

# INVESTIGATION 1 I-CHECK

## EARTH AND SUN

Name \_\_\_\_\_

Date \_\_\_\_\_

1. A fifth-grade class was learning about shadows. They decided to have a contest to see who could make the longest shadow using a post that was 1 meter tall.

- a. Write **Y** (yes) next to each time of day that you could use to make the longest shadow.  
Write **N** (no) next to each time that would not make the longest shadow.

\_\_\_\_\_ Just as the Sun is rising

\_\_\_\_\_ At noon

\_\_\_\_\_ Just as the Sun is setting

\_\_\_\_\_ Just after the Sun sets

- b. Explain why you marked the times above the way that you did.

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2. Write **T** next to each sentence that is true and helps explain why there is night and day on Earth.  
Write **F** next to each sentence that is false.

\_\_\_\_\_ The Sun moves around Earth once every 24 hours.

\_\_\_\_\_ Earth spins on a north-south axis.

\_\_\_\_\_ It takes 1 year for Earth to turn on its axis.

\_\_\_\_\_ Day is the side of Earth facing the Moon.

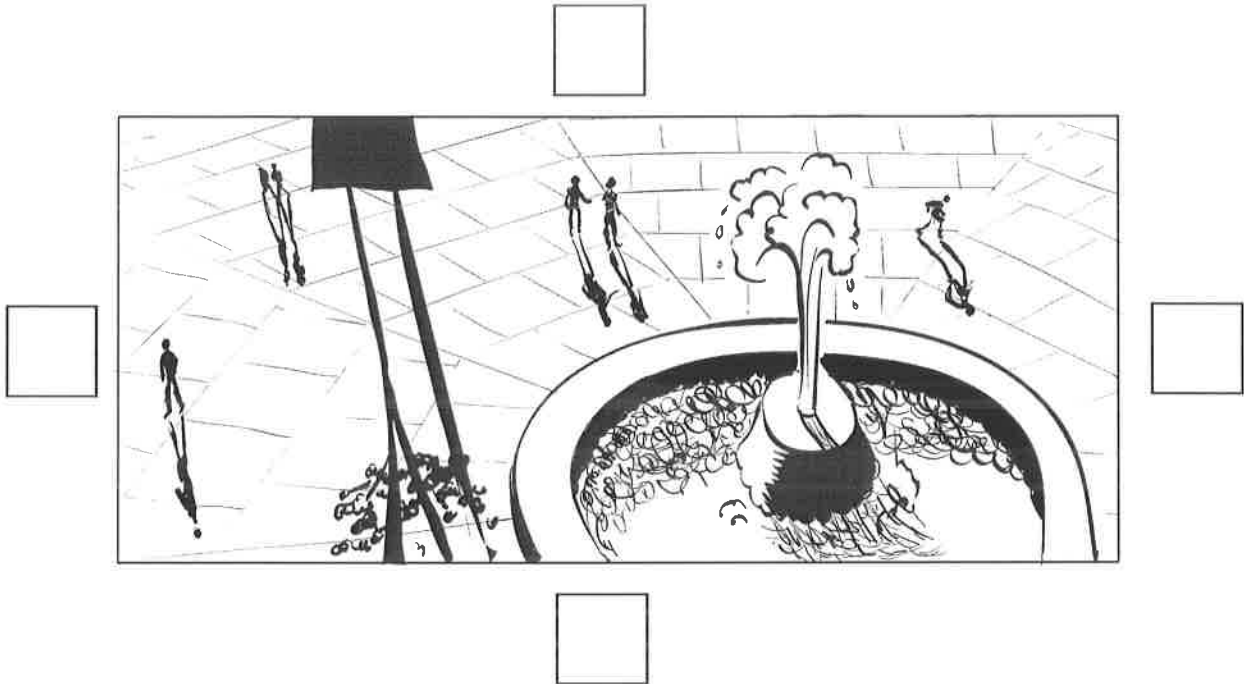
\_\_\_\_\_ Night is the side of Earth in shadow.

\_\_\_\_\_ Earth is always half in shadow and half in light.

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3. The drawing above is almost a bird's-eye view of a plaza in the late afternoon. On the plaza, there are people, trees, and a fountain. Use the shadows to figure out which side of the drawing is north (N), east (E), south (S), and west (W). Write a letter in each box to indicate the four directions on the plaza.
4. A class in the northern United States went outside every day at 10:00 in the morning and measured the length of the same tall tree's shadow. When they measured the winter shadow, they noticed that it was longer than in the fall. Which statement explains this phenomenon?

*(Mark the one best answer.)*

- ☐ A The tree most likely got shorter during the winter after it lost its leaves.
- ☐ B The Sun is higher in the sky in the winter than in the fall.
- ☐ C The Sun is lower in the sky in the winter than in the fall.
- ☐ D The Sun's position in the sky does not change from season to season, so they must have measured incorrectly.

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5. Two students want to model what causes day and night in one place on Earth. They have a basketball, a lamp with a bare bulb, and a small plastic person with sticky feet to attach to Earth. They place the lamp and the ball about 2 meters apart.

- a. Which sentence describes the best way to model day and night for the plastic person?

*(Mark the one best answer.)*

- ☐ **A** Keep the ball in one place, keep the person in one place on the ball, and move the lamp in a circle around the ball.
- ☐ **B** Keep the lamp in one place, keep the person in one place on the ball, and rotate the ball.
- ☐ **C** Keep the person in one place on the ball, keep the lamp in one place, and move the ball around the lamp.
- ☐ **D** Keep the ball and the lamp in one place, and move the person around the ball.

- b. Write **Y** (yes) next to each sentence that describes a limitation of the students' model explaining day and night compared to the real system. Write **N** (no) next to each sentence that is not a limitation of the model.

\_\_\_\_\_ The model has no Moon, which also plays a part in the day-and-night system.

\_\_\_\_\_ The ball in the model cannot rotate as fast as Earth.

\_\_\_\_\_ The plastic person is much larger than it should be compared to Earth.

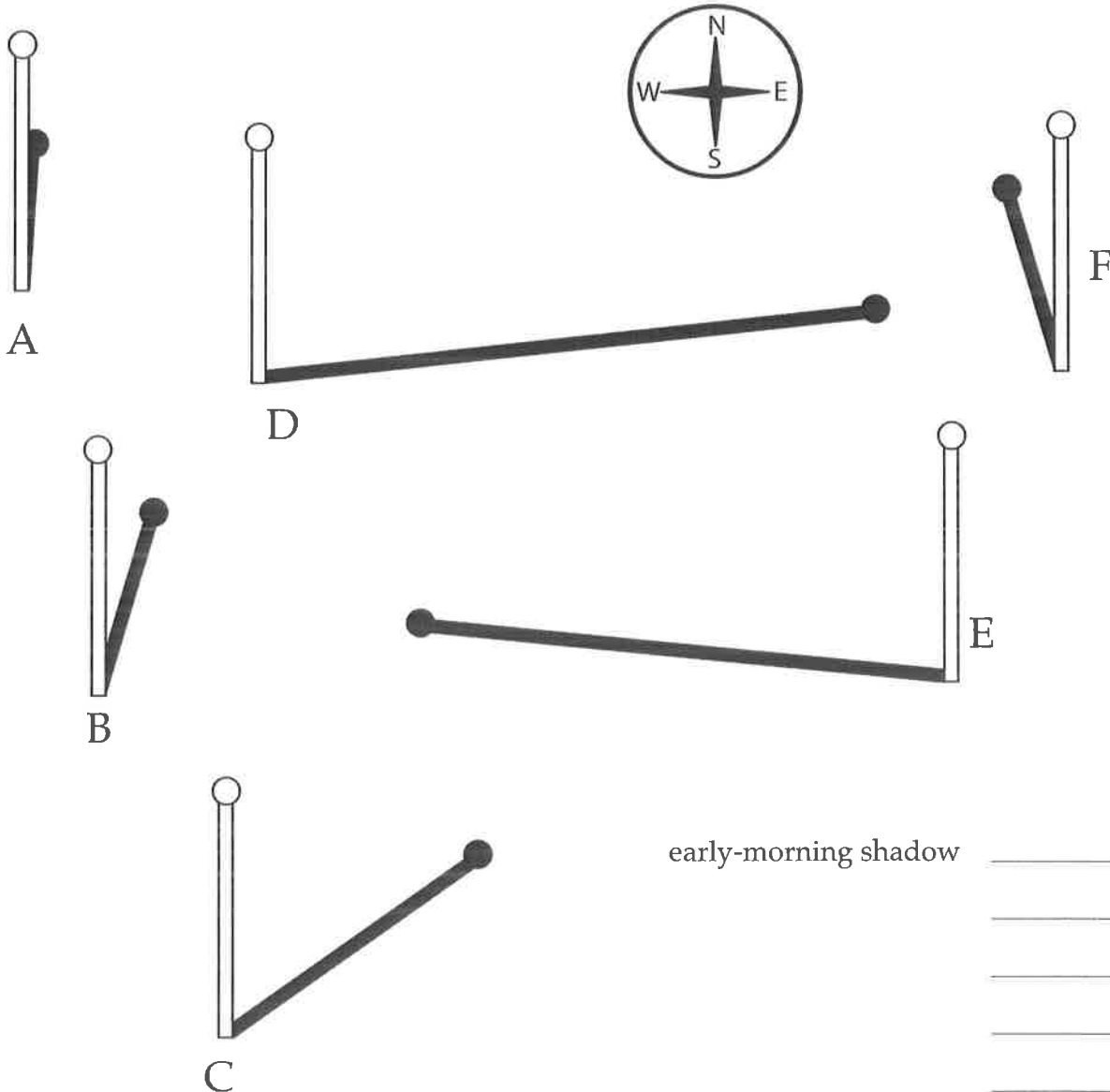
\_\_\_\_\_ The distances between the ball and the lamp are much closer than in the actual system.

Name \_\_\_\_\_

# **INVESTIGATION 1 I-CHECK** **EARTH AND SUN**

6. Below are the shadows of a flagpole at different times of the day.

Put the shadows in order from early morning to late afternoon. Record your answer below.



early-morning shadow \_\_\_\_\_

late-afternoon shadow \_\_\_\_\_

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7. A class investigated when the Sun rose and set each day in Oakland, California. They found a table that showed the number of hours it was daylight each day.

a. Which sentence indicates the pattern they most likely found?

*(Mark the one best answer.)*

- ☐ A The most daylight hours were in January.
- ☐ B The most daylight hours were in June.
- ☐ C The most daylight hours were in April.
- ☐ D The most daylight hours were in October.

b. Mark **X** next to the two motions that cause the difference in the number of daylight hours at different times of the year.

- ☐ The rotation of Earth on a tilted axis
- ☐ The revolution of the Sun around Earth
- ☐ The revolution of Earth around the Sun
- ☐ The rotation of the Moon on its axis

