



Do

## The Sun's Warming Power

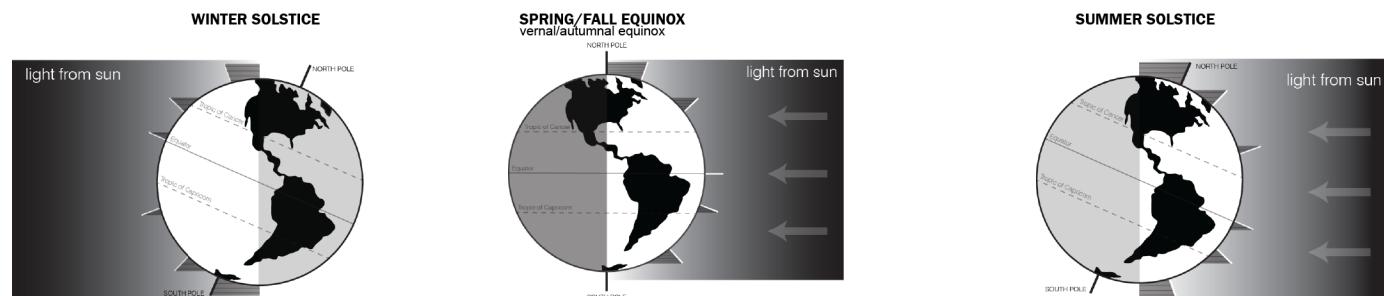
### Activity

When the Sun is directly overhead, the rays are perpendicular as they strike Earth. When the Sun is lower in the sky, the rays strike the ground at an angle causing the energy to "spread out".



### Procedure

1. Observe as your teacher stands about .5 meters from the wall and directs the flashlight beam on the graph paper from cheek level.
2. Observe as a student volunteer outlines the even glow of light produced by the flashlight beam using a red marker, then counts and records the number of squares inside the shape on the graph paper or white board.
3. Observe as your teacher stands about .5 meters from the wall and directs the flashlight beam on the graph paper, this time holding the flashlight as high over head as possible instead of cheek level.
4. Observe as a student volunteer outlines the even glow of light produced by the flashlight beam using a blue marker, then counts and records the number of squares inside the shape on the graph paper or white board.
5. Draw the two shapes and corresponding number of squares counted for each.





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### Activity, continued

6. Decide which shape should be labeled direct light and which shape should be labeled indirect light.
7. Assume that the flashlight, representing the Sun, delivers a total of 100 Joules of energy each second in the demonstration model system. Calculate the amount of energy received by each square per second for the direct light model and the indirect model. Show math calculations beneath each labeled drawing.
8. Answer the following questions.
  - a. Which illuminated shape models a situation where a cone of ice cream would melt the fastest, the direct rays or indirect rays?
  - b. Which illuminated shape would create the longest shadow for a dart placed in the center of the outline?
  - c. Do you expect that the Sun's rays are more direct, in the summer or the winter?