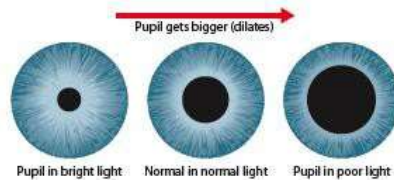
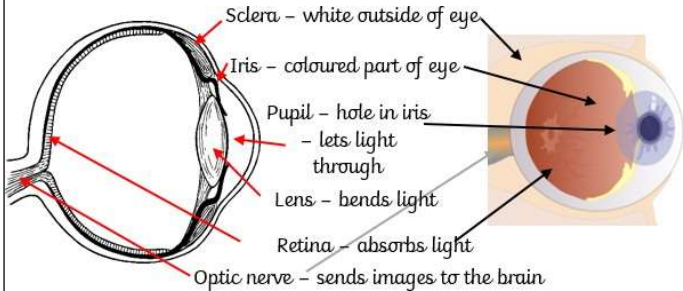


Key Vocabulary	
Light source	An object that emits (gives off/ sends out) light around itself.
Illuminate	A verb meaning to light up. E.g. <i>A flash of light illuminated the house.</i>
Opaque	Not able to see through (not transparent).
Translucent	A material allowing light, but not detailed shapes, to pass through (semi-transparent).
Transparent	A material allowing light to pass through so that objects behind can be seen clearly.
Shadow	An area of darkness produced by an object coming between rays of light and a surface.
Darkness	The absence of light in a place.
Reflection	The bouncing of light (or heat or sound) by a surface without absorbing it.
Refraction	The change in direction of light as it travels through a material such as glass.

**Important information:**

- The sun (our solar system's star) emits very powerful beams of light. These are so powerful they can reach our planet from around 150 million kilometres.
- Our eyes are very sensitive to light, so it is incredibly important we use translucent materials such as sunglasses to protect our eyes from the powerful rays of the sun and other strong light sources.



**How do we see?**

Light travels in a straight line from the candle to the boy's eyes.

Light from the candle, bounces off the box and travels to the boy's eyes.

- Reflections are light bounced off a shiny surface.
- Some light rays hit the girl's face hit the mirror.
- They bounce off the mirror and travel to her eyes.
- The rays in her eyes help her see her reflection.

Light source

Light beam

Reflected light

Eye

Smooth, shiny, flat surface

Blending light	Refraction
<p>Different parts of the visible light spectrum can be blended – but this does not work the same as blending pigments in art!</p> <p style="text-align: center;"><b>Try some for yourself.</b></p> <p>Blending all of the visible parts of the spectrum makes white light.</p>	<p>A glass or Perspex block can change the direction of a light ray.</p> <p>Light changes direction as it passes from air into the block.</p> <p>Once it emerges the other side it changes direction again.</p> <p>Water refracts the light, making the pencil appear bent when in the water.</p>

**How are shadows formed?**

Light source

Shadow

Opaque object

- Darkness is an absence of light
- Shadows look different based on the transparency of the object.
- Transparent objects = faint shadows (more light gets through)
- Translucent objects = darker than transparent, lighter than opaque

object shadows.

- Opaque objects = dark shadows.

**Splitting light.**

There are seven main colours in the spectrum and many more in between.

Most of the light waves in the light spectrum is invisible to the human eye.

Other animals can see parts of the light spectrum that we cannot see.

The light waves that we see from the sun can be described as white light. This contains all of the colours in the spectrum above.

**Some uses of mirrors.**

- In shops and supermarkets for security.
- In cars for safety.
- In hairdressers to watch what is happening.
- At the dentist to look around teeth.
- On the roadside to see around corners.
- Periscopes in submarines**

- I can:**
- 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.

- I can also:**
- Design and make a periscope, using their understanding of how light moves to explain how the periscope works.
  - Explore a range of natural phenomena including rainbows, colours on soap bubbles.
  - Explain why objects looking bent in water
  - Mix colours using filters

Quiz

Question 1

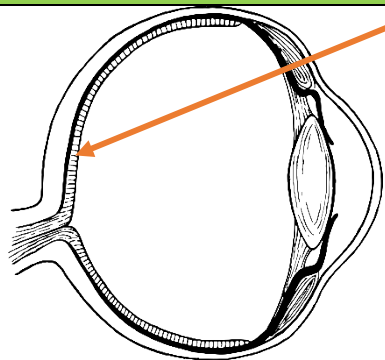
How does light waves travel?

- A. Slowly
- B. In a straight line
- C. Into darkness
- D. From darkness

Question 2

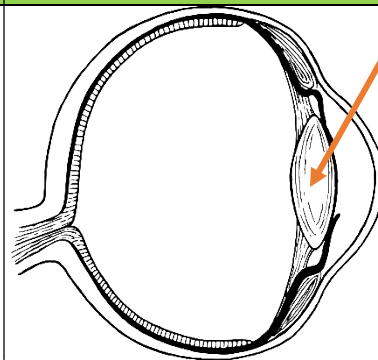
Complete this sentence: In bright light our pupils ...

- A. change colour.
- B. get bigger.
- C. change shape.
- D. get smaller.



Name the part of the eye the arrow is pointing to...

- A. Optic nerve
- B. Sclera
- C. Lens
- D. Retina



Name the part of the eye the arrow is pointing to...

- A. Optic nerve
- B. Sclera
- C. Lens
- D. Retina

How many main colours are there in the visible light spectrum?

- A. 5
- B. 6
- C. 7
- D. 8

What is reflection?

- A. The movement of light in a straight line.
- B. The change in direction of light as it passes through a material.
- C. The absorption of light.
- D. The bouncing of light (or heat or sound) by a surface without absorbing it.

What is refraction?

- A. The movement of light in a straight line
- B. The change in direction of light as it passes through a material
- C. The absorption of light
- D. The bouncing of light (or heat or sound) by a surface without absorbing it.

What is darkness?

- A. The absence of light in a place.
- B. The absence of most light in a place.
- C. The inclusion of light in a place.
- D. The change in direction of light .