The Reason for Seasons

Earth travels around the Sun in a path called an orbit. One full trip around the Sun is one year. Earth stays about the same distance from the Sun throughout its orbit. It's not closer to the Sun in summer than it is in winter. So why are some parts of the year warmer than others? Why are there seasons? Let's use a globe and a lamp to find out.

MATERIALS

For each student group:

- Lamp
- Globe
- Meter stick
- 2 thermometers
- Masking tape

Do the activity

1. Remove the shade from the lamp. Place the lamp in the middle of a table.
2. Position the globe 70 centimeters from the lamp. Make sure the equator line on the globe is at the same height above the table as the light bulb. You may need to set the globe on textbooks.
3. Turn the globe so that the North Pole is tilted away from the lamp and the South Pole is tilted toward the lamp.
4. Tape one thermometer to the globe along the 15° north latitude line. Make sure the end of the thermometer that measures temperature is on the part of the globe closest to the lamp.
5. Tape the other thermometer to the globe along the 15° south latitude line. Make sure the end of the thermometer that measures temperature is on the part of the globe closest to the lamp.
6. Record the temperature on each thermometer in degrees Celsius.

   Northern Hemisphere: _____ Southern Hemisphere: _____
7. Turn on the lamp and wait 5 minutes.
8. Record the temperature on each thermometer in degrees Celsius.

   Northern Hemisphere: _____ Southern Hemisphere: _____
9. Turn off the lamp.
10. What was the change in temperature for the Northern Hemisphere? _____
11. What was the change in temperature for the Southern Hemisphere? _____

Interpret your results

1. Was the change in temperature in the globe's Northern Hemisphere different from the change in temperature in the Southern Hemisphere? If so, what was the difference?

_____

_____

_____

_____

2. In your model of sunlight striking Earth, what was the season in the Northern Hemisphere? What was the season in the Southern Hemisphere? Explain your answer.

3. Why does your hometown receive a different amount of sunlight in summer than it does in winter?