Name

HANDS-ON ACTIVITY

How Does A Shadow Grow?

Objective

Collaborate to model how shadows change throughout the day.

What question will you investigate to meet this objective?

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Materials

- new, unsharpened pencil
- modeling clay
- poster board
- metric ruler
- marker
- rocks (4)

Procedure

STEP 1 Use the clay to position the pencil upright in the center of the poster board.

Why is it important to position the pencil correctly?

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STEP 2 Place the poster board outside in a sunny, flat area away from trees and other tall objects. Put a rock on each corner of the poster board.

What might happen if you did not weigh down the poster board?

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STEP 3 Measure the length of the pencil's shadow. Mark the end of the shadow. Record the time of day and your measurement on the poster board.

Why should you write down the time of day and your measurement?

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STEP 4 Observe the position of the sun and the direction of the shadow in relation to the sun. Record your observations in the table below, along with your measurements of the shadow. **Caution:** Do not look directly at the sun.

Why is it important to observe the position of the sun?

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STEP 5 Repeat steps 3 and 4 each hour throughout the school day.

Why should you take measurements throughout the day?

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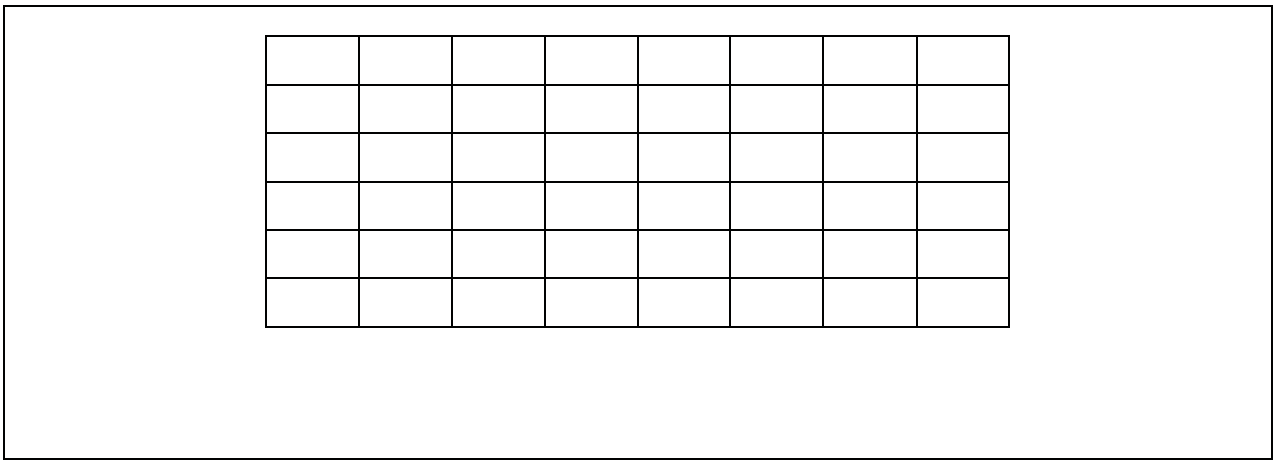
Complete the data table as you observe and measure.

Shadow Data Table			
Time of day	**Position of sun**	**Length of shadow**	**Direction of shadow in relation to sun**

Name

Analyze Your Results

STEP 6 Use your data to create a line graph. Label the horizontal axis (x-axis) *Time of day*. Label the vertical axis (y-axis) *Length of shadow.*



STEP 7 Analyze your graph. What pattern do you observe?

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STEP 8 Compare your results with your classmates. Why is it important for scientists to share the results of their investigations?

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Draw Conclusions

STEP 9 Make a claim about the sun's movement based on the question you investigated. Cite evidence from your investigation to support this claim.

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STEP 10 If you could observe the shadow of a stick from morning to evening on a sunny day, what do you think you would observe?

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