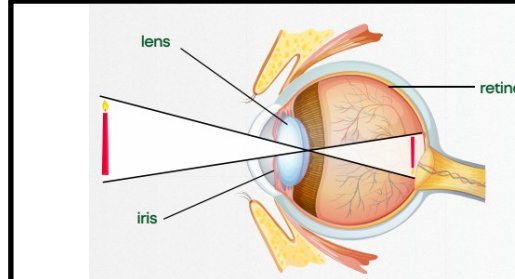


Science: Light

What should I already know?

- Light enables us to see things and darkness is the absence of light
- The sun is an important source of light for life on Earth
- Transparent material allows light to pass through it whereas Opaque material blocks light from passing through it
- Mirrors reflect light
- A shadow is created when an object blocks the path of light

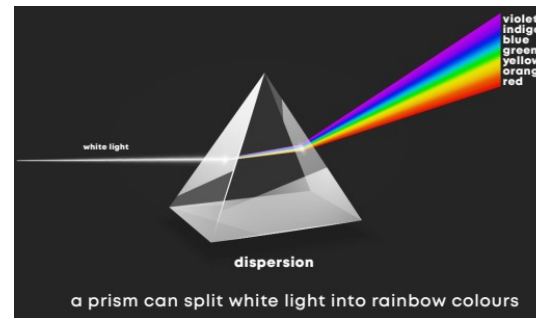


Key Question: How do our eyes adapt to different conditions?

Key learning

What is light?

- Light is electromagnetic energy. The light that we can see is just a small part of the electromagnetic spectrum. 'Light' is what we call the small part our eyes can detect.
- We call the light that comes from the sun white light, but it is actually made up of all the colours of the rainbow.
- Light travels at over 670 million miles per second and always moves in straight lines. You can show it moves in straight lines by holding a book up to the light. The light will make a shadow on the floor where the light doesn't reach. The light cannot curve around the book.
- Light acts differently on different materials: some materials are clear, allowing light to pass through them. These materials are transparent. Other materials block light passing through – these materials are opaque.



How do we see?

- The light we see is actually part of a large spectrum of light, of which only a small part is visible to the human eye. We can see the different colours white light is made up of by using an object called a prism.
- A prism slows down light travelling through it, bending it and splitting it into its different component colours – with red bending least, and violet bending most. We say the light is refracted through the prism.
- In order for us to see, rays of light pass through the cornea, then the pupil, which is a hole in the middle of the iris. The iris, the coloured part of the eye, is a circular muscle that makes the pupil wider or narrower. The iris is an involuntary muscle – it works without you thinking about it. Then light passes through the lens, muscles attached to the lens change its shape just a little bit, to help the lens focus. The lens focuses the light rays onto the surface at the back of the eyeball, called the retina. Inside the retina, light rays change into electrical signals. These signals travel along the optic nerve to your brain.
- A periscope is a device that uses reflection to allow the user to see something that is out of their line of sight.

Vocabulary

Light	Light is a source of illumination; it allows us to see
Speed of light	the speed of light is believed to be the fastest speed at which anything in the universe can travel, approximately 650 million mph
White light	A combination of all colours in the colour spectrum
Shade	A dark patch where light has been blocked; shade is darker and cooler than areas exposed to direct sunlight
Reflection	the return of light from a surface; some materials absorb light, but others reflect it
Prism	a wedge shaped object which can split white light into a rainbow spectrum of colours; scientists call the splitting of light 'dispersion'
Lens	a piece of glass or other transparent material with curved sides for concentrating or dispersing light rays
Iris	a flat, coloured, ring-shaped membrane behind the cornea of the eye
Retina	A layer at the back of the eyeball that contains cells sensitive to light
Dispersion	The splitting of white light into the seven colours of the visible spectrum
Periscope	A device that uses reflection of light to allow the user to see something that is out of their line of sight