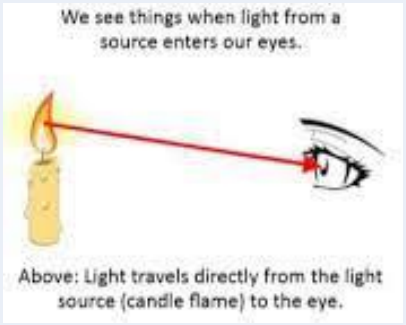
Light | Science | Years 5 & 6 | Spring Term 2026-27

National Curriculum Science - Knowledge

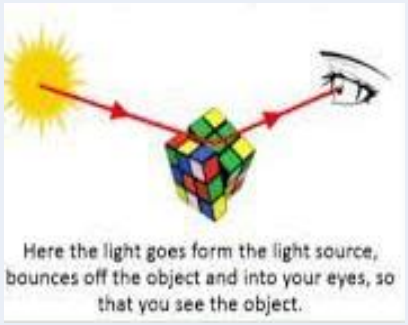
- Recognise that light appears to travel in straight lines.
- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Key Learning

Light appears to travel in straight lines and we see objects when light from them goes into our eyes. The light may come directly from light sources but for other objects some light must be reflected from the object into our eyes for the object to be seen.



Above: Light travels directly from the light source (candle flame) to the eye.


Here the light goes form the light source, bounces off the object and into your eyes, so that you see the object.

A light source is anything that makes light, whether natural and artificial. Natural light sources include the Sun and stars. Artificial light sources include lamp posts and televisions. Without light sources we could not see the world around us, however not every object we can see is a light source.

Vocabulary

Light source: anything that makes light, whether natural and artificial.
Dark: the absence of light.
Transparent: allowing light to pass through so that objects behind can be distinctly seen.
Translucent: allowing light, but not detailed shapes, to pass through; semi-transparent.
Opaque: does not allow light to pass through; not transparent.
Shiny: a smooth surface reflecting light, typically due to being very clean or polished.
Matt: dull and flat; without shine or reflection.
Shadow: a dark area where light from a light source is blocked by an opaque object.
Reflect / reflection: where light is bounced back by a surface, without absorbing it.
Absorb: to take in or soak up light.

Mirror: a surface, typically of glass coated with a metal amalgam, which reflects a clear image.
Refraction: when a ray of light changes direction when it enters at an angle or passes from one medium to another (e.g. air into water).
Lens: a clear, curved structure at the front of the eye behind the pupil. It focuses light rays that enter the eye through the pupil, making an image on the retina.
Retina: a layer at the back of the eyeball that contains cells sensitive to light, which send a message to the brain, where a visual image is formed.

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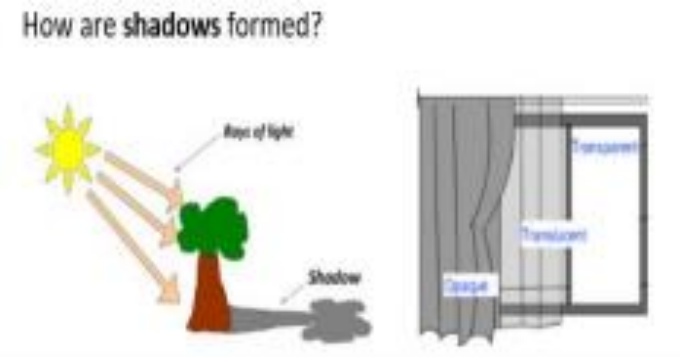
National Curriculum Science – working scientifically

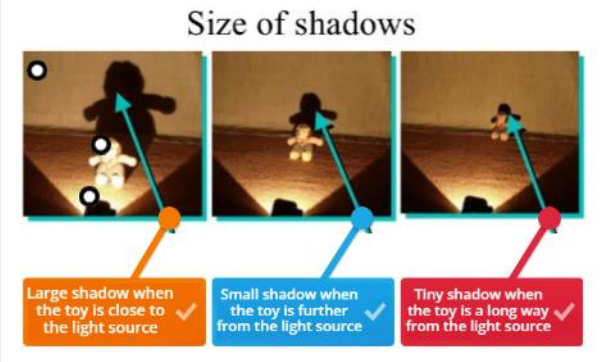
- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further comparative and fair tests.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
- Identify scientific evidence that has been used to support or refute ideas or arguments.

Key Learning continued…

Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.



The size of a shadow changes as the light source moves. The further away an object is from the light source is, the smaller the shadow it casts. The closer an object is to the source of the light, the larger the shadow it casts.



Light rays usually travel in straight lines, but when they pass from one material to another they can be forced to bend (change direction and continue on a new straight path). The bending is called refraction. It happens because light travels at different speeds in different materials. Refraction can cause a rainbow to form.

Scientific investigations

1) How is a shadow formed?
2) Why do shadows appear to have the same shape as the object s that cast them?
3) How is light reflected?
4) What is refraction?

- Plan an enquiry to investigate each scientific concept.
- Make scientific observations.
- Record and present findings using scientific diagrams, labels and written explanations.
- Use test results to make predictions, adaptations and set further questions to investigate.

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Key Learning: Work scientifically to understand how light travels and how we see things.	
1	**How is a shadow formed?** Conduct practical experiments to explore the creation of shadows. Use observations to support understanding that light cannot travel through opaque objects and that light also travels in straight lines. Explain how a shadow is formed using scientific language.
2	**Why do shadows have the same shape as the objects that cast them?** Conduct practical experiments to explore the shape and size of shadows. Use observations to support and explain understanding that light travels in straight lines (it does not bend) and that shadow size and clarity changes as the object and light source move closer together/further apart. Understand that a shadow is an outline and does not have internal details.
3	**How is light reflected?** Design and build a maze using mirrors and a light source to explore the concept of reflection. Know that the angle of reflection is the same as the angle of incidence. Use observations to explain how light is reflected.
4	**How are objects seen?** Explore current ideas about how objects are seen. Understand that we 'see' because a light source reflects off an object and into our eye where the lens focuses the light onto the retina at the back of our eye. This in turn sends an image to our brain. Name key parts of the human eye.
5	**What is refraction?** Conduct a variety of practical experiments to explore refraction. Use observations to explain that light can be 'bent' (a change in direction) when it travels through one medium to another (e.g. air into water). Know this is called 'refraction'.
6	**How is a rainbow formed?** Conduct a practical experiment to explore the components of light. Use this to explain that white light comprises a variety of colours and this means a rainbow is formed when light is refracted through a raindrop.