Shadow Explorer: Move the Torch

Open investigation: there are no pre-filled measurement answers.

Adult set-up and observation guide

Use a small battery LED torch, opaque card and a white paper screen. An adult secures the battery cover and supports the card. Work at a stable tabletop with enough room light to see safely. Never shine the torch into eyes.

Fix the card and screen 30 cm apart. Mark torch positions 30 cm and 15 cm from the card. Keep the same card, screen, light height, direction, beam setting and room light. The adult first checks that both positions give a visible shadow on the screen.

At each position, trace the shadow outline on a fresh sheet fixed in the same place. Measure its widest horizontal width in cm, with adult help. Repeat both positions. Record unclear edges honestly rather than estimating an invented value.

An opaque object blocks light reaching part of the screen. A nearer small light source will often make a wider shadow in this set-up. The exact shape and edge depend on the torch and room. Accept real observations; adjust with an adult and repeat if the pattern is unclear.

Primary background reading

UCL: Working scientifically with shadows (2020)

https://discovery.ucl.ac.uk/id/eprint/10114799/

NUSTEM: Lighting technician family story time

https://nustem.uk/activity/lighting-technician-family-story-time/