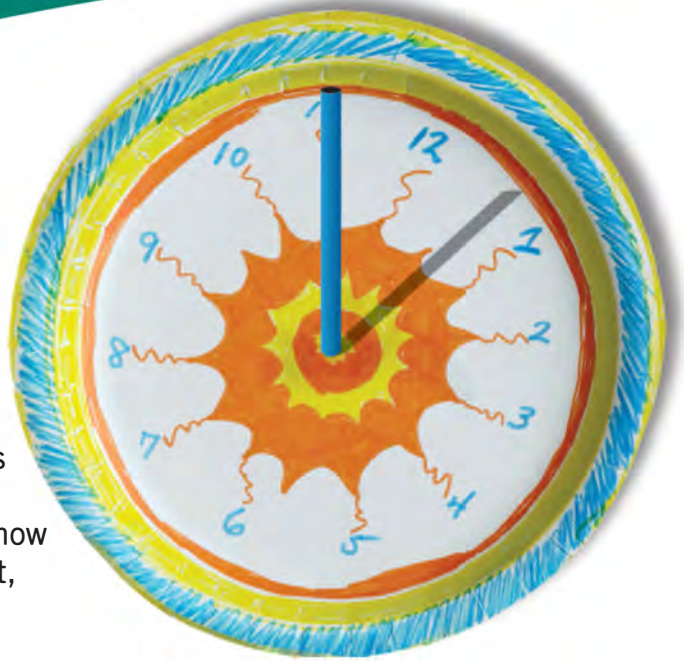
DIY Sundial



Have you ever noticed how your shadow changes throughout the day? Sometimes it's long, sometimes it's short, and sometimes it points in a completely different direction! In this activity, you will explore how the Sun helps us tell time. With the help of an adult, you will create your own sundial and observe how shadows move as the day goes on.

Fun Facts/Information:

- The Sun appears to move across the sky because of Earth's rotation.
- A shadow is created when an object blocks light.
- Ancient civilizations used sundials to tell time long before clocks were invented. This method is known as solar time.
- The part of a sundial that casts the shadow is called a gnomon (usually a stick or pointer).

Learning Objectives:

- Students will model how the Sun's position affects shadows and use observations to measure the passage of time.

Materials:

- Paper plate or cardboard circle
- Pencil or straw
- Modeling clay or tape
- Marker
- Ruler
- Clock or watch

Safety Considerations:

- Adult supervision is recommended when working outdoors.
- Avoid looking directly at the Sun.
- Use sunscreen if spending extended time outside.

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Procedure:

1. Create your sundial.
    - Push a pencil or straw through the center of your paper plate.
    - Use clay or tape to secure it so it stands upright (this is your gnomon).
    - Write “12” at the top edge of the plate.
2. Set up your sundial.
    - Take your sundial outside to a sunny spot.
    - Place it on a flat surface.
3. Track the shadows.
    - Look at the shadow made by your pencil.
    - Use a marker to trace where the shadow falls.
    - Label the shadow with the current time using a clock or watch.
    - Repeat this process at different times throughout the day (every hour if possible).
4. Observe your results
    - Watch how the shadow moves over time.
    - Notice how the length and direction of the shadow changes.

Discussion Questions:

1. Make observations about the shadow throughout the day. How did its position change?
2. Was your sundial accurate at every time of day? Why or why not?
3. What might affect how well your sundial works (clouds, location)

Extensions:

1. Shadow Tracking Challenge
    - Track your sundial over multiple days and compare results. Do the shadows follow the same pattern?
2. Human Sundial
    - Stand outside and trace your own shadow at different times of day to compare with your sundial.