triangles but it's quite complicated. See if you can find a simpler method and then test out your idea.

VIDEOS FOR THIS RESOURCE AT:

INTRODUCTION:



Clickable Link:

<https://youtu.be/ZMmpmxFC8Cc>

CONCLUSION:



Clickable Link:

<https://youtu.be/7b2Uei3q2Xo>

