

Paper Sundials

Measuring time is essential in our daily lives. Before clocks were invented, individuals observed shadows and light created by the sun to determine time. Discover one of the ways civilizations told time by creating your own sundial. Compare your sundial to your watch to see how accurate it is!

TEKS:

2.5D Combine materials that when put together can do things that they cannot do by themselves, such as building a tower or a bridge, and justify the selection of those materials based on their physical properties.3.6A Explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life.

How To:

- Download and print all sundial templates here: <u>http://cp.cij.com/en/contents/3151/sundial/index.</u> <u>html</u>
- 2. Cut out all templates along the edges.
- 3. Cut out the bottom of the face to create a notch, insert the red-triangle into the bottom of the face from the bottom, and glue it in place.
- 4. Glue the sides of the top and the bottom of the base, and fold in all the center tabs.
- 5. Fold the tabs around the edges of the bottom and the top of the face.

Materials:

- Scissors
- Glue
- Top of face template
- Bottom of face template
- Gnomon template
- Top of base template
- Bottom of base template
- Angular adjustment sheets
- Directional compass
- 6. Cut out the inside of the thin red-edged rectangle in the middle of the top of the face, and place the top of the face over the bottom of the face to cover it (make sure the red triangle is sticking out).
- 7. Insert the face into the base, matching the shape of the face into the base opening. Match the "N" pointer on the base to the "12" on the face.
- 8. You are now ready to use your sundial!

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How Does It Work?

A sundial is a device that tells the time of day using the position of the sun. The red, triangular sheet sticking out of the surface of your sundial is called a gnomon. The shadow cast by the gnomon on a sundial indicates the time. The sundial you created is an example of a horizontal sundial. Place your sundial in a flat, horizontal location with good exposure to the sun. Place a compass next to the sundial to align the north, south, east, and west pointers on the sundial's base with those directions on your compass. The diagonal line created by the shadow of the gnomon indicates the time. Compare the time on your sundial with an actual clock and see how accurate it is!

Career Connection:

<u>Astronomers</u> study planets, moons, the Sun, stars, galaxies, meteors, comets and their interactions with each other. Heliologists focus on the study of the Sun, and the effects of the Sun on the Earth. They both must have an in depth knowledge of physics and mathematics in order to understand how forces work in space.

Resources:

- http://cp.c-ij.com/en/contents/3151/sundial/index.html
- http://cp.c-ij.com/en/contents/2024/list 15 1.html



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