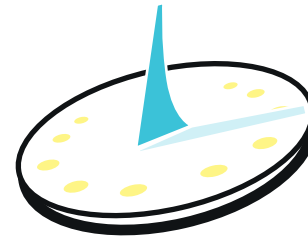




SUPER POWER: Measuring Time!

SUNDIAL

LAB NOTES...



BUILD TIME
10
MINS

YOU WILL NEED

- Card.....○
- Pencil.....○
- Blue tack.....○
- String.....○
- Scissors.....○
- Tape.....○
- Ruler.....○

SUNDIALS

are ancient technology which we still use today. Sundials have been used to measure the passing of time for over 3,000 years. The oldest sundial we know about is from ancient Egypt, and it was used as a way to tell workers when the start and end of their working day should be.

As the earth moves around its polar axis, which is how we get days and nights, the earth's rotation means that the sun appears to move across the sky.

This apparent movement means the sun hits your sundial at different angles through the day which causes different shadows to be cast.

TO MAKE YOUR SUNDIAL...

1. Watch the video of Nanogirl making her sundial.
2. Measure and cut 11 cm of string and draw a dot on your card with the pencil at least 11cm from the edges.
3. Stick one end to the blu-tack to the dot and attach one end of the string.
4. Hold a pencil against the other end of the string, pull until it's tight and use it to draw a circle.
5. Cut out the circle.
6. Measure the length from the centre mark to the edge of the circle.
7. Use this measurement to draw a right-angled triangle on some card where the length and width of the triangle is the same as the radius of your circle.
8. Tape the triangle upright on the sundial with the right angle in the centre.
9. Find a sunny spot stick your sundial down
10. Mark where the shadow falls by drawing a line with a pencil or pen.
11. Check the time on a clock and write it next to the shadow line
12. Come back to the sundial every hour and mark the position of the shadow, along with the corresponding time on a clock.

Sundials are great for measuring large amounts of time like hours, but are they any good at measuring small amounts of time, like minutes or seconds? Can you measure how much the shadow line moves in one minute, or five minutes? What does this tell you about how accurate your sundial is?

You might notice that the shadow gets longer and shorter throughout the day. At what time of day do you think that the shadow will be shortest, and why?

Do you have a daily routine or something you look forward to, like Nanogirl's cookie time? Mark these times on your sundial and use it to figure out how long you have to wait until the next task.

Do you think you could use your sundial at night?

What other shapes other than a triangle could you use to cast a shadow on your sundial? What if you replaced it with a paper straw, would that work?