

SCIENCE · Y3 & Y6

Light

Knowledge Organiser — Year 3 & Year 6 Science

Key vocabulary

1

Light

A type of energy that allows us to see things. Travels very fast — about 300,000 km per second.

2

Light source

Something that gives out its own light. Sun, lamps, fire, stars.

3

Reflection

When light bounces off a surface.

4

Refraction

When light bends as it passes through different materials (like water or glass).

5

Shadow

A dark area where light has been blocked by an object.

6

Opaque

Material that blocks light completely — wood, metal, your body.

7

Translucent

Material that lets some light through but is not see-through — frosted glass, tissue paper.

8

Transparent

Material that lets light pass through clearly — glass, clear water, clean plastic.



9

Spectrum

The range of colours that white light can be split into (rainbow colours).

10

Luminous

Something that gives out its own light.

Light travels in straight lines

The most important rule for

- Light always travels in **STRAIGHT LINES**.
- It travels until it hits something and is **REFLECTED, REFRACTED, or ABSORBED**.
- We see things because light from a source bounces off them into our eyes.
- We **CAN'T** see in the dark because there's no light to bounce off objects.
- Light travels much **FASTER** than sound — that's why we see lightning before hearing thunder.
- Nothing travels faster than light (according to Einstein).

Shadows

How they form and change

- Shadows form when an **OPAQUE** object blocks light.
- Translucent objects make **BLURRY/PARTIAL** shadows.
- Transparent objects make almost **NO** shadow.
- Shape of shadow = same as the object's outline.
- Closer to light = **LARGER** shadow. Further from light = **SMALLER** shadow.
- Sun **MOVES** across the sky during the day, so shadows **MOVE** and change **SIZE**.
- Shadows are **LONGEST** at sunrise/sunset. Shortest at midday.
- Shadow **CLOCKS** use this — sundials tell time by shadow position.



Light and the eye

How we see (Y6)

- Light from a source (or reflected) enters the eye through the PUPIL.
- The LENS focuses the light onto the back of the eye.
- The RETINA detects the light and sends signals to the BRAIN.
- The brain interprets the signals as an image.
- PUPIL gets smaller in bright light (less light enters), bigger in dim light.
- Some people need GLASSES because their lens doesn't focus correctly.
- We see an UPSIDE-DOWN image on our retina — but the brain flips it for us.

Reflection and rainbows

Cool light facts

- MIRRORS reflect light very well — that's why we see ourselves.
- WHITE OBJECTS reflect almost all light. BLACK OBJECTS absorb almost all light.
- That's why dark clothes get hotter in the sun.
- RAINBOWS form when sunlight refracts through water droplets, splitting white light into colours.
- Rainbow colours: Red, Orange, Yellow, Green, Blue, Indigo, Violet (ROY G BIV).
- Each colour bends a different amount — that's how they separate.
- PRISMS (triangular glass) split white light into a rainbow on a wall.
- Light is MADE UP of all rainbow colours — white IS all colours together.

