How does the human eye work?

KS2 KS3 Ages 7-14 ⏰ 3 min read

Your eye is essentially a biological camera — and in many ways, it's more sophisticated than any camera humans have ever built. It adjusts focus automatically, handles an enormous range of lighting conditions, and provides a continuous stream of information to your brain from the moment you open it.

How light becomes sight

Light enters through the **cornea** — the clear dome at the front of your eye — which bends the light inward. It then passes through the **pupil** (the black circle in the middle, which is actually a hole) and through the **lens**, which fine-tunes the focus. Tiny muscles around the lens change its shape — thickening it to focus on close objects, flattening it for distant ones. This is called **accommodation**.

The focused light hits the **retina** at the back of the eye — a layer of roughly 120 million light-sensitive cells. These cells, called **rods and cones**, convert light into electrical signals. Rods handle low-light and motion detection. Cones handle colour and fine detail, and are concentrated in a tiny central area called the **fovea** — the exact point you're looking at right now.

The retina is like a cinema screen made of 120 million tiny light-detecting pixels. Each pixel fires an electrical signal when light hits it. But instead of displaying a picture, these signals travel down the optic nerve to your brain, which assembles them into the image you "see." Your eye doesn't see anything — your brain does. The eye is just the sensor.

Why do we have two eyes?

Two eyes pointing roughly forward give you **stereoscopic vision** — your brain compares the slightly different images from each eye and uses the difference to calculate depth and distance. You can test this: hold a finger in front of your face and close one eye, then the other. Your finger appears to jump sideways because each eye sees it from a slightly different angle. Your brain uses that parallax to judge how far away things are.

The blind spot

Where the optic nerve connects to the retina, there are no light-sensitive cells at all. This creates a blind spot in each eye — a small area where you literally can't see anything. Your brain fills in the gap using context from the surrounding image, so you never notice it. You can find it with a simple test: it's there, your brain just hides it from you.