

Interested in learning more?

You can learn more with these fun extension activities!

Take a closer look to learn how the movement of the Earth and Sun cause days, seasons, and years by watching this video.



Scan the QR code to understand more about the causes of seasons by exploring NASA Science.



COMING UP NEXT!



We will identify and describe the phases of the lunar cycle.

Answer Key

1. C
2. Position 4
3. Winter
4. Summer

For more information about Project VICTORY visit:



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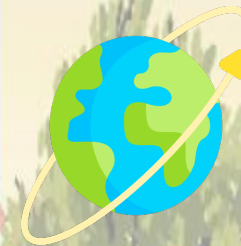
School of Education and
Human Development



Project VICTORY

Family Involvement in Science

Causes of Seasons



FIELD
NOTEBOOK #7

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Grant No. S411B200055

Dear Family,

We are glad you are participating in Project VICTORY to learn more about Earth science. We hope you enjoy these **Family Involvement in Science (FIS)**



activities. Please work through the activities this week.

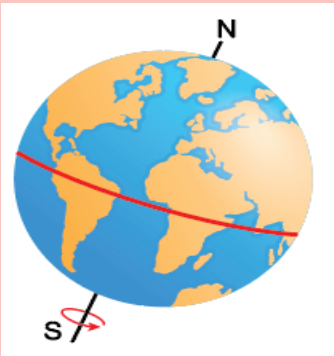
This week's topic:

Your child is exploring what causes the seasons we experience on Earth. We are learning science vocabulary that scientists use when explaining the causes of seasons.

Find ways to use these words in everyday conversations. This will help develop your child's science vocabulary.



DID YOU KNOW?



The Northern and Southern Hemispheres always have opposite seasons. If there is winter in the Northern Hemisphere then it would be summer in the Southern Hemisphere.



The Arctic Circle only has two seasons: summer and winter. The Sun only rises and sets once every year there. The Sun shines for 24 hours a day from April to August. From September to March, there is no direct sunlight in this region.

Record Your Observations

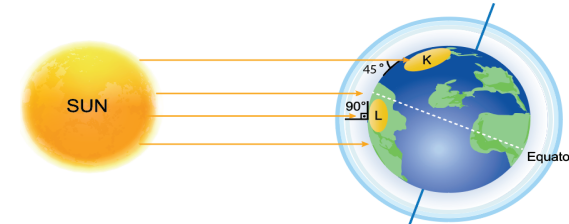


	Room Temperature (°C)	After 5 minutes Temperature (°C)
Round 1 (flashlight at 90° angle)		
Round 2 (flashlight at 45° angle)		

1. Is the light hitting the thermometer in Model 1 direct or indirect light?

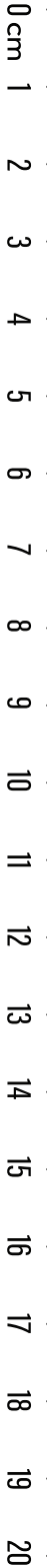
2. Is the light hitting the thermometer in Model 2 direct or indirect light?

3. Which "Sun" angle resulted in the higher temperature?



4. Imagine that the flashlight represents sunlight and the thermometer represents the surface of the Earth. What season do we experience on the Earth corresponds to Model 1, and why do you think this?

5. What is the effect of the angle (more direct or indirect) of sunlight on the amount of heat an area receives?



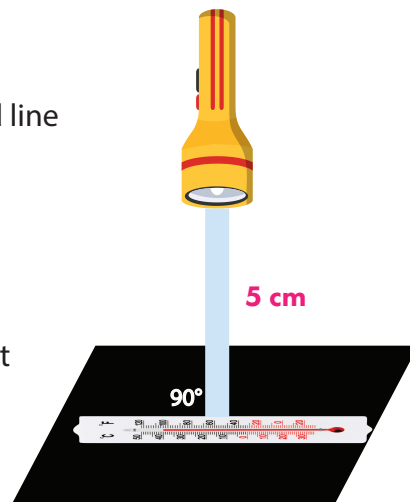
Family Science Activity

This week's family challenge is to learn how the Sun's angle affects the temperature on the Earth. This angle is important as the Earth is tilted creating our seasons. When light from the Sun hits the Earth **directly** (overhead), the solar energy is spread over a smaller surface area and is more intense (concentrated) than when light hits the Earth **indirectly**, at a more slanted angle (less intense).

Materials: A thermometer; a flashlight (or the flashlight on your phone); a pair of scissors; and a paper ruler provided on page 7.

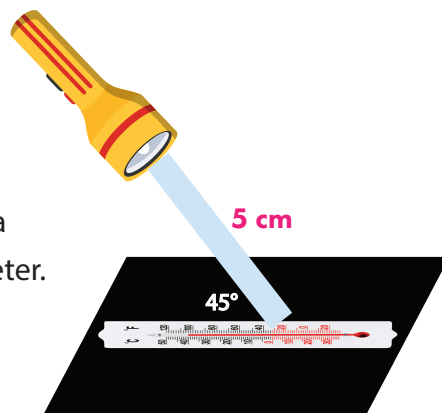
Model 1.

1. Lay the thermometer on a flat surface.
2. Cut out the paper ruler along the dotted line on page 7.
3. Hold the flashlight so that the beam shines directly down (90° angle) onto the thermometer.
4. Use the paper ruler to keep the flashlight 5 cm from the thermometer.
6. Observe and record the temperature after 5 minutes.



Model 2.

1. Let the thermometer return to the room temperature.
2. Hold the flashlight at approximately a 45° angle in relation to the thermometer.
3. Make sure the flashlight is still 5 cm from the thermometer.
4. Observe and record the temperature after 5 minutes.



Target Vocabulary



Axis — the imaginary line that runs straight through Earth's North and South Poles.



Orbit — the path that an object travels around another object.



Revolution — one complete trip that an object makes around another object.



Season — the cycle of weather changes that is divided into four parts, including winter, spring, summer, and fall.

What Causes Seasons to Change?

A pattern is something that repeats in a predictable way. We see patterns every day in our lives. One pattern we observe is night and day. Another pattern we commonly observe each year is seasons. Have you ever wondered what causes the seasons: summer, fall, winter, and spring?

We know that Earth rotates on its **axis**, the imaginary line that runs straight through the North and South Poles. But did you know that the axis is tilted, or slanted, at an angle? As Earth rotates on its tilted axis, it also slowly revolves around the Sun. Revolve means to travel around another object in a path called an **orbit**. Every 365 days, the Earth makes a complete **revolution** around the Sun.

The tilt of Earth's axis causes sunlight to shine directly on different parts of the planet. When the sunlight is shining more directly on the Southern Hemisphere, the warmth of the direct sunlight causes spring and summer. Notice that in the Northern Hemisphere, the sunlight appears to be spread out. Less indirect sunlight causes the cooler temperatures of fall and winter. Earth's tilted axis causes the **seasons**.

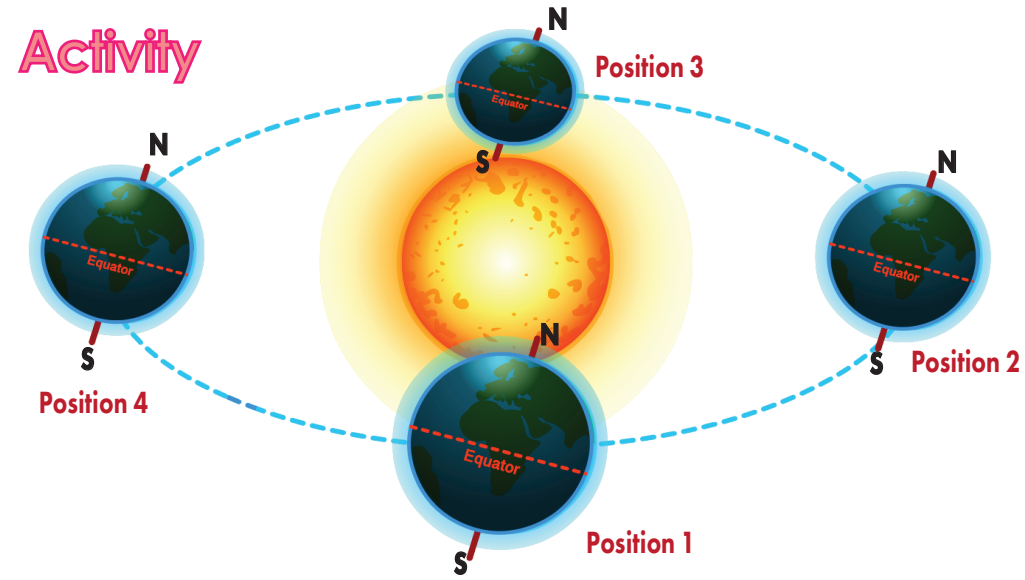
We live in the Northern Hemisphere. Each year we experience four seasons. When the North Pole tilts towards the Sun as it travels in its orbit, we have summer and spring. When the North Pole tilts away from the Sun as it travels in its orbit, we have fall and winter.

Reading Questions

1. How long does it take for the Earth to revolve around the Sun?



2. What causes the Earth's seasons? Underline in the passage where you found this information.



1. What is best represented by this diagram?
A. Earth's rotation
B. Earth's solar cycle
C. Earth's seasons
2. In which position would the Southern Hemisphere experience winter?
3. Which season is taking place in the Northern Hemisphere in Position 2?
4. Which season is taking place in the Northern Hemisphere in Position 4?

The answer key for the diagram questions is on page 8.