

Box 1: Keywords

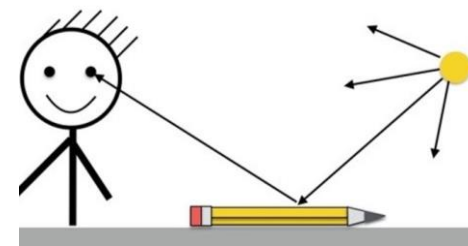
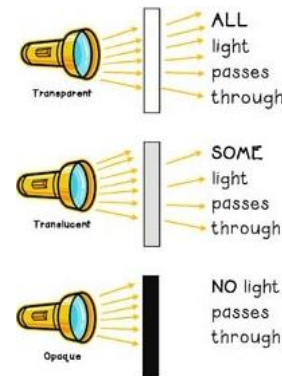
Word	Definition
dispersion	Splitting up of light of mixed wavelengths by refraction into its components.
focal point	The point at which the rays refracted by a convex lens cross over.
medium	Material that affects light by slowing it down or transferring the wave.
normal	An imaginary line at right angles to a surface where a light ray strikes it.
opaque	Objects that absorb, scatter, or reflect light and do not allow any light to pass through.
photoreceptors	Specialised cells that are sensitive to light.
prism	Triangular-shaped piece of glass used to produce a spectrum of light.
ray	Lines used to model beams of light.
real (image)	Image that can be put on a screen; the image formed in your eyes.
reflect	Bounce off.
refraction	The change in direction of a ray or wave as a result of its change in speed.
spectrum	A band of colours produced when light is spread out by a prism.
translucent	Objects that transmit light but diffusing (scattering) the light as it passes through.
transparent	Objects that transmit light and you can see through them.
virtual	An image that cannot be focused onto a screen.

Box 2: Key skills

Safety with electrical equipment; Measure angles; Draw accurate ray diagrams; label diagrams; compare models.

Box 3: Introduction to light

Light travels as a wave in a straight line. It does not need a medium to travel through so it can move through a vacuum – where there are no particles - such as space.
Light travels at a speed of 300,000,000 metres per second.

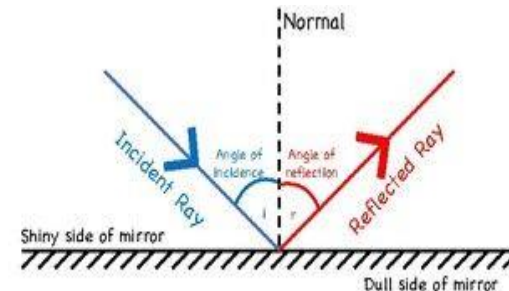


We see things either because they emit light (luminous) or reflect light.

Box 4: Reflection

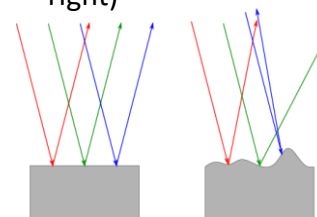
An image in a plane mirror is:

- Virtual
- Same size as object
- Same distance behind mirror as object is in front of mirror
- Laterally inverted (left “swapped” with right)



Reflection in a plane mirror:
Angle of incidence = Angle of reflection

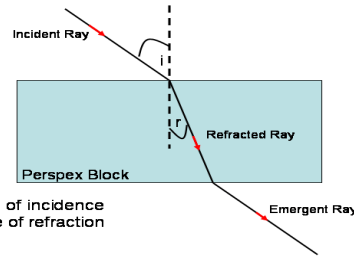
This is the “Law of Reflection”



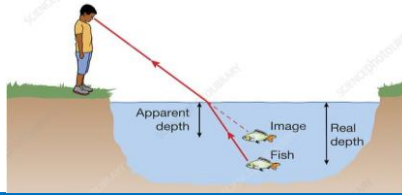
Light is reflected off a smooth surface in a regular manner (specular reflection); off a rough surface light is scattered (diffuse reflection)

Box 5: Refraction

As light enters a glass block it slows down and speeds up again when it comes out. This causes it to change direction twice.



i = angle of incidence
 r = angle of refraction



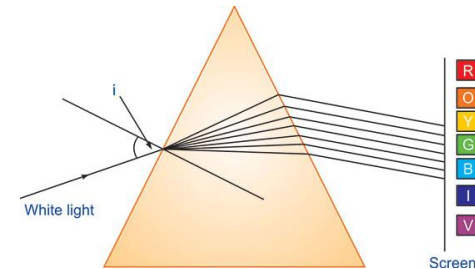
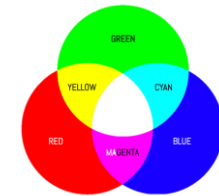
Refraction makes things underwater appear to be in a different place to what they actually are.

Box 8: Colour

Coloured objects reflect the colour that they are and absorb the rest.



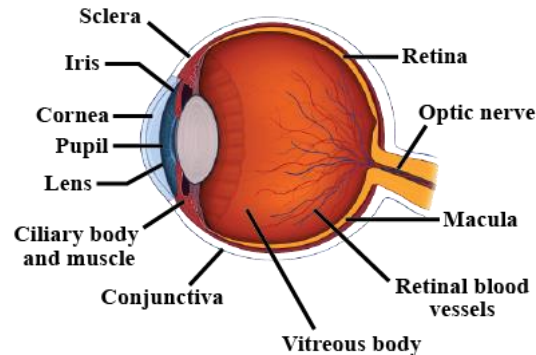
A white object reflects all colours, a black object reflects none.



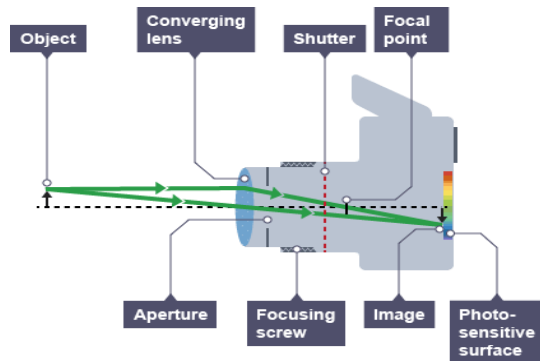
White light is made up of 7 different colours. The colours are dispersed by a prism as a result of refraction

Box 6: The eye

When light hits the retina, photoreceptors turn it into electrical signals which travel to the brain via the optic nerve. The brain turns the signals into the images you see. Images in the eye are 'real'



Box 7: The camera



At the back of a digital camera there is a layer of photosensitive pixels called the charge coupled device (CCD). Light hits the pixel and produces a charge which makes the image.

Box 9: Pathway

Previous knowledge: KS2 Light

Future links: KS4 Energy and Wave motion

Careers: Opticians; Doctors; Artists; Photographers; Designers; Studio engineers; Electricians

Box 10: Cross curricular links