

Lesson Plan

Subject: Grade 3 Science **Lesson:** We Have All the Time in the World

Standards Addressed:

- The sun and shadows (3.E.1.2)

Objectives:

- Students will recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the sun during the day although the patterns of the stars in the sky, to include the sun, stay the same.

Materials Needed:

- Device for showing *We Have All the Time in the World* video
- "Sundials" Activity
- Paper cup, chalk, and ruler for each student

Outline:

- Prior to this lesson students should understand:
 - The solar system
 - Light and shadow
 - Time
- Before the video, have students look over the activities and review some of what you have learned about the solar system and light.
- Watch the video with students.
- After the video, students may complete the "Shifting Shadows" activity sheets individually or in teams.

Take It Further: Make a very simple yet effective sundial by placing a pencil in a ball of clay. Place the pencil standing up in the parking lot. Every hour, have a student go out and mark the hour with a stone. Use chalk to label each stone with the corresponding Roman numeral.

Cross-Curriculum Connection: Have the students collaborate to write a shadow hand puppet show script based on sundials. Have them practice and perform it using a projector light.



Shifting Shadows

Grade 3 Science

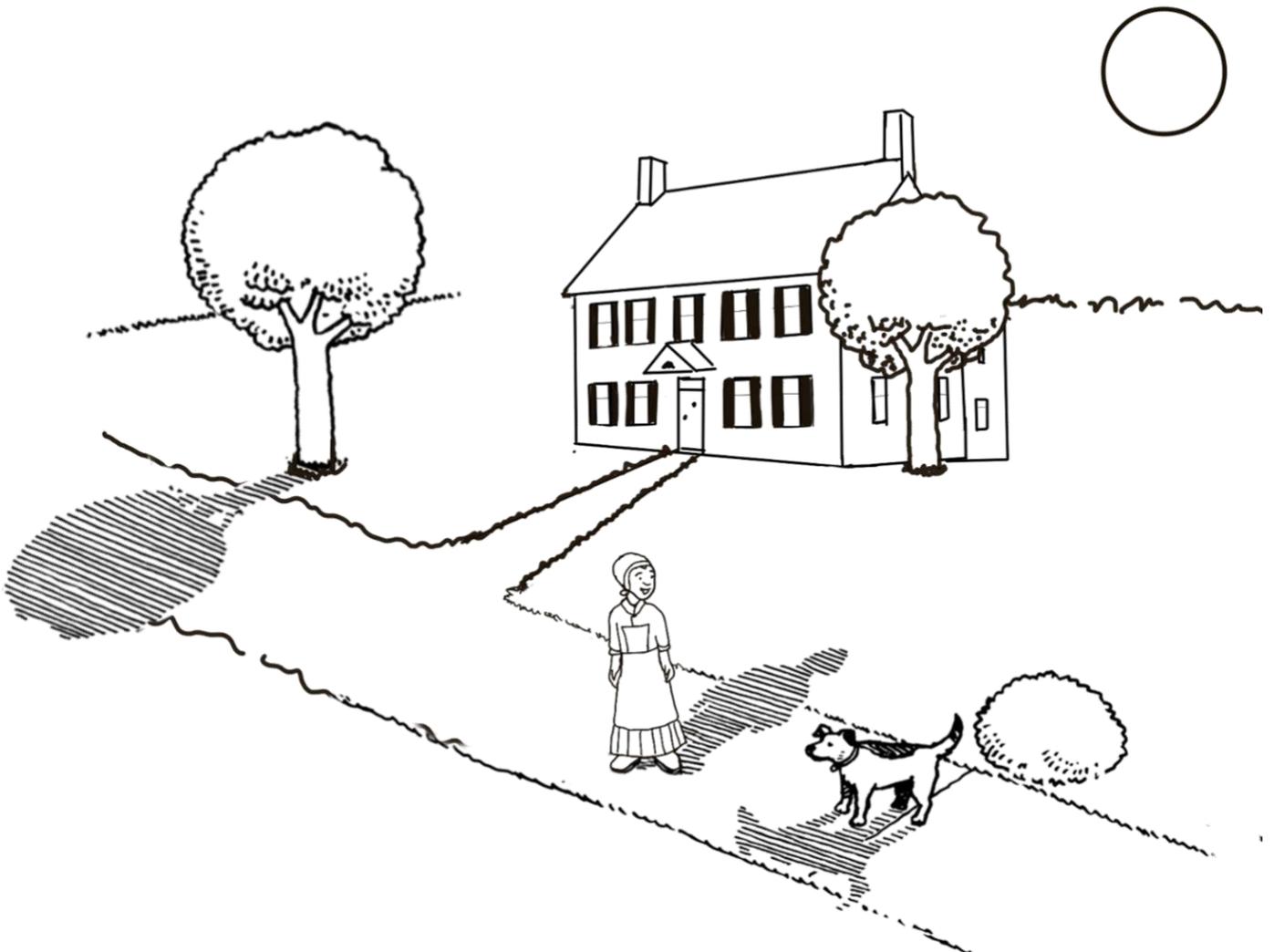
Name: _____

Date: _____

Activity 1: Making Shadows

Look at the picture and notice where the sun is. Then circle each shadow that is in the correct place. Mark an X through the shadows that are not in the correct place. What shadows are missing? Draw those shadows.

Why should there be shadows? _____



Shifting Shadows

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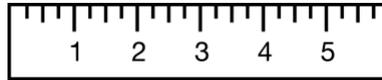
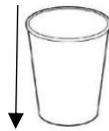
Name: _____

Date: _____

Activity 2: *Shifting Shadows*

Gather these items:

1. Paper cup
2. Chalk
3. Ruler



1. Measure the cup in inches from top to the bottom. Fill in that part of the chart below.
2. Early in the morning on a sunny day, place the cup in a clear spot on the sidewalk, driveway or yard. Leave it in the same place for the day.
3. Measure the length of the shadow at the times on the chart below and write the length in the correct places.

| Cup | 8:00 am | 10:00 am | 12:00 pm | 2:00 pm | 4:00 pm |
|-----|---------|----------|----------|---------|---------|
| in. | in. | in. | in. | in. | in. |

Shifting Shadows

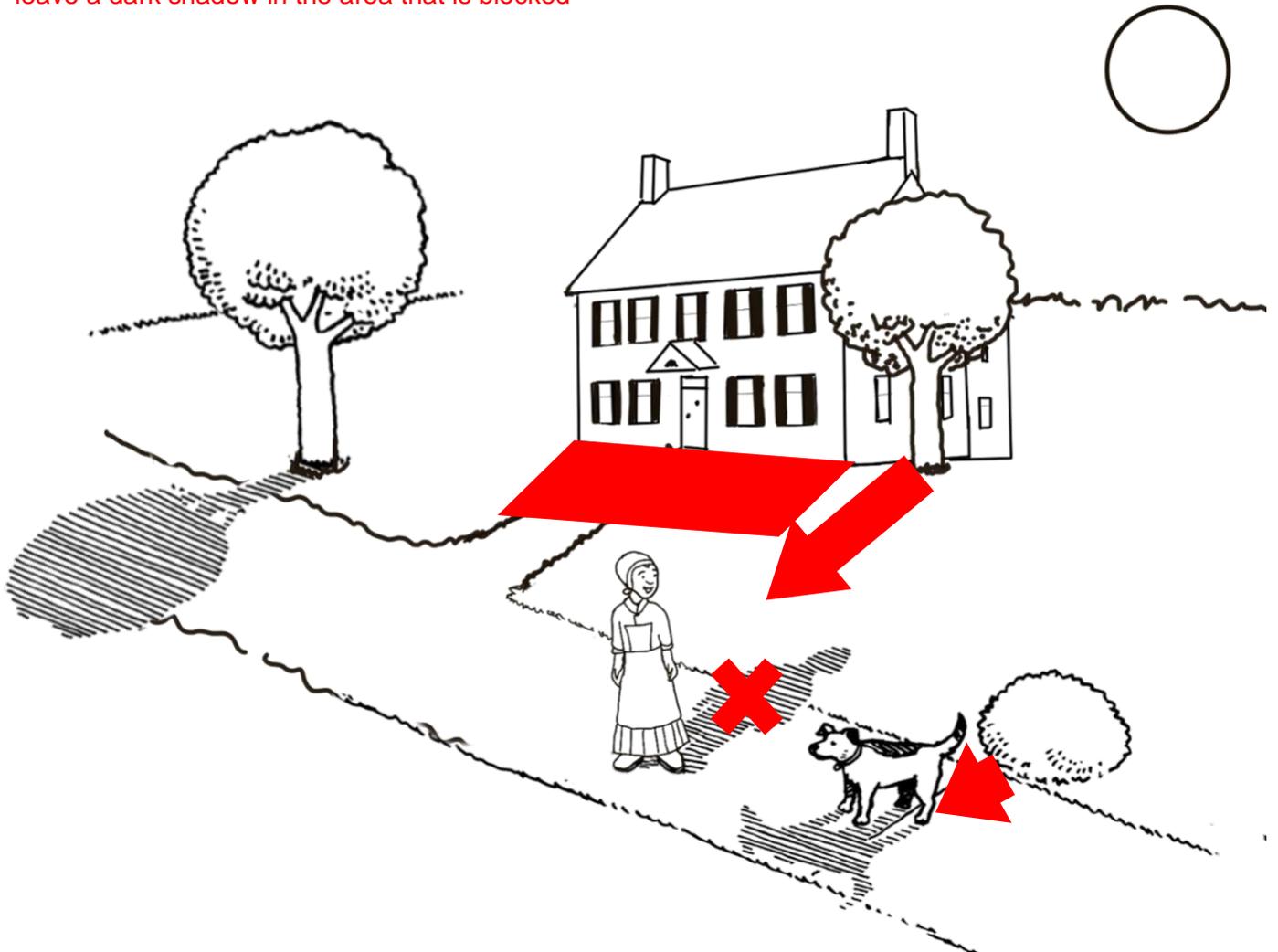
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Answer Key

Activity 1: Making Shadows

Look at the picture and notice where the sun is. Then circle each shadow that is in the correct place. Mark an X through the shadows that are not in the correct place. What shadows are missing? Draw those shadows.

Why should there be shadows? **Our bodies and objects that are solid block the sun's rays and leave a dark shadow in the area that is blocked**



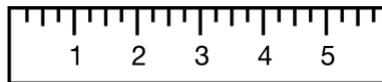
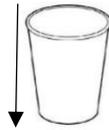
Shifting Shadows

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Answers will vary depending on the location of the sun in relation to the cup and the size of the cup.

The measurements should show steady lengthening and diminishing