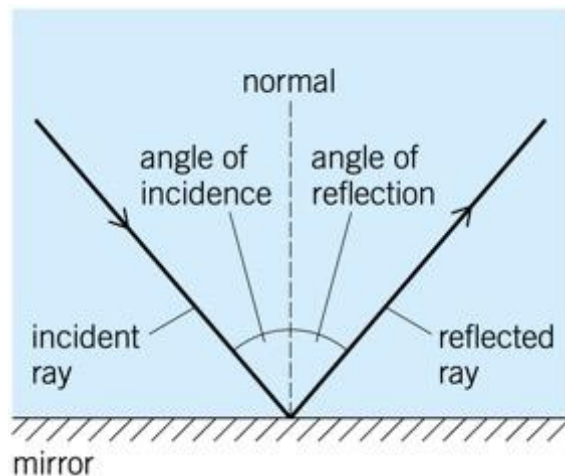


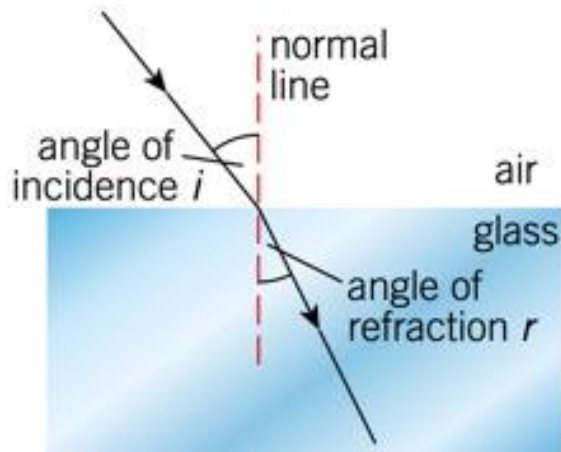
Must Remember

- Light is emitted from luminous sources. It can be transmitted through, reflected off, or absorbed by non-luminous objects.
- Objects are transparent, translucent, or opaque.
- Light travels through a vacuum at 300,000 km/s.
- A light-year is the distance light travels in one year. Light-years are used to measure very large distances.
- Your brain uses the fact that light travels in straight lines and you see a virtual image when you look in a mirror.
- The law of reflection says that the angle of incidence equals the angle of reflection.

Reflection



Refraction



- When light slows down it is refracted towards the normal.
- A lens can focus light to a focal point.
- Prisms disperse white light to produce a continuous spectrum. Primary colours of light add up to make secondary colours.
- Filters and coloured objects subtract colours from white light by transmitting or reflecting the colour they are and absorbing the rest.

Key Terms

dispersion:

the splitting up of a ray of light of mixed wavelengths into its components

reflect:

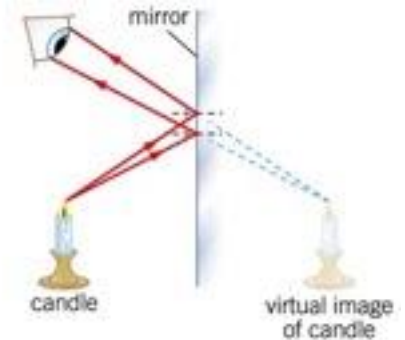
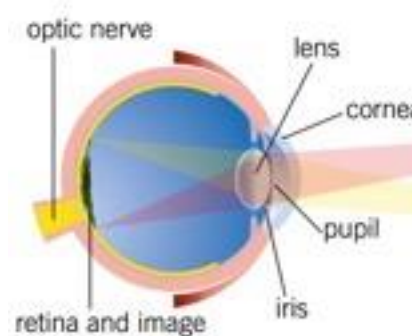
bounce off

refraction:

the change in direction of a ray or wave

Nice to know that...

- Images are formed when reflection is specular but not when there is diffuse scattering from a surface.
- Light enters your eye through the pupil. The cornea and lens focus light to produce a real image on your retina. The signal travels down the optic nerve to your brain.



- Light forms an image in a camera in the same way. Digital cameras store images produced when light hits a charged-coupled device.
- Lenses use refraction to spread out or focus light. Convex lenses are shaped to focus light to a point – called the focal point.



Maritime Futures – Refraction

Refraction is when light changes direction when it travels through one medium (material, such as air or water) to another. Refraction happens because light travels at different speeds in different materials.

Rays of light will be refracted:

- towards the normal if they slow down, such as going from air to glass
- away from the normal if they speed up, such as going from water to air.

Refraction is important for diving as an object may appear to be in a different location when looking at the object from the surface of the water compared to the actual location of the object under the water.

Further Study

[BBC Bitesize – Light waves](#)