Why Shadows Form and How They Change Throughout the Day

KS2 SCIENCE | LIGHT AND SHADOWS | Ages 9-12 | ⏰ 3 min read

What is a Shadow?

A **shadow** is a dark area created when something blocks **light**. Shadows are all around us — on sunny days, you see them under trees, behind buildings, and even following you as you walk. But how do they actually form?

Light travels in straight lines from a source — like the **Sun** or a light bulb. When light hits an object, it can pass through it, bounce off it, or get blocked by it. When light gets completely blocked, it creates a shadow on the other side.

Think of it like a flashlight in a dark room. If you hold your hand in front of the beam, the light can't pass through your hand, so it creates a shadow on the wall behind it. The same thing happens with sunlight and objects outdoors.

Why Shadows Change Size

Have you noticed that your shadow is sometimes long and thin, and other times short and stubby? This happens because of the **angle of the light source**.

When the Sun is high in the sky (around midday), it shines down from above, and your shadow is short and falls mostly beneath your feet. When the Sun is low in the sky — early in the morning or late in the afternoon — it shines at a **shallow angle**, and your shadow stretches out much longer.

Imagine shining a flashlight straight down at a toy from above — the shadow is tiny. Now tilt the flashlight to shine from the side — suddenly the shadow is huge and stretched out. The angle of the light changes everything.

Shadows Change Direction Too

Throughout the day, your shadow doesn't just change size — it also changes direction. This happens because the Sun appears to move across the sky from east to west.

In the morning, your shadow points west (away from the rising Sun). At midday, it's almost gone because the Sun is almost directly overhead. In the afternoon, your shadow points east (away from the setting Sun).

Why Some Shadows Are Sharper Than Others

The sharpness of a shadow depends on the size of the light source. The **Sun** is so far away that it creates sharp, clear shadows. A lamp with a big bulb creates softer, blurrier shadows because light comes from many angles at once.

Think of it like the difference between a pinprick of light and a whole lamp. A tiny hole lets you see a precise shadow, but a big, broad light source blurs the edges.