

As the Earth Turns

Teacher Facilitation Notes

In General . . .

- Project the slide deck in edit mode—do not show it as a slideshow.
- Hide the speaker notes before projecting. (View/Show Speaker Notes)
- Hide the filmstrip to the left. (View/Hide Filmstrip.)
- Hide the toolbar. (Click on the up arrow at the right end of the tool bar.)
- Call on students to read the various content shown on slides.

Materials Needed:

Explore:

Flashlight, 1 per pair of students

Unsharpened pencil, 1 per pair

Metric ruler, 1 per pair of students

Play-doh

Scissors, 1 per pair of students

Other Materials

Student Recording Sheets

Student Summative Evaluation

Pencils

Science notebooks

Engage: Light To Dark and Back Again

- Watch the video about patterns. Make sure students understand that a pattern is something that occurs over and over in the same way.
- Talk about patterns that they might see in the feathers of a peacock.
- Remind students about the term *symmetry* and identify the line of symmetry on the photo of the butterfly.
- Students should understand that a cycle is a repeating pattern of events. Click on the word *cycle* to get to the glossary page for this term. Call on volunteers to define the term in their own words. Come to a consensus on a definition and type it in the appropriate text box.
- Give students a few moments to observe the day/night cycle animation. Discuss if desired.
- Read the directions and have the students do a one minute Quick Write in their science notebooks.
- Call on volunteers to share what they wrote. Discuss.

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Teacher Facilitation Notes, p. 2

Explore: The Earth Spins and the Day Begins!

- Call on students to describe times they have seen the sun set or the sun rise in the sky.
- Watch the video about sunrise and sunset.*
- Have students complete the sentence in their science notebooks.
- Work through the Science World *Mediterranean Sea* activity. (You can make this a game, if desired. Divide the class into groups. Call on a group to answer a question. They get a point if they are correct. Rotate through the groups so that each group has an equal chance at answering questions. The group with the most points wins!)
- Allow time for students to answer the questions on their recording sheet. Discuss the answers, if desired.
- For Part 3, read through the information slides and discuss as desired.
- Have students answer the four prompts on their recording sheets. Call on volunteers to give the answers. Fill in the text boxes as they answer the prompts.
- Have pairs of students work together to complete the shadow investigation. Discuss.

*Because of Earth's counterclockwise rotation, the Sun has an apparent clockwise motion across the sky from east to west. However, most world maps show the East on the right side of the map. This makes the sun appear to go right to left. Recent items on the STAAR™ have been shown both ways. Give students opportunities to see both orientations.

Explain

- Read through the passage. Call on volunteers to define the terms as you enter their definitions in the glossary.
- Review the Top 10 Facts about the day/night cycle.
- Have students complete the graphic organizer independently. Discuss.

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Teacher Facilitation Notes, p. 3

Elaborate

- Read and discuss the information about why we don't feel the Earth move as it rotates on its axis.
- Play the game, if desired.

Evaluate

- Have students complete the short answer questions on their recording sheet. Discuss.
- Call on volunteers to identify the times based on the position of the sun in the sky.
- Have students decide where the shadows would fall at that time of day.
- The Challenge is very difficult. Use is optional.
- Have students complete the quiz independently.

As the Earth Turns

Name: KEY

Evaluation

1. Some students in a science class created the following list to describe a natural Earth process.

- Time period: 24 hours
- Causes the day/night cycle
- Affects the length of shadows throughout the day

Which process is described by the characteristics listed above?

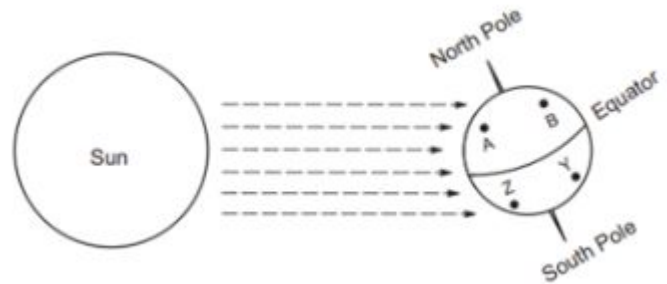
- A** Earth's rotation around the sun
 - B** Earth's rotation on its axis
 - C** Earth's revolution around the sun
 - D** The moon's revolution around the Earth
2. Which of these best explains why the sun is not visible during the night?
- F** As it revolves around the Earth, the moon blocks the sun from view.
 - G** As it rotates on its axis, one side of the sun always faces away from Earth.
 - H** As the Earth revolves around the sun, the sun stops creating light at night.
 - J** As it rotates on its axis, the side of the Earth having night faces away from the sun.
3. Why does Earth experience day and night?
- A** The moon orbits the Earth.
 - B** The sun does not emit light at night.
 - C** Earth rotates on its axis.
 - D** Earth revolves around the sun.

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Evaluation

4. The diagram illustrates sunlight shining on the Earth. At which points on the Earth would it be day?



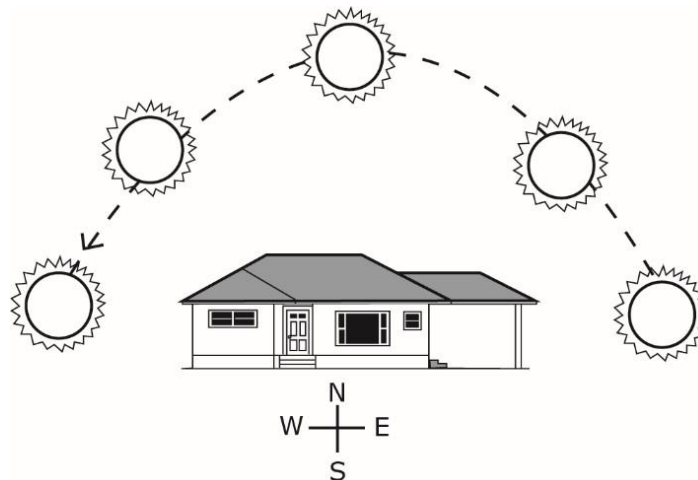
F Z and Y

G B and Y

H Z and A

J A and B

5. The diagram shows the sun over a house at different times of the day.



The sun's apparent movement across the sky is caused by-

A Earth's rotation around the sun

B Earth's rotation on its axis

C Earth's revolution around the sun

D Earth's revolution around the moon

As the Earth Turns

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Evaluation

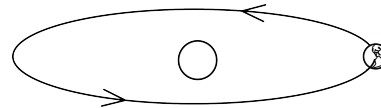
6. The illustration shows some shadows from a house and two trees.



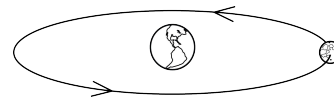
When the shadows of the house and trees appear as shown in the illustration above, the sun is most likely-

- F** straight above the house
 - G** hidden behind some clouds
 - H** to the east of the house
 - J** to the west of the house
7. Which of the following processes takes about 24 hours?

- A** One orbit of the Earth around the sun



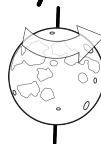
- B** One orbit of the moon around the Earth



- C** One rotation of the Earth on its axis



- D** One rotation of the moon on its axis

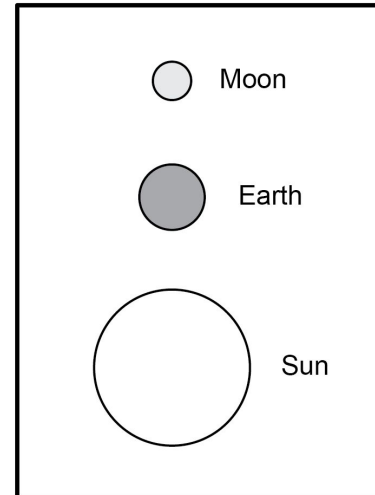
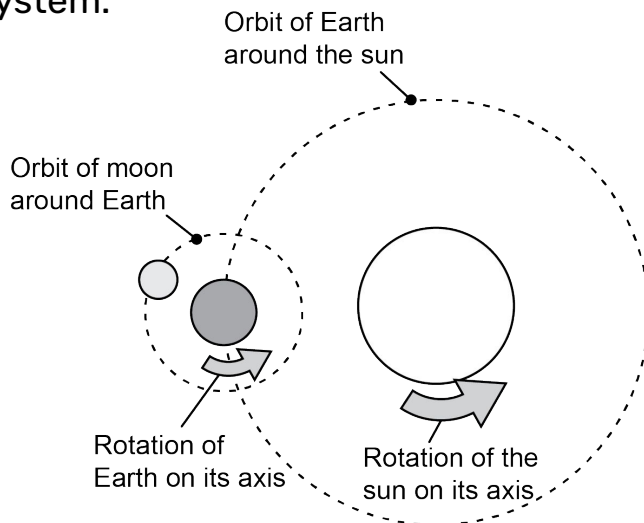


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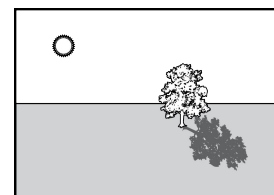
8. The illustration shows some of the motions of the sun, moon, and Earth system.



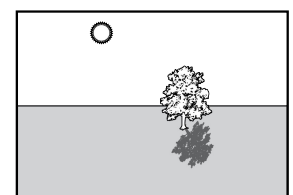
Which of the labeled motions in the illustration causes the apparent movement of the sun across the sky as observed on Earth?

- F** Orbit of the Earth around the sun
- G** Orbit of the moon around the Earth
- H** Rotation of the Earth on its axis
- J** Rotation of the sun on its axis

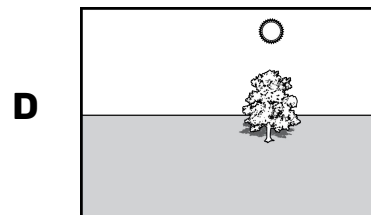
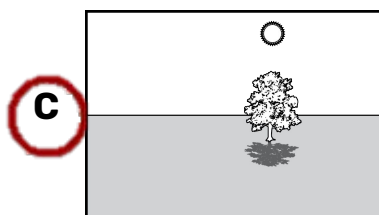
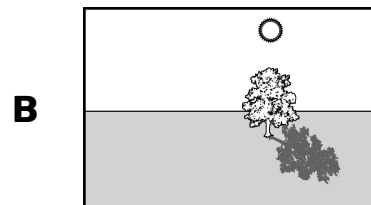
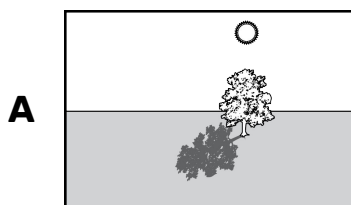
9. The image shows a tree and its shadow in the early morning and the late morning. Which image below best shows what the shadow of the tree will look like at noon?



Early Morning



Late Morning

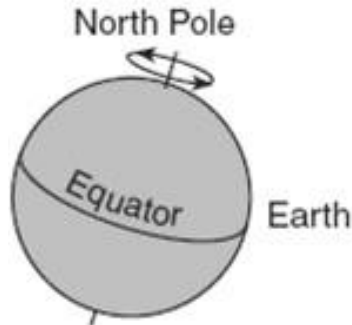


As the Earth Turns

Name: _____

Explore: The Earth Spins and Day Begins

Directions: Study the diagram. Then complete the sentences that follow.



Terms You Might Use

axis	day	night
rotation	hours	24

1. The arrows in the diagram above represent Earth's _____.
2. It takes the Earth about _____ to rotate once on its axis.
3. Day and night on Earth are caused by _____

4. The imaginary line that passes through the center of the Earth from the North Pole to the South Pole is called a/an _____.
5. On warm days, many people like to sit on their patios and watch the sun set. On which side of their house would these people build their patios?

6. About what time of day would it be in the illustration?

7. Complete the following analogy:
Sunset is to west as sunrise is to _____
8. A student notices that the sun is directly overhead when he enters the library. When he leaves the library several hours later, in which direction should he look to see the sun? _____



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Explore, Part 4: The Long and the Short of It!

1. Sketch the scissors, their shadow, and the position of the flashlight when it created the shadow.

2. What is necessary in order for a shadow to be created? _____

3. How long was the longest pencil shadow you made? _____

4. How did you position the flashlight to make the longest shadow? _____

5. How long was the shortest pencil shadow you made? _____

6. How did you position the flashlight to make the shortest shadow? _____

7. Is the sun really moving? Explain your answer. _____

8. When will objects outside have the longest shadows? Why? _____

9. Why do you think there are fewer shadows that are more difficult to see on cloudy days than on sunny days? _____

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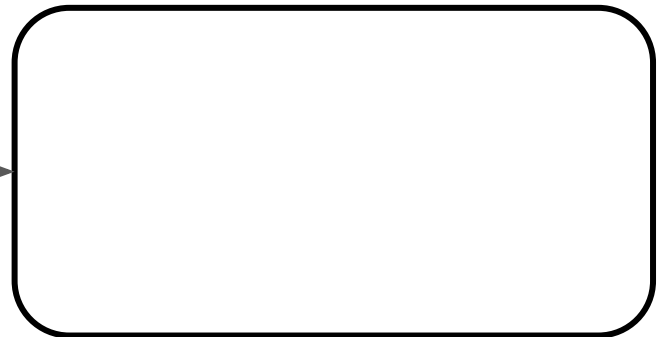
Explain

Directions: Think about what you read about the day/night cycle. Use that knowledge to fill out the main idea and details graphic organizer!

Detail #1



Detail #2

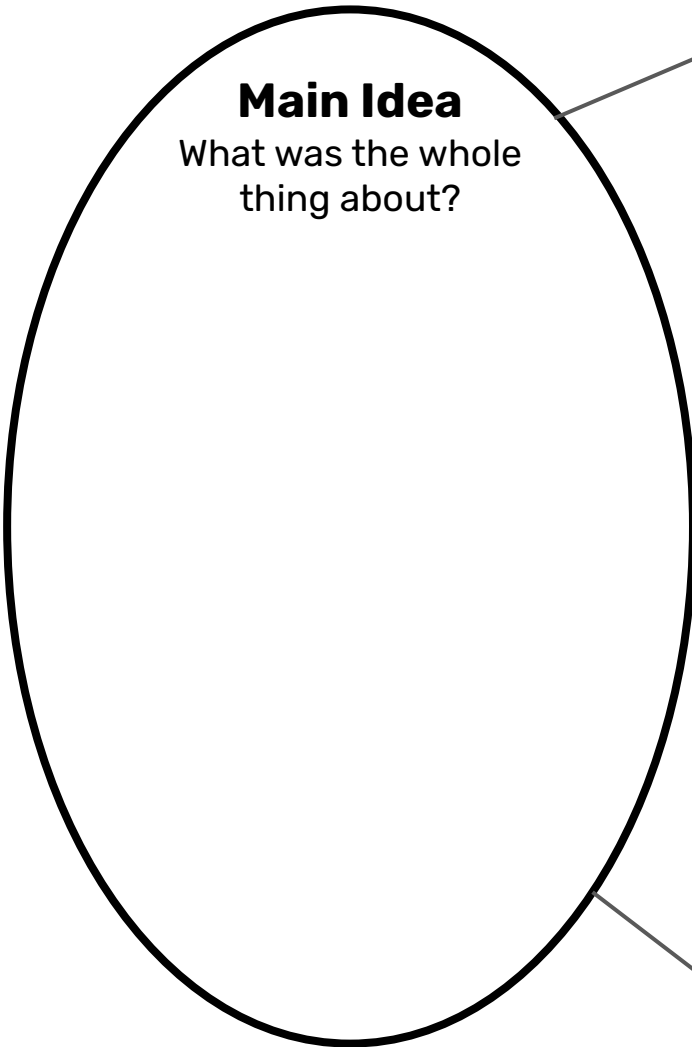


Detail #3



Main Idea

What was the whole thing about?

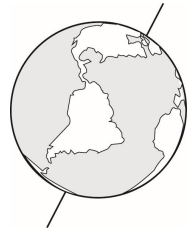


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Evaluation-Open-Ended Responses

1. What is the imaginary line running through the center of the Earth called? _____



2. You are outside face east in the early morning. How does the sun appear to move? Why? _____

3. How does this illustration explain why the sun appears to move across the sky? _____



4. My teacher can watch the sunrise from her living room windows. What direction do the windows face? Explain. _____

5. Use the terms *axis*, *rotate* (or *rotation*), *sun*, *Earth*, *day*, and *night* to explain the day/night cycle. _____

6. Why is the surfer's shadow so long? Does his shadow always look like this? Explain. _____



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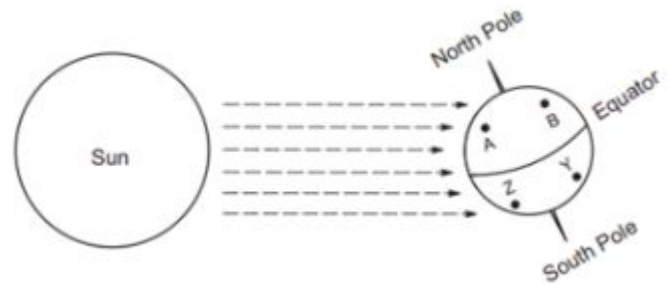
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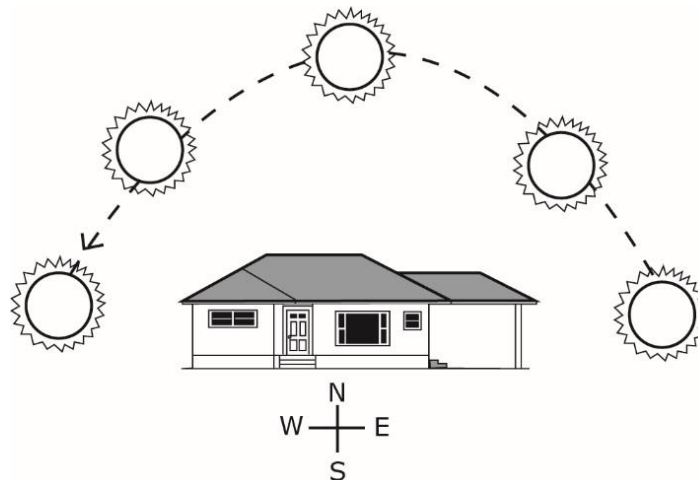
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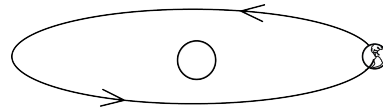
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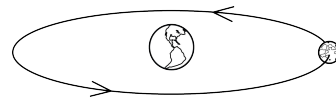
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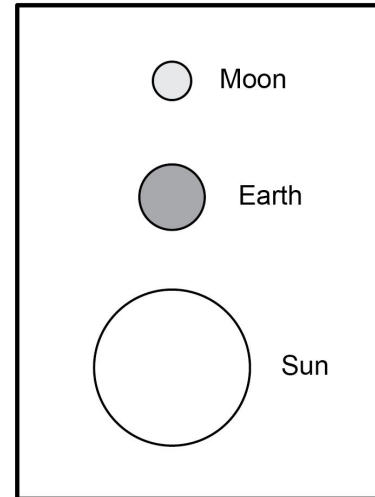
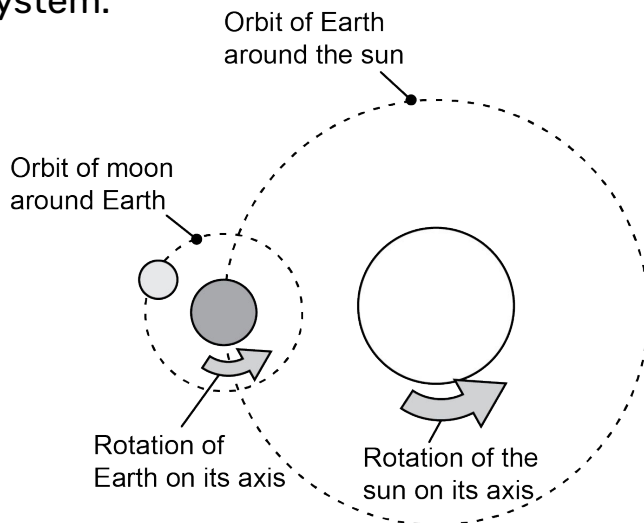


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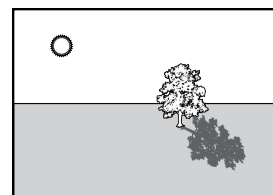
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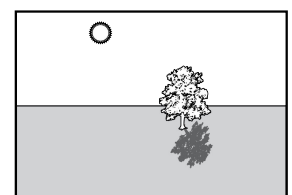


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