

## Lesson Plan

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

**Standard Addressed:**

- Recognize the major components and patterns observed in the earth/moon/sun system. (NC.3.E.1)

**Objectives:**

- Students will determine the location of shadows based on position of the Sun. Students will also investigate the lengthening and diminishing of shadows based on position of the Sun.

**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. (Great time to teach Roman Numerals!)

**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 strong flash light. What happens when the light shines from different angles?



## Shifting Shadows

Grade 3 Science

Name: \_\_\_\_\_

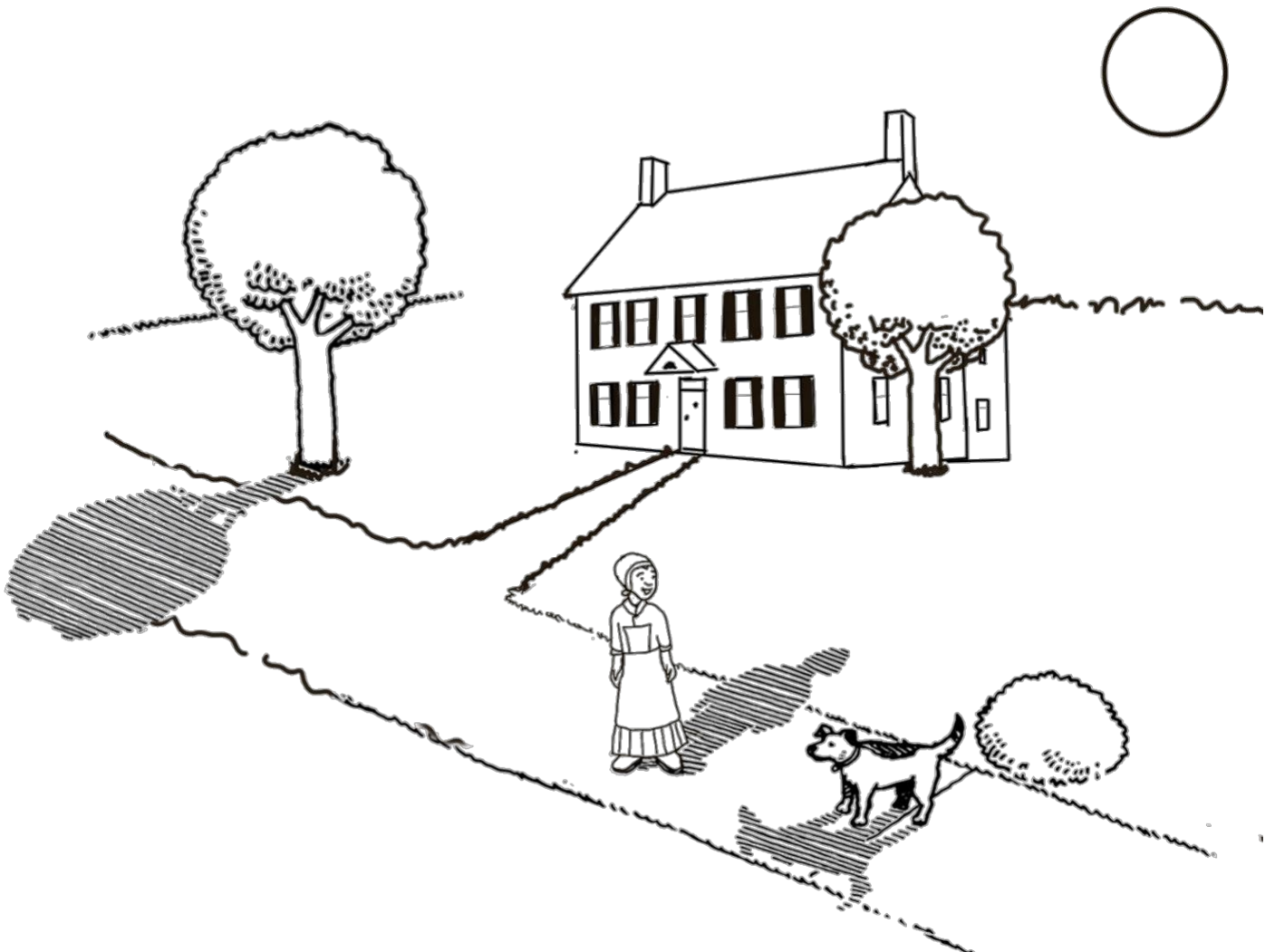
Date: \_\_\_\_\_

### 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

Grade 3 Science

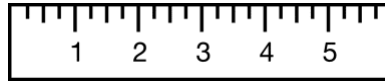
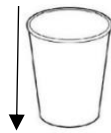
Name: \_\_\_\_\_

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

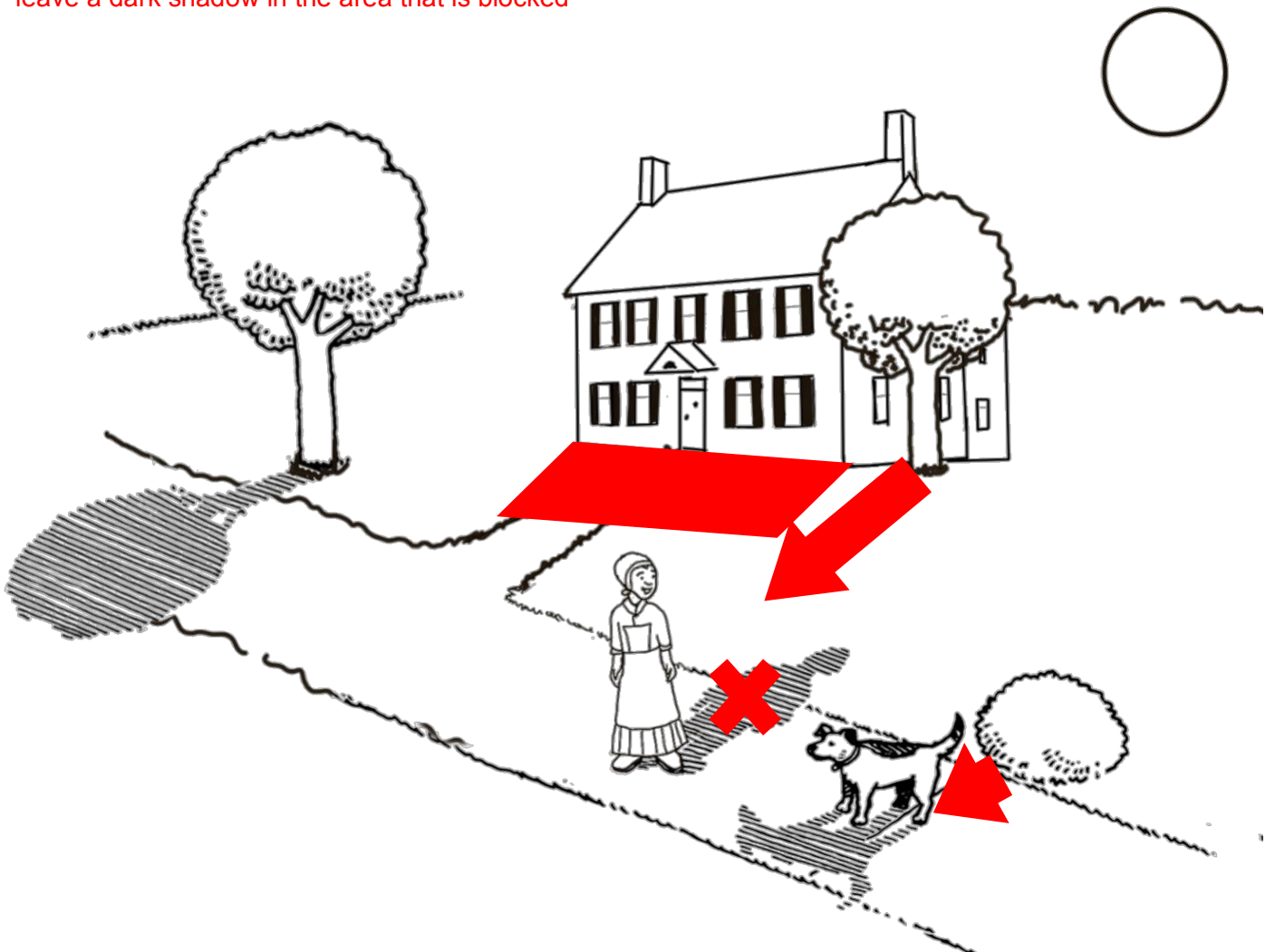
Grade 3 Science

### 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**



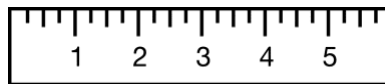
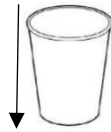
## Shifting Shadows

Grade 3 Science

### Activity 2: Shifting Shadows

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in.	in.	in.	in.	in.	in.

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