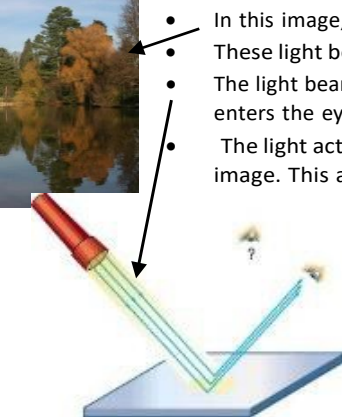



Key Vocabulary	
Light source	An object that emits light around itself.
Illuminate	To give out something – usually light.
Opaque	Not able to see through (not transparent).
Translucent	A material allowing light, but not detailed shapes, to pass through (semi-transparent).
Transparent	A material allowing 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 throwing back of light, heat or sound by a body or surface without absorbing it.
Light ray	A line (straight or curved) that is perpendicular to the front of the light beam.
Light beam	A projection of light energy radiating from a light source.

### What happens when light is reflected



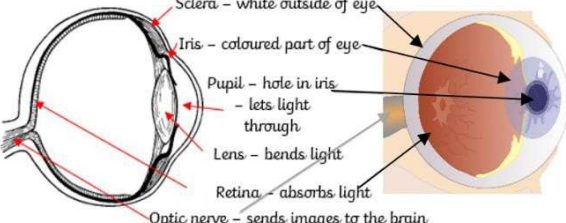



- In this image, light beams are projected from the light source (the sun).
- These light beams travel in a straight line until they meet an object.
- The light beams are then reflected off the surface it meets, until the light beam enters the eye.
- The light activates cells inside our eyes which are processed by our brain into an image. This all happens incredibly fast!

- All of the objects we can see are only visible when light has reflected from the objects into our eyes.
- This is why when we close our eyes we can no longer see – the light has been blocked from entering our eyes. Those objects in our surroundings are still there, we just cannot see them until we open our eyes again. This also explains why we cannot see in the dark.



**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.


Structure of the eye.	Reflection
	<ul style="list-style-type: none"> <li>• Light reflects best off smooth surfaces</li> <li>• Bumpy surfaces spread the light out so the light that reaches your eye isn't as strong.</li> </ul> <div style="display: flex; justify-content: space-around; margin-top: 10px;">    </div>

### I can:

- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change.

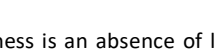
### How are shadows formed?

Light source



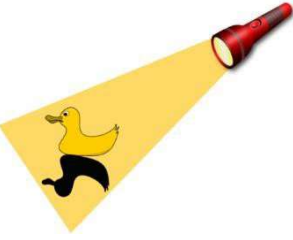
Opaque object

Shadow




- 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.

### Patterns with shadows



If an object is close to the light source, the shadow of that object will be very large – sometimes, so big you can't see all of the shadow!



The further away from the light source the object gets, the smaller the shadow gets.

### 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 roads to see around corners.

**Quiz**

Question 1	Question 2
<p>Complete this sentence: <b>Darkness is ...</b></p> <ul style="list-style-type: none"> <li>A. an object that emits light around itself.</li> <li>B. the absence of light in a place.</li> <li>C. an area of darkness produced by an object coming between rays of light and a surface.</li> <li>D. not able to see through.</li> </ul>	<p>Complete this sentence: <b>Reflection is...</b></p> <ul style="list-style-type: none"> <li>A. a thin layer or covering of something</li> <li>B. the throwing back of light, heat or sound by a body or surface without absorbing it.</li> <li>C. a place, person or thing, from which something begins or can be found.</li> <li>D. a verb meaning to light up.</li> </ul>
Question 3	Question 4
<p>Which of the following is not true?</p> <ul style="list-style-type: none"> <li>A. Rays of light from the sun can be damaging to our eyes.</li> <li>B. We can protect our eyes from powerful light rays from the sun by using translucent objects such as sunglasses.</li> <li>C. Shadow is an area of light between a light source and an object.</li> <li>D. We see by light reflecting from objects into our eyes.</li> </ul>	<p>Light can travel around objects by using what?</p> <ul style="list-style-type: none"> <li>A. A torch</li> <li>B. A telescope</li> <li>C. A battery</li> <li>D. A mirror</li> </ul>
Question 5	Question 6
<p>Which of the following is not true?</p> <ul style="list-style-type: none"> <li>A. The shape of an object can change the way a shadow looks.</li> <li>B. The materials an object is made from can change the way a shadow looks</li> <li>C. The position an object is orientated towards a light source can change the way a shadow looks.</li> <li>D. A human has to be holding an object for it to show a shadow.</li> </ul>	<p>Complete this sentence: <b>A shadow is formed when an object comes between...</b></p> <ul style="list-style-type: none"> <li>A. an opaque and a translucent object.</li> <li>B. a dark place and a light place.</li> <li>C. a light source and a surface.</li> <li>D. when someone or something looks at an object.</li> </ul>
Question 7	Question 8
<p>Complete this sentence: <b>Light always travels ...</b></p> <ul style="list-style-type: none"> <li>A. into darkness.</li> <li>B. away from our eyes.</li> <li>C. through objects.</li> <li>D. in straight lines.</li> </ul>	<p>Which of the following is not true?</p> <ul style="list-style-type: none"> <li>A. Modern mirrors are usually made by coating glass with a thin film of a metal such as silver or gold.</li> <li>B. The earliest mirrors were made from polished metals such as copper.</li> <li>C. In 1678, it was made possible by new ways of producing glass invented in Venice, Italy.</li> <li>D. The earliest mirrors, made from polished metals, were very cheap to make.</li> </ul>