

Investigating shadow size

Outstanding Science Year 3 - Light - OS3D007

National Curriculum Statutory Requirements

3D5 - find patterns in the way that the size of shadows change; **LKS2W3** - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; **LKS2W5** - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; **LKS2W7** - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;

Learning Objective



I can investigate how moving a light source changes the size of an object's shadow.

Me:

Teacher:

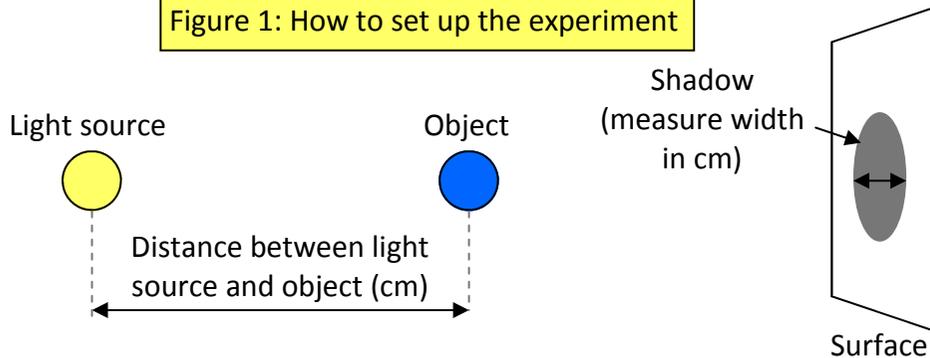
Scientific question

What happens to the shadow as you move an object away from the light source?

You will need:

- A light source (such as an OHP projector)
- An opaque object
- A flat surface to project the shadow on
- A ruler or tape measure

Figure 1: How to set up the experiment



Method

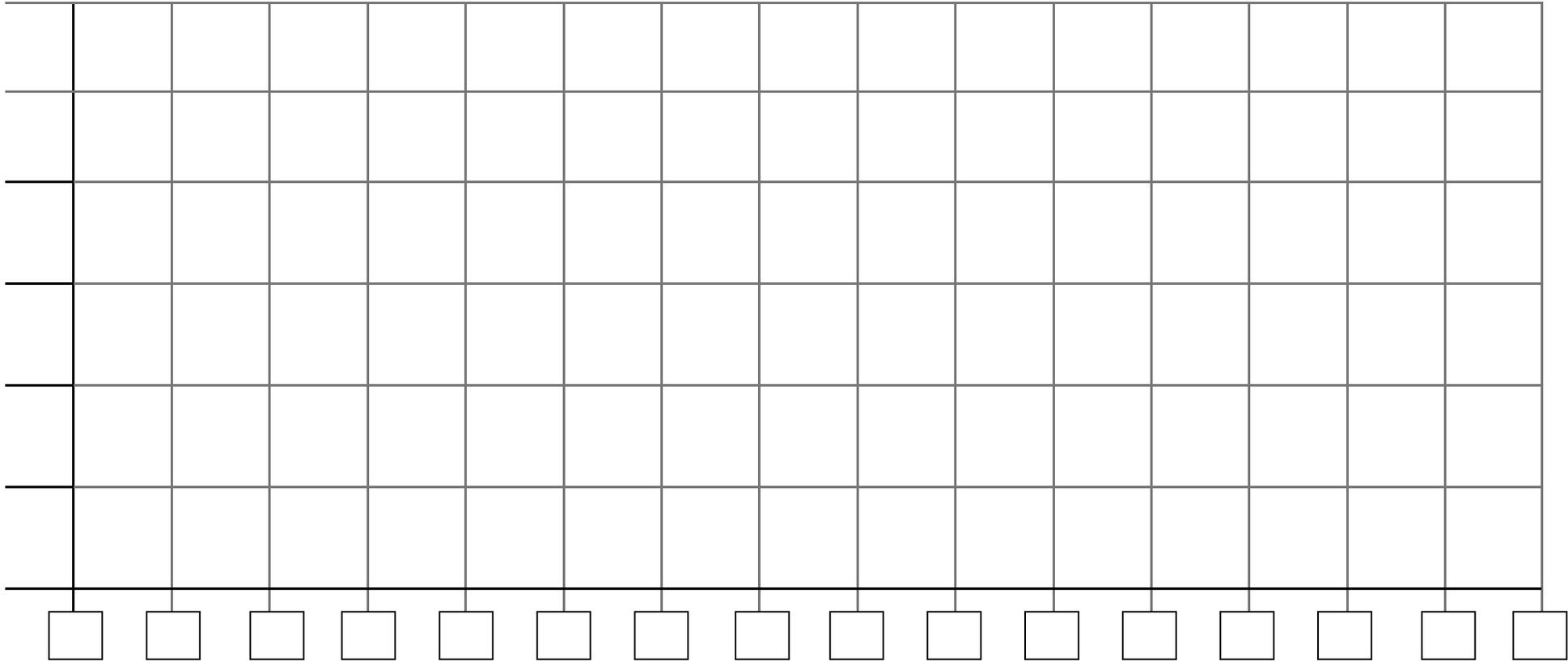
Set up the investigation as shown in the diagram. Measure how far the light source is from the object. Measure the width of the shadow at its widest point. Record this information in the table. Move the light source further away from the object. Record this new distance. Predict and measure the width of the shadow. Repeat until you have 6 measurements. Use your measurements to complete the bar chart on the following page. Think of a suitable scale for your graph.

Table showing the width of shadow cast by an object

Distance between light source and object (cm)	Width of shadow at its widest point (cm)	
	Prediction	Measurement

Bar chart showing how shadow size changes when a light source is moved away from an object

Distance between light source and object (cm)



Width of shadow (cm)

What happens to the size of the shadow if you move the light source away from the object?

What happens to the size of the shadow if you move the light source towards the object?

Can you explain why this happens?

