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AIM KITS

PORTABLE SUNDIAL

October 2025

October 2025: Portable Sundial

This month's AIM Kit is a Do-It-Yourself Sundial! Sundials are an ancient way to tell time using the position of the sun in the sky. Before the invention of the analog clock, a sundial was the only way for people to tell time. Even after the analog clock was created, a sundial was still vitally important to adjust the time of the clock accordingly since early clocks were poor at telling time.

The origins of the sundial can be traced back to ancient Egypt and Babylonian astronomy. As the use of the sundial spread, the Greeks even used its principles to come up with geometry! Today, you can find sundials all around the world, serving as a ornate reminder of the past and a testament to scientific development.

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MATERIALS NEEDED:

1. One paper plate
2. One straw, pencil, chopstick, OR skewer
3. One pointed object (ex: pencil)
4. Writing Utensil
5. Ruler

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PROCEDURE:

1. Use a pointed object to poke a hole through the center of the paper plate
2. Place the straw/pencil/chopstick/skewer in the hole that you made
3. Use your writing utensil to mark a '12' at the edge of your sundial.
4. Take your sundial outside around noon and put it under the sun. Rotate the plate until the straw's shadow is on the '12.'
5. Return to the sundial 1 hour later and observe where the shadow is. Write '1' where it lies.
6. Repeat step 5, writing a '2,' '3,' etc. each hour where the shadow is until you've made it to '5.'
7. Use a ruler to map out directly opposite of all numbers. For example, use the ruler to find the opposite of '12' to find the position of '6,' etc.

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WHY IT WORKS:

As the Earth rotates each day, the Sun appears to look like it moves across the sky. The paper plate, or the dial, will have a shadow cast onto itself by the gnomon (the pencil) depending on the position of the sun. At noon, the sun is at its highest point in the sky which causes the shadow to be directly vertical. The higher in the sky the sun is, the shorter the shadow. Using this principle, the shadow will rotate around the pencil according to the time of day. During summer, because Earth's orbit isn't perfectly circular, the sun is actually highest in the Northern Hemisphere. This causes the shadows on the dial to be even larger!

Contact Us

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About STEMducate

STEMducate is a non-profit organization dedicated to creating and promoting STEM to students from a young age to increase their curiosity and imagination. Our goal is to expose students to STEM opportunities and careers, enabling them to dream big and make their dreams a reality. We provide positive and powerful opportunities and experiences in STEM fields for people of all ages. These initiatives will hopefully entice students toward becoming the next innovators, educators, researchers, and leaders. We aim to reduce the number of unfilled jobs due to the lack of specialized skills that are needed to perform job tasks.

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