

Sizing up a shadow



Background information

To form a shadow, there must be a light source, an object to block the light, and a surface on which the shadow can form. Shadows resemble the shape, but are not necessarily the same size as the object that makes them. The distance and position of the light source from an object affect the size of a shadow. A shadow will get bigger if the light source is moved closer to the object, or if the object moves away from its shadow. A shadow cast by the Sun becomes shorter from dawn until midday, and then begins to lengthen until dusk.

Science activity

John was making a shadow-puppet theater. He used a sheet stretched between two table legs as his screen and a bright lamp as his light source. He made the shape of a person from cardboard and stuck it on a stick, but the shadow of the shape was too big for the screen.



How could he make the shadow smaller? Describe two ways.

Science investigation

Obtain a flashlight, a pencil, a small amount of clay, and a large piece of white paper. Investigate shadow formation by shining the light on the pencil. Use the clay to stand the pencil upright at different angles. Place the paper on a nearby wall to cast the shadow. Change the position of the flashlight and pencil, and measure the size of the shadow after each change. Make predictions.

