

Make A Sundial

An activity of "Closing in on the Sun's Mysteries".

Read "Closing in on the Sun's Mysteries" (page 12, *What's Up* September 2025). Long before we had watches, people told the time by looking at the sun's shadow. Some used a sundial, an ancient tool for telling time. Would you like to make your very own sundial?

A sundial has a stick or upright piece called a **gnomon**. As the sun moves across the sky, the gnomon's shadow falls on a marked surface known as a **dial**, where different hour lines indicate the hours of the day. As the day progresses, the position of the shadow moves, providing a visual representation of the time.

A. Watch the following video.

How to Make a Sundial

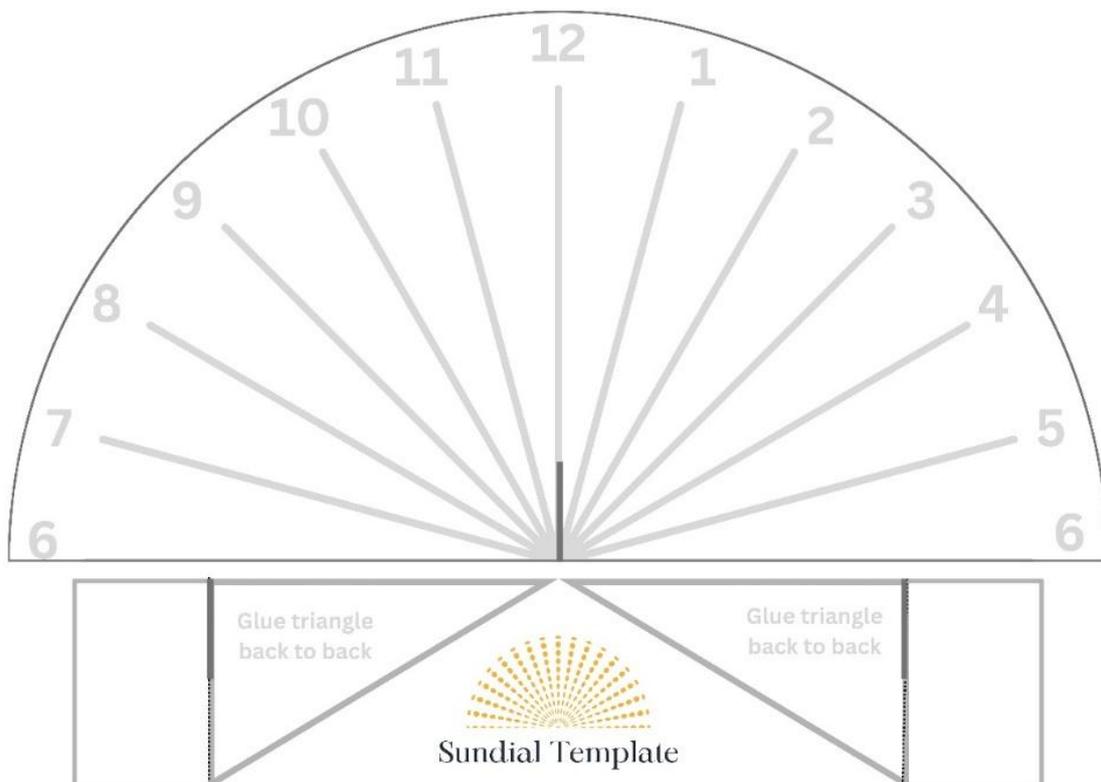
➤ <https://youtu.be/FcvstZluAJI?si=-3kMdUbzPvUA0vSu>
(Royal Observatory Greenwich, 24 June 2020)

B. Assemble the materials you will need:

- a cut semicircle (you can use the template below or draw your own)
- some cardboard (for backing)
- a cut triangle / straw/ stick/ pencil (for the gnomon)
- tape/ glue ▪ a compass ▪ some markers / coloured pencils

C. Follow these instructions, step by step.

Step 1: Decorate this semicircle, which is the sundial template. Then, cut it out.



Step 2: Glue the semicircle template onto a piece of cardboard to make it sturdy.

Step 3: Cut out the two triangle gnomon templates which are below the semicircle
Glue the triangles back-to-back to make them stiffer.

Step 4: Fold and slot it so that it can stand upright in the center of the straight edge of the semicircle. Tape or glue it so it stands at a right angle. (this is your gnomon)

Step 5: Take your sundial outside to a sunny spot.

Step 6: Use a compass to align the base so the 12:00 mark points North.

Step 7: Watch the shadow of the gnomon. It should fall across the semicircle markings.
Compare the shadow to the time on your clock.

Step 8: Record your observations below. E.g. Did it match your clock? When was the shadow the shortest and the longest? What problems might happen on a rainy day or on a cloudy day?

| Hour | Where did the shadow fall? (e.g. between 8 & 9) | Did it match your clock? (Yes / No) | Notes |
|------|---|-------------------------------------|-------|
| 0800 | | | |
| 0900 | | | |
| 1000 | | | |
| 1100 | | | |
| 1200 | | | |
| 1300 | | | |
| 1400 | | | |
| 1500 | | | |
| 1600 | | | |

D. Have a show-and-share session in class. Take turns to display your sundials and talk about what data you were able to collect for Step 8.