

What Makes a Shadow?

1st–2nd Grade

Objectives

- Understanding that shadows are formed when an object blocks a light source, such as the sun
- Explaining how their own shadows change shape and size

Materials Needed

- *Moonbear's Shadow* by Frank Asch
- What Makes a Shadow? reproducible
- Chalk

Introduction

Tell students that you are going to read a book about a bear and his shadow. Encourage them to pay close attention to what the bear's shadow does in the story.



Read aloud the book *Moonbear's Shadow* by Frank Asch. Then ask students the following questions:

- What makes Moonbear's shadow?
- Why does Moonbear want to get rid of his shadow?
- How does he try to get rid of his shadow? Why doesn't it work?
- What happens to Moonbear's shadow when he hides behind a tree? Why?
- Why does Moonbear's shadow disappear when he buries it?
- Why does Moonbear's shadow appear larger during certain times of the day and smaller during other times?

Procedure

1. Early on a sunny day, take students outside and have them experiment with their shadows.
2. Before you begin, have students point toward the direction of the sun. Then identify where their shadows are in relation to the sun. Ask, "Are your shadows short or tall?"
3. Have students move around and observe their shadows as you ask them the following questions:
 - What makes your shadow move?
 - What happens to your shadow when you stretch your arms up high?
 - What happens to your shadow when you crouch down low to the ground?
 - Can you make your shadow disappear completely?
4. Divide students into pairs and give each pair a piece of chalk. Have students stand on a hard surface, such as the blacktop or sidewalk. Prompt them to take turns using the chalk to trace around each other's shoes and shadows. Encourage them to label the outline with their name and the time of the day.

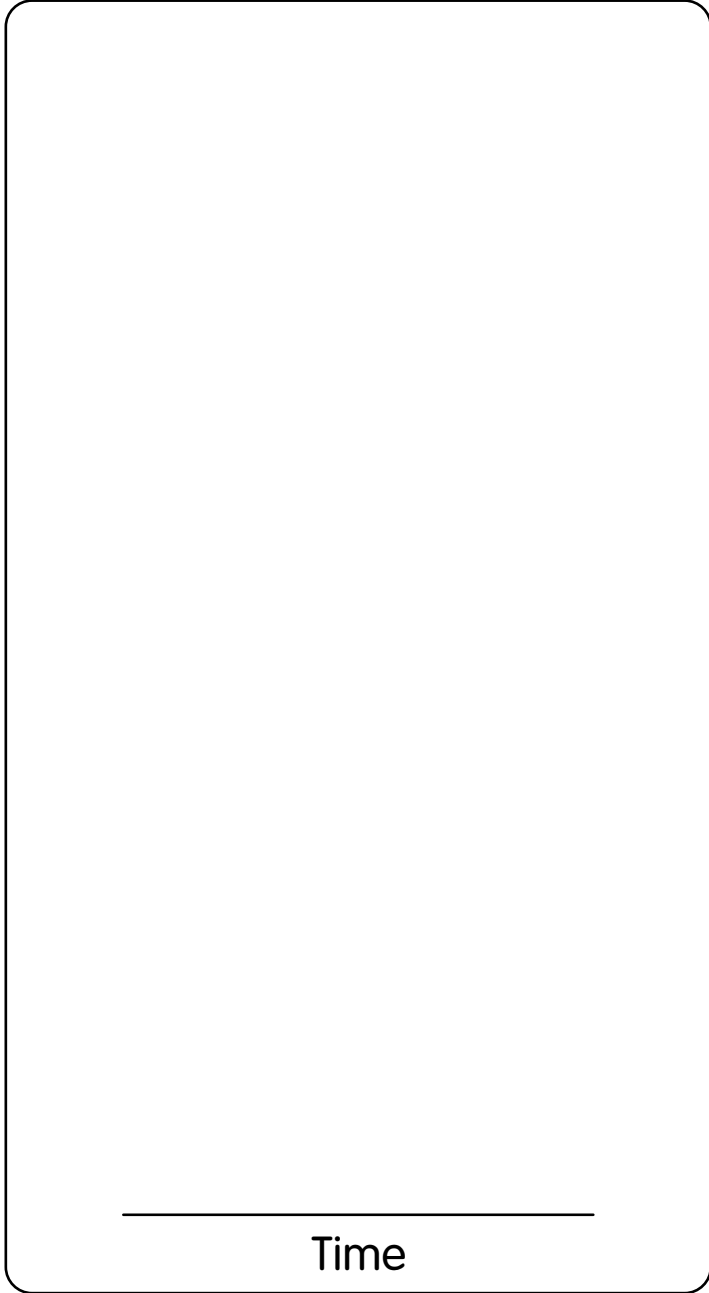
5. Ask students to predict what their shadows will look like when they return to the same spot later in the day.
6. Have students test their predictions a few hours later by returning to the same spot, using their shoe outline as a guide. Instruct students to take turns tracing their new shadows.
7. Invite students to discuss the differences in their shadows. Why do they think the shadows moved?
8. Explain to students that their shadows look different because Earth is rotating. The sun is now in a different position relative to where they are standing.

Guided/Independent Practice

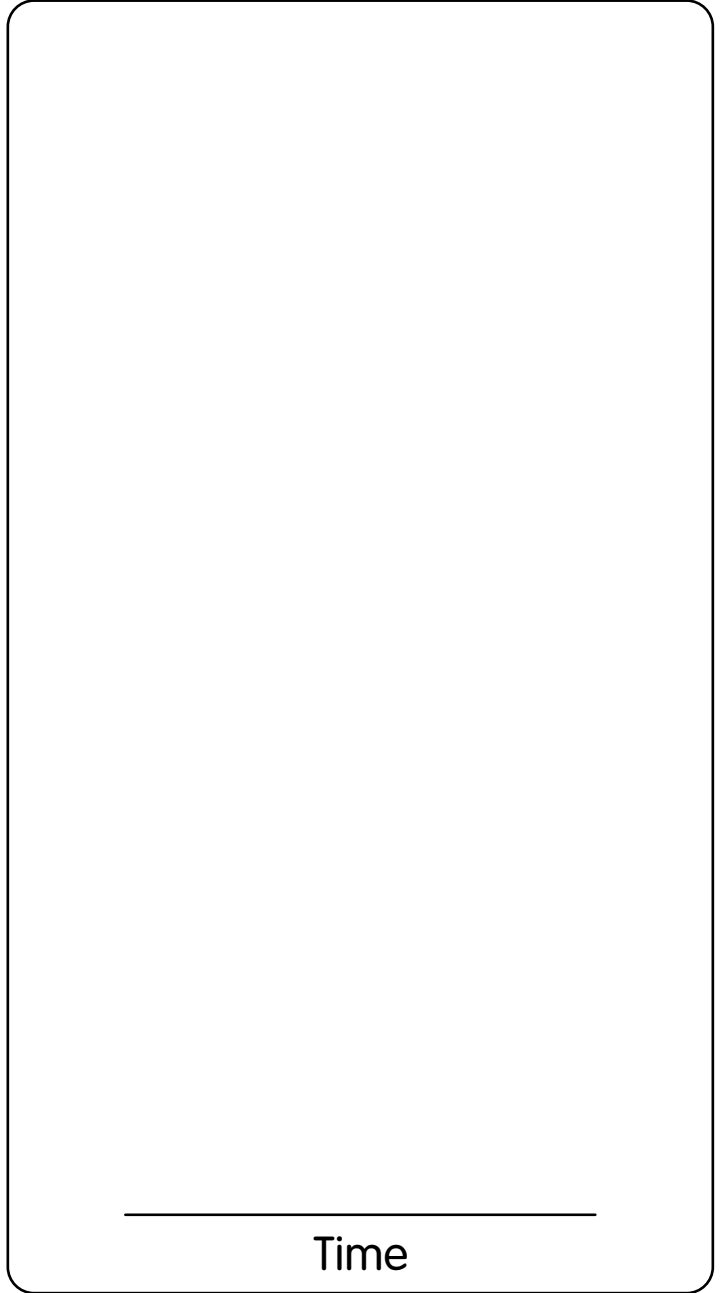
Provide each student with a copy of the What Makes a Shadow? reproducible. Invite students to record what their shadows looked like at each time of the day. Then have them complete the sentence at the bottom of the sheet.

What Makes a Shadow?

Name: _____



Time



Time

My shadow moved because _____

_____.