

Paper Plate Sundial

For Grades K-3

Lesson Plan

Goals: The objective of this activity is to allow young students collect data on how the earth rotates in relation to the sun, and how that data can be used to measure **time**.

Key concepts: **Earth Rotation, Shadows, Sun, Sundials**

- 1) You will be able to measure the position of the sun
- 2) You will be able to identify changes in pattern of shadows

Never look directly at the Sun

Instructions:

1. Find the center of the paper plate and mark it with a dot
2. Make 4 Registration marks along the edge of paper plate. **Make sure 1 Mark is longer than the others.** (this will ensure that the plate is always positioned the same way)
3. Make 4 1/2-inch cuts in one end of the straw section. Flare out the cut portion of the straw.
4. Tape it onto the center of the paper plate. The straw should be perpendicular to the surface of the plate.
5. Cut the straw so it is 2 inches long. Use the ruler to measure 2 inches

Over for more instructions



Now that you have built your sundial

Place your sundial in a sunny spot on the Robbins Farm Oval or another sunny spot. Mark the ground with chalk at the 4 registration points on the edge of their sundials. Remember to make one of the chalk marks longer so the sundials can be correctly repositioned (by matching to long mark on your paper sundial).

Trace the shadow on the plate carefully with your colored pencil. Do this again at different times of the day. Ask your children to predict where they think the shadow will be later in the day.

Here are some questions that you can ask your children!

1. What did you observe? What did the shadows do?
2. When was the shadow the longest? Where was the Sun?
3. When was the shadow the shortest? Where was the Sun?
4. Why do you think the shadows change length? How can you explain what you are observing?
5. How could you use a shadow to tell the time of day?
6. How accurate were your predictions? What could you do to make them more accurate?

For more information:

This lesson is from a project of University of California, Berkeley to foster literacy and interest in science through hands on projects and literature. Check their website for more activities.

Source: University of California Eye on the Sky Curriculum project
http://www.eyeonthesky.org/lessonplans/14sun_sundials.html

Alignment with Massachusetts Curriculum Frameworks.