



# Learning Activity

Year  
3

## Make a sundial

Make your own sundial and tell the time using the Sun



### What you will need

- Paper plate (or trace around a dinner plate on a piece of cardboard—e.g. a cereal box—and cut it out)
- a straw or pencil
- a small piece of Blu Tack/plasticine
- pen/pencil for writing
- watch, clock or phone to tell the time
- something heavy to hold down your sundial (e.g. rocks)



### What to do

- Wait for a sunny day.
- With the paper plate upside down, use the Blu Tack or plasticine to attach the straw or pencil so it points straight up from the middle of the plate. (See photo below.)
- Place it on the ground where you will get sunshine for most of the day. (You might need to put something heavy on the edge so it doesn't fly away.)
- Each hour, trace the shadow coming from the straw/pencil on your paper plate and write the time. (You may need to set an alarm so that you remember to go out each hour and record the time.)
- After you have traced the first two times e.g. at 9am and 10am, can you predict where the next line (e.g. 11am) will be?
- Do the times appear on the sundial in the same location as they do on a clock face? Why/why not?

If the weather is fine, leave your sundial out overnight and tomorrow you can use it to tell the time.



*Remember: never look directly at the Sun!*





## What is happening?

As the Earth rotates, the Sun's position changes in our sky:

- In the morning the Sun is low in the east.
- In the middle of the day the Sun is high in the north.
- In the late afternoon, the Sun is low in the west.

The sundial uses the shadow cast by the gnomon (in this case, the straw or pencil) to tell the time.

The Sun's position makes the gnomon cast shadows on different parts of the sundial.

Your sundial should be accurate for several days.

### **Will my sundial always tell the right time?**

You may have noticed that the Sun is higher in the sky in summer and lower in the sky in winter. This is due to the tilt of the Earth.

For a sundial to be accurate all year round, the gnomon (you used a pencil or straw) has to be on a special angle (how far it leans over). These angles are different depending how far from the equator you live. Also, small corrections need to be made, depending on the date. More information on the correction is available here. <https://www.qvmag.tas.gov.au/files/assets/qvmag/planetarium/making-a-sundial-with-qvmag.pdf>

People have used sundials to tell the time for thousands of years.



## Curriculum links

### **Year 3**

#### **Science**

- Earth's rotation on its axis causes regular changes, including night and day (ACSSU048)
- Science involves making predictions and describing patterns and relationships (ACSHE050)



## Link to QVMAG

QVMAG has a Planetarium, which presents various different shows about astronomy. The special projector there can be used to show you how the Sun appears to move across the sky.

QVMAG has a sundial in the courtyard. When you stand in the middle of the sundial, you become the gnomon\* and use your own shadow to tell the time.

\*We have designed the sundial so that it will tell the correct time all year round (you do need to add an hour during daylight saving).

Each month you stand in a slightly different spot in the middle of our sundial. This allows for the change in the angle of the Sun during the year, which is related to how far Launceston is south of the equator.

# Sundial

