



# Sun Tracker

The Sun's position changes over the course of the day as it appears to move across the sky. This means the shadows cast by the Sun's light change throughout the day, too. By tracking *your* shadow, you can make your own sundial.

*Please note:* This activity requires at least 3 hours and can be done over 2 days.

## Materials

Open, sunlit, 10ft x 10ft space (like a sidewalk, patio, or driveway)

3-12 position markers like rocks or coins (heavy enough to not be blown by wind)

Chalk

Timer, alarm, or stopwatch (optional)

## Directions

1. Start this activity in the morning, if possible. 10 am is a good time.
2. Find an open, sunny area outside away from shadows. Draw an **X** with chalk or place a marker to make your special spot to stand on.
3. Stand on your special spot and hold your hand up as high as you can.
  - a. See where the shadow of your hand is on the ground.
  - b. Have a helper place a marker on the ground where your hand's shadow is OR remember where that spot is and (quickly!) put a position marker or draw a chalk line there.
  - c. Double-check that you marked the correct spot by going back and standing on your mark again. Make your shadow's fingers touch the spot where your marker is.
  - d. Optional: Use chalk to write the time next to the marker.



4. Wait one hour. Go inside and have lunch, play a game, watch a livestream of the Academy's penguins, or do something else fun. It can be helpful to set a timer!
5. After one hour, go back to your special spot marker, stand on it, and raise the same hand. Where is your hand's shadow now? Has it moved?
  - a. Place another position marker or draw another chalk line where your hand's shadow is now.
  - b. Use chalk to write the time next to the new marker.
6. Repeat Step 3!
7. Repeat Step 4!
8. Keep repeating Steps 3 and 4 every hour until you are done or the Sun has set.
9. The next morning, after the Sun rises, stand on your special spot again. Where is your shadow? Is it in the same spot as it was yesterday? If it is in a different spot, why might that be?
10. At the same time as you first measured your shadow yesterday (example: 10 am), stand on your special spot again and raise your hand. Is your hand's shadow in roughly the same place as it was at the same time yesterday?
11. Challenge: Mark your shadow every hour from the time you wake up (or the Sun rises) until you go to bed (or the Sun sets) to create a "clock" of a whole day.
12. Alternative: Instead of using your own shadow, put a tall toy, like an action figure, doll, or tower of blocks on the special spot marker. Every hour, mark where the top of its shadow touches the ground. You can also trace the shadows and see how the shapes change!