

Name: \_\_\_\_\_ #: \_\_\_\_\_

Date: \_\_\_\_\_

Section: \_\_\_\_\_ HR: \_\_\_\_\_

## Chapter 1 Skills Lab: Reasons For The Seasons

In this lab, you will use an Earth-sun model to make observations about factors that contribute to the seasons.

### Problem

What effect does the tilt of Earth's axis have on the heat and light received by Earth as it revolves around the sun?

### Materials

Books  
Pencil

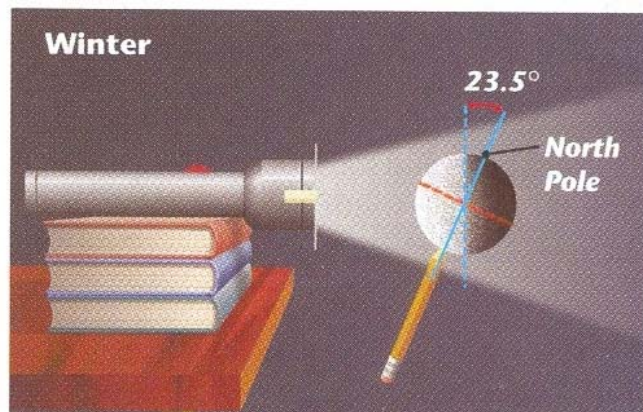
Flashlight  
Protractor

Paper

A Ruler

### Procedure

1. Make a pile of books about 15 cm high. Dim the room lights.
2. Place the flashlight on the pile of books.
3. Carefully push a pencil into the South Pole of the plastic foam ball, which represents Earth.
4. Use a protractor to measure a  $23.5^\circ$  tilt of the axis of your Earth **away** from your "flashlight sun," as shown in the diagram below. This represents winter.



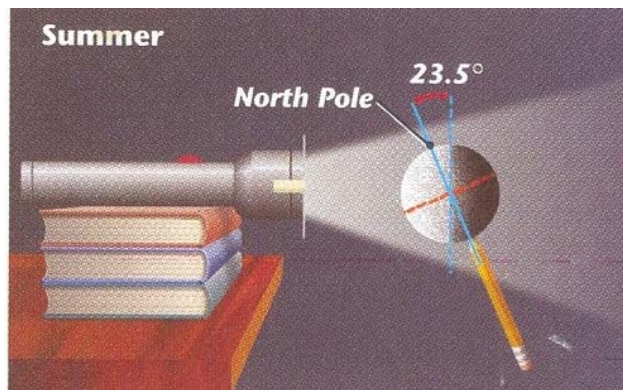
5. Hold the pencil so that Earth is steady at this  $23.5^\circ$  angle and about 15 cm from the flashlight head. Turn the Flashlight on.

6. Observe and record the intensity of the light on the equator and the poles.

Observations:

7. Tilt the earth  $23.5^\circ$  **toward** the flashlight, as shown in the diagram below. This is summer.  
Observe and record the intensity of the light on the equator and the poles.

Observations:



Analyze & Conclude

1. When it is winter in the Northern Hemisphere, which areas on Earth get the most concentrated amount of light?

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Which areas get the most concentrated light when it is summer in the Northern Hemisphere?

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2. Compare your observations of how the light hits the area halfway between the equator and North Pole during winter (step 4) and during summer (step 7).

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3. According to your observations, which areas on Earth are consistently coolest? Why?

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Which areas are consistently warmest? Why?

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**Think About It** How can you use your observations of an Earth-sun model to explain what causes seasons?

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