

Home experiment: Shadow sticks and sundials.

The Earth rotates once on its axis every 24 hours so the direction of the Sun in the sky continually changes. Sundials use the motion of the Sun across the sky to measure time.

These experiments investigate how the shadow cast by the Sun can be used to measure time.

1. Shadow stick and sundial experiments, materials needed:

A sunny open space in your garden.

A small pot or jar with earth or sand in.

A straight stick or rod about 30-50 cm long.

A flat board*

A marker pen

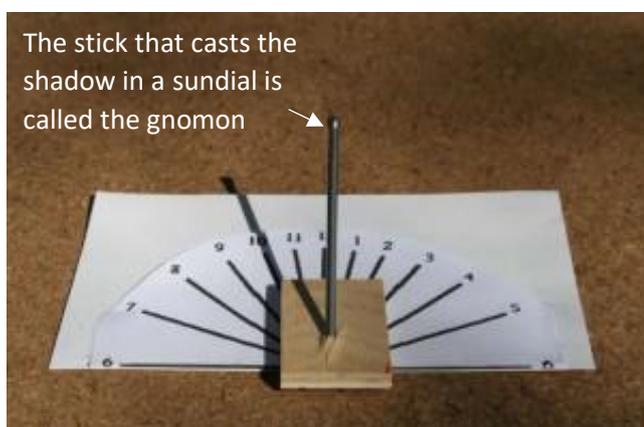
A ruler

A clock or watch

A pencil

Instructions:

- Place the rod vertically in the pot and place the pot on the board before 10:00 am.
- Make sure the shadow falls across the board
- Starting at 10:00 am or earlier mark the position of the shadow as it leaves the edge of the board.
- Record the time (from your watch or clock) there (e.g. 10:00 am).
- Join this position to the position of the rod with a straight line.
- Repeat this every half an hour (or hour) after that, throughout the day.
- You now have a very simple sundial that can be used to tell the time.



Find out:

Why does the length of the shadow change during the day?

Why does the length of the shadow change at different times of the year?

How could you use your shadow stick to find due south?

Now turn over to learn how to make a simple portable sundial