

(Optional) Assignment: Telling Time by the Sun

Materials:

1 paper plate (or 10" to 12" piece of cardboard or poster board)

Pencil

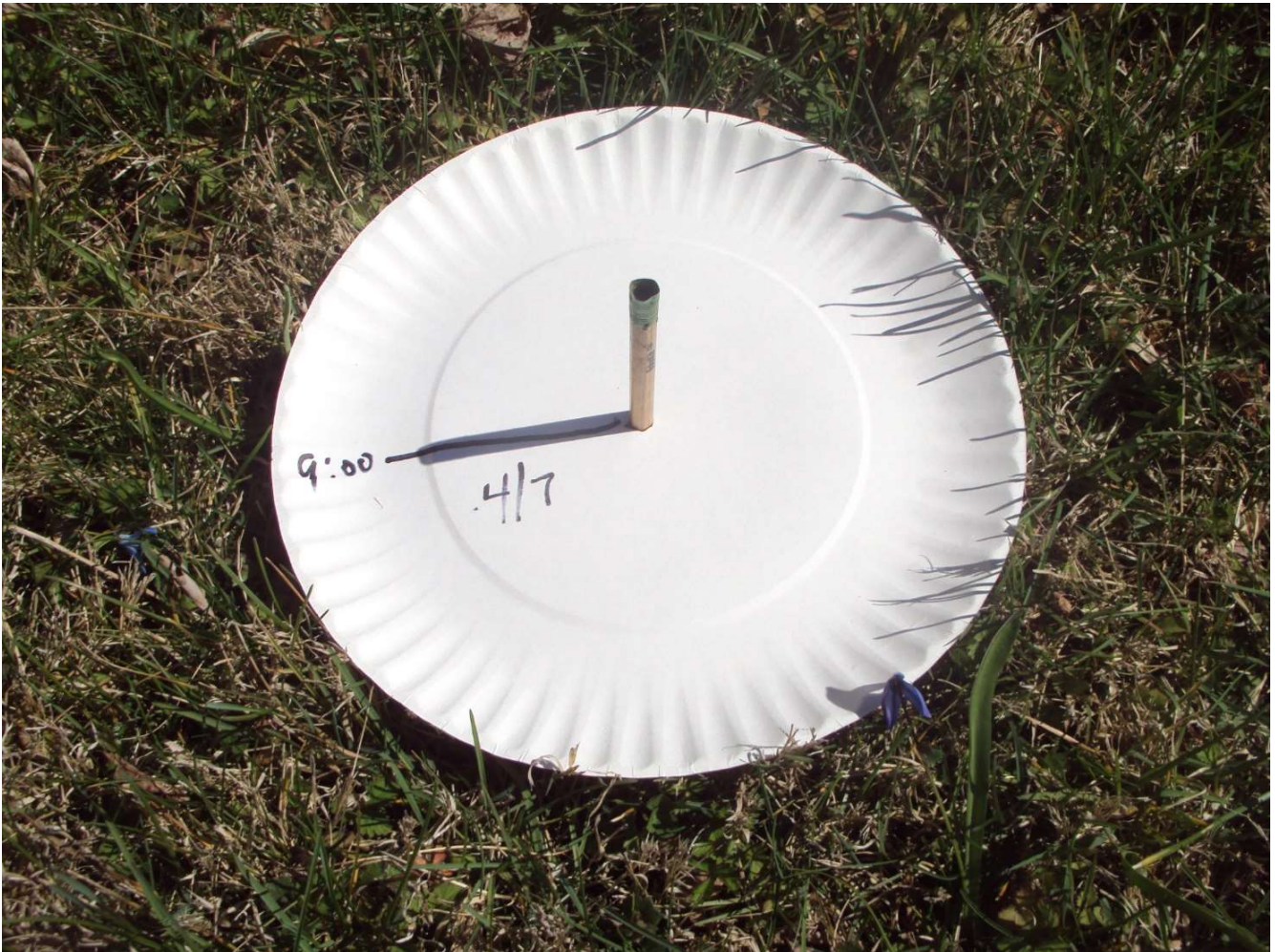
Permanent marker

On a sunny day at around 9:00 AM or so:

1) Bring the pencil, paper plate and marker outside. Find a spot on a lawn or a patch of dirt where there are no shadows and no foot traffic. Lay the plate on the ground.

2) Take the pencil and poke it through the center of the paper plate. You probably don't need to say: "Die you horrible, loathsome beast!" as you poke the pencil through the plate, but I guess you can if you want to. (If you do, check the expressions on the faces of any on-lookers. If they seem horrified, you might smile up at them sweetly and say: "Just kidding." Use your own judgement here.)

3) Note the shadow cast by the pencil. Use the marker to trace the shadow on the plate. Write the date somewhere convenient on the plate and write the time near the line that you just drew. If it's very windy, you might need to place a few rocks on the plate, but otherwise just leave it sitting out in the sun.



4) Go out at regular intervals—every hour, or even every few hours—and check the position of the shadow. Draw a line over the shadow and record the new time next to the new line.



5) Continue doing this throughout the day. If you don't want to mark every hour, try marking just 9:00, 12:00, 3:00 and 6:00.

6) Save this plate. On another sunny day a few days or weeks later, set your sundial back up in the same location. Align the plate so that at 9:00 the pencil's shadow is covering the line you drew for 9:00 on the day you made the sundial. Then check your plate at regular intervals. Do the shadows align with the lines you drew last time? Is your sundial still accurate?