

Light is a form of **energy** - it moves a Crooke's radiometer.

Light can be converted into other energy types.

e.g. solar  $\longrightarrow$  electrical in a solar panel.

e.g. solar  $\longrightarrow$  chemical in a plant.

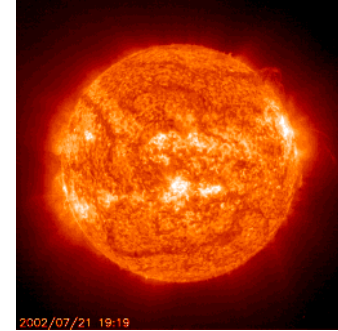
Other forms of energy can be converted into light.

e.g. Electrical energy  $\longrightarrow$  light in a lightbulb.



# The Sun

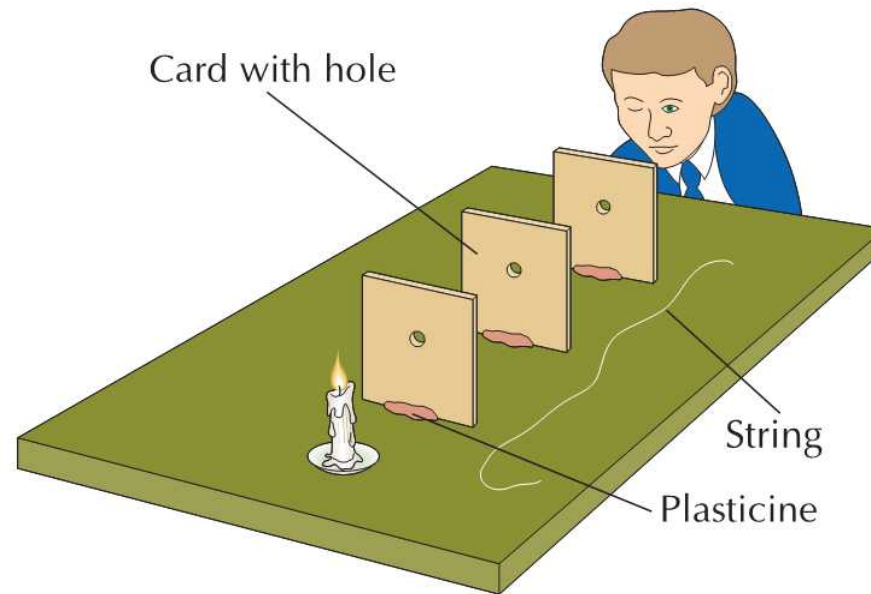
Some objects are **luminous** - they give out light.  
e.g. the sun, a fire, a light bulb.



The **sun** is our main source of light.  
Light is the fastest thing known and travels at 300,000,000 m/s.  
It takes about 8.5 minutes for light to get to us from the sun.

Light travels in straight lines. We can see shadows which proves this.  
A solar eclipse also proves this. A solar eclipse is where the moon goes between the earth and sun and blocks the sunlight for a few minutes.

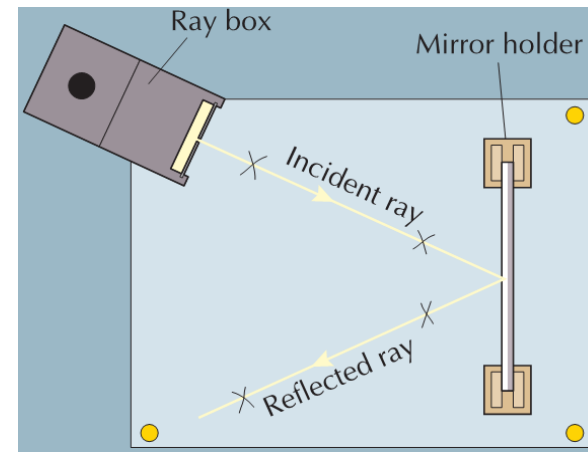
## Experiment to show that light travels in straight lines



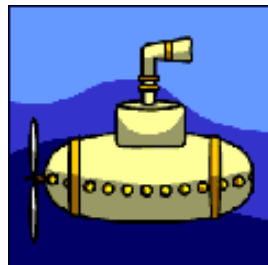
# Reflection

**Reflection is the bouncing of light from a surface.**

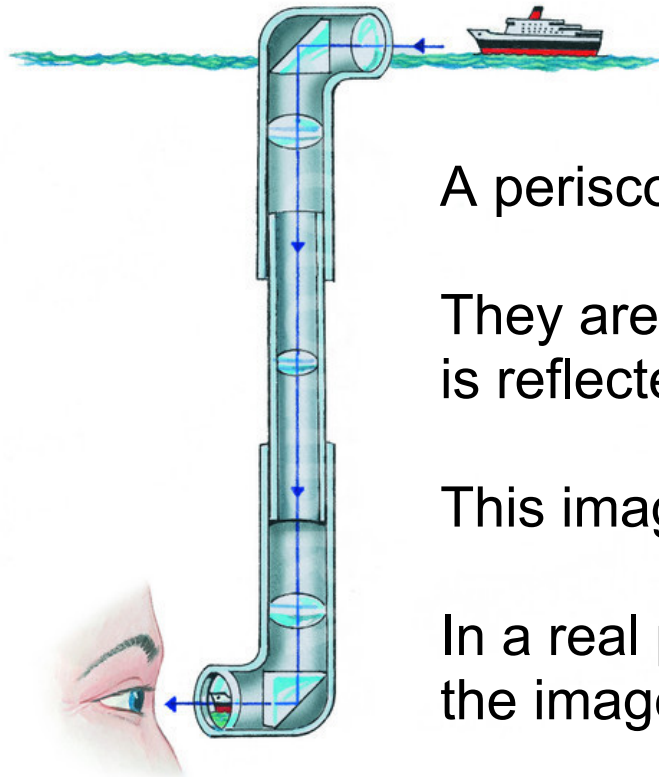
When light hits a polished surface it is reflected back.



Reflection is used in periscopes and in mirrors.



# Periscope



A periscope has 2 mirrors inside it.

They are set at  $45^\circ$  so that the image of the boat is reflected straight down onto the second mirror.

This image is then sent to the person's eye.

In a real periscope there are also lenses to magnify the image to make it clearer.

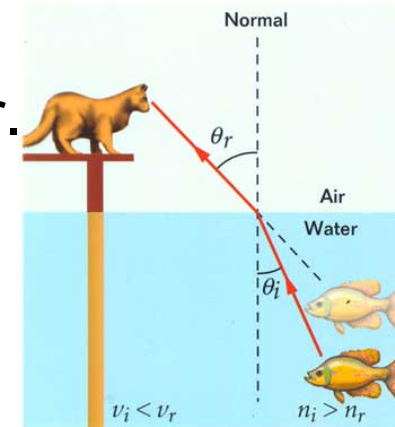
# Refraction

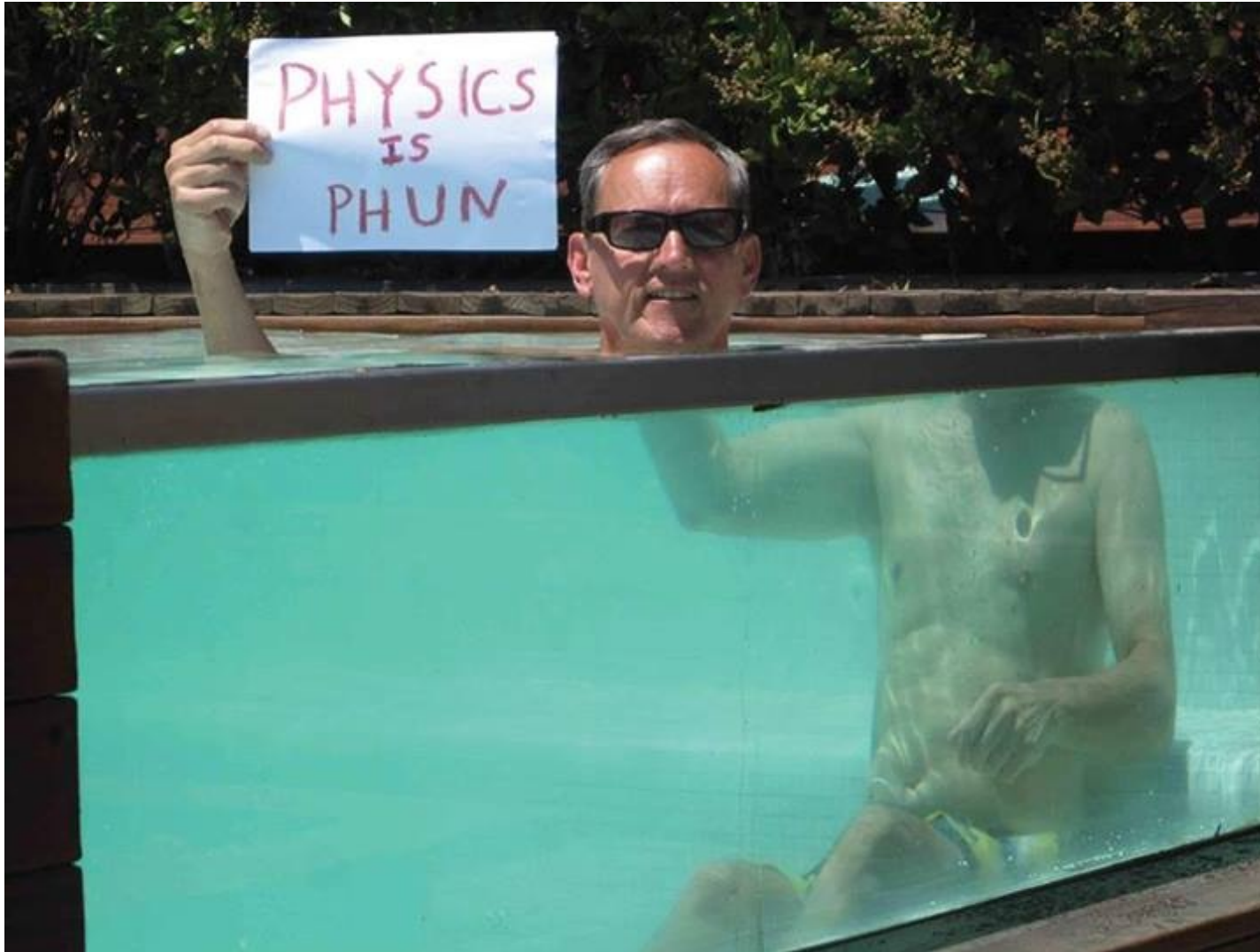
**Refraction** is the **bending** of light as it passes from one **medium** to another. e.g. from air to water.

**A medium is anything that light can move through.**

The easiest way to see this is to put a pencil in a glass of water.

The light from the air to our eyes travels differently than the light from the water to our eyes. Light is slowed down in water and glass.





# Lenses

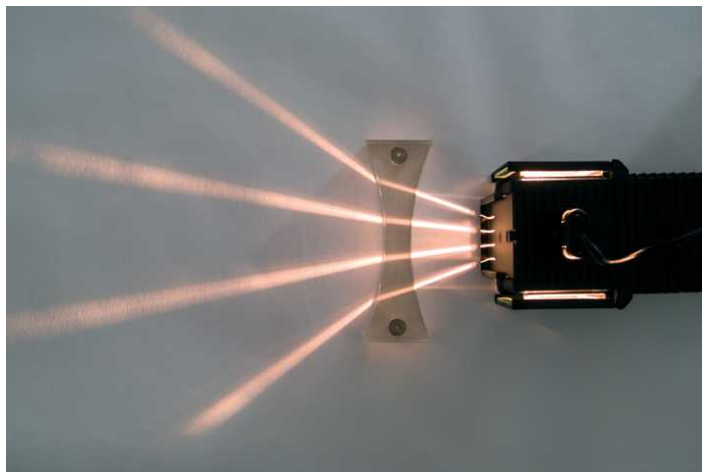
A lens is a piece of glass or other transparent material that has at least one curved surface.

We use lenses in glasses to bend light into our eyes so we can see objects properly.

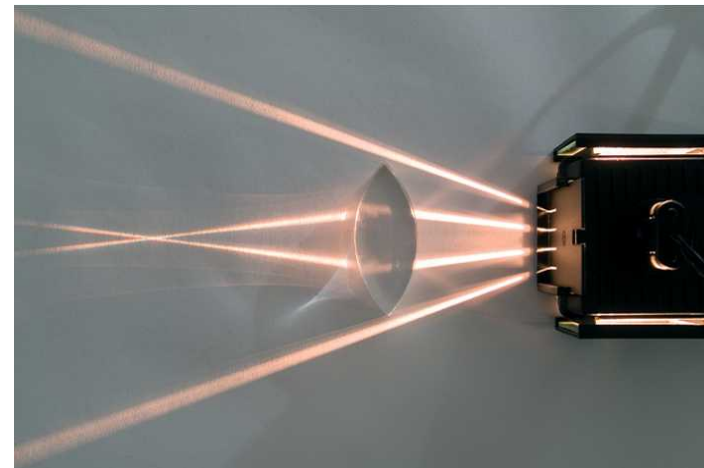


Bending light can be Convergent (meets) or Divergent (separates).

A concave lens diverges light.



A convex lens converges light.





## White Light

**Dispersion** is the breaking up of white light into the colours that make it up. All the colours that make up white light are known as a **spectrum**. White light can be broken into different colours by using a **prism**.

The drops of water in the atmosphere can split white light into different colours and a **rainbow** is formed. Often you can get double or triple rainbows.

Violet is refracted (bent) the most and red is refracted (bent) the least.

The rainbow can be remembered by.....

