

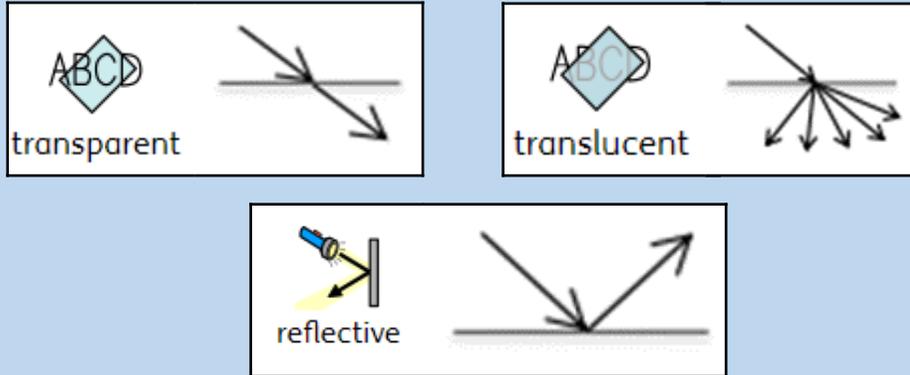
Substantive Knowledge
When light is emitted from a light source, it travels in straight lines until it hits an object. This can be represented by an arrow.
Shadows form when light hits an opaque object, the area behind is in darkness because light can only travel in straight lines.
Shadows have the same shape as the objects that cast them.
When light hits a transparent object, it goes through it in a straight line so we can see a clear image through it.
When light hits a translucent material, it goes through it but is scattered. This means light can pass through but we can't see an image through it.
When light hits a mirrored surface, it reflects off it in straight lines, so we can see an image in the reflective material.
Sometimes when light hits a material, it reflects off it in many different directions (it is scattered). In this case light will be reflected but no image will be seen in the material.
Shiny surfaces are better reflectors and rough surfaces scatter light more. Opaque objects don't allow any light to pass through them.
Animals see objects when the light is reflected off the object and enters the eye through the pupil .
The pupil changes its size to allow enough, but not too much light into the eye.
Too much light damages the eye and too little results in poor quality images.

Disciplinary Knowledge	
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	
Recording data and results of increasing complexity using scientific diagrams.	
Identifying scientific evidence that has been used to support or refute ideas or arguments.	
Taking measurements using a range of scientific equipment, with increasing accuracy and precision.	

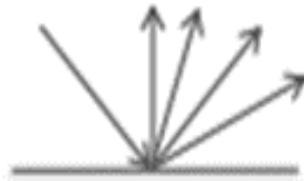
Significant Scientists	
Dr Patricia Bath (1942-2019)	C.V. Raman (1888-1970)
Patricia Bath was an ophthalmologist who created a game-changing treatment for blindness from cataracts.	C.V. Raman was an Indian physicist known for his work in the field of light scattering with transparent materials.

Interesting Books				

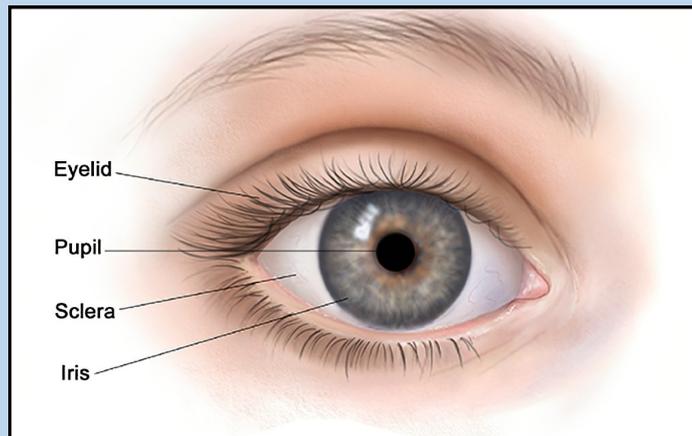
How Light Behaves When it Hits Something



Sometimes when light hits a material, it reflects off it in many different directions (it is scattered). In this case light will be reflected but no image will be seen in the material.



The Eye



Key Vocabulary

shadow	A dark area or shape produced by a body or object coming between rays of light and a surface.
opaque	Not able to be seen through.
transparent	A material that allows light to pass through so objects behind can be clearly seen.
translucent	A substance that allows light but not detailed shapes to pass through.
reflection	The throwing back of light or sound without absorbing it.
pupil	The pupil is the black circle in the centre of an eye. It opens and closes to control the amount of light that enters the eye.

Prior Knowledge

