



Light

Optics



# Sources of Light

Sources of light can be  
Natural or artificial

# Natural Light

Sources of Light

Astronomical

Bioluminescence

Lightning

Aurora

Magma

Plasma



# Artificial Light

Sources of Light

Chemical

Combustion

Electrical

Nuclear

Laser

⑤



# Sources of Light

All sources of light emits or gives off light.  
Objects that emit light are luminous

# Sources of Light

Objects that reflect light rather than giving off light

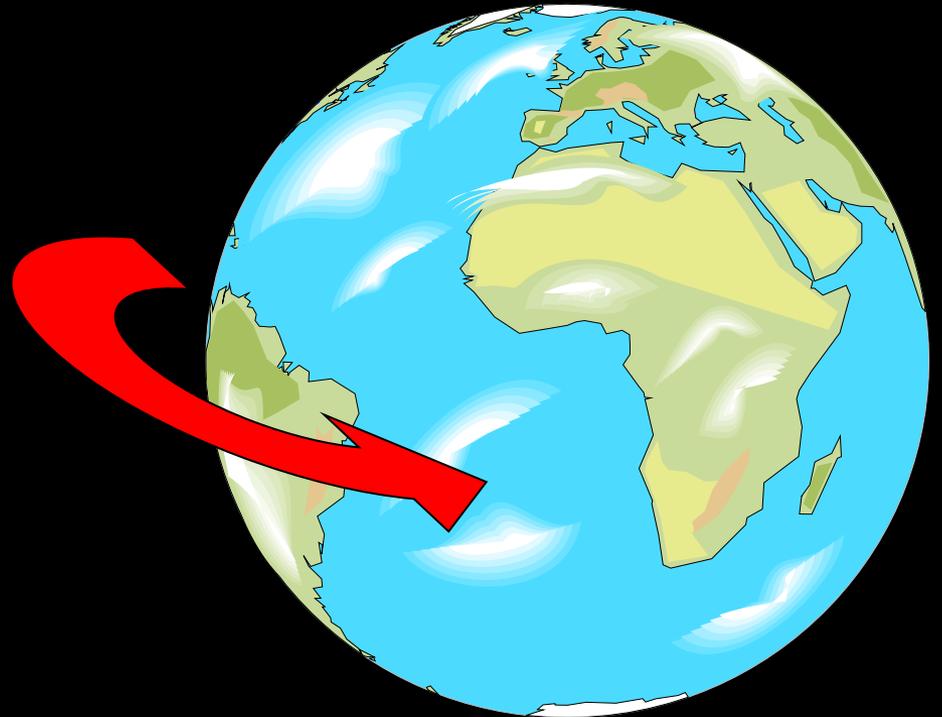
# Properties of Light

Light travels in straight lines:



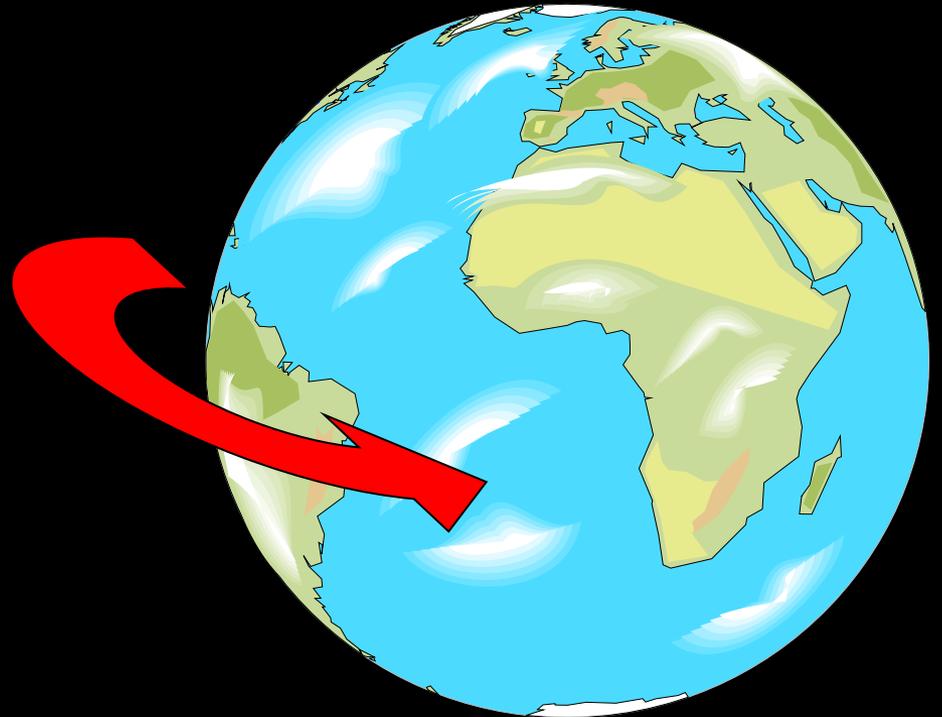
Light travels VERY FAST - around 300,000 kilometres per second.

*At this speed it can go around the world 8 times in one second.*



We can use this speed to determine the distance of far away objects

*A light year is the distance light travels in one year...10 million million km*

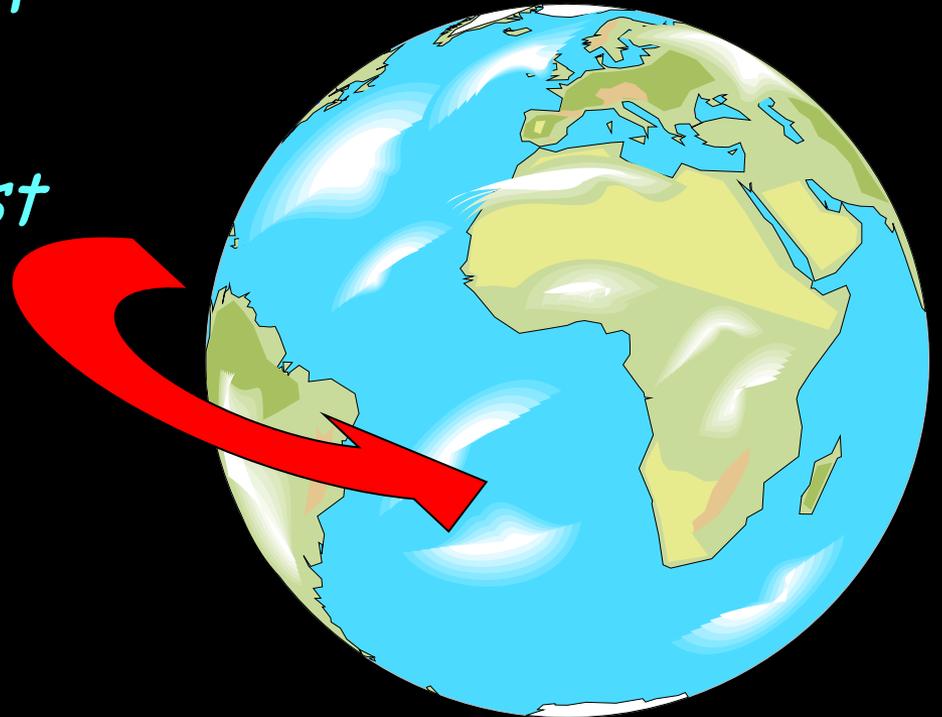


# Just how fast

*1.3 seconds to the moon*

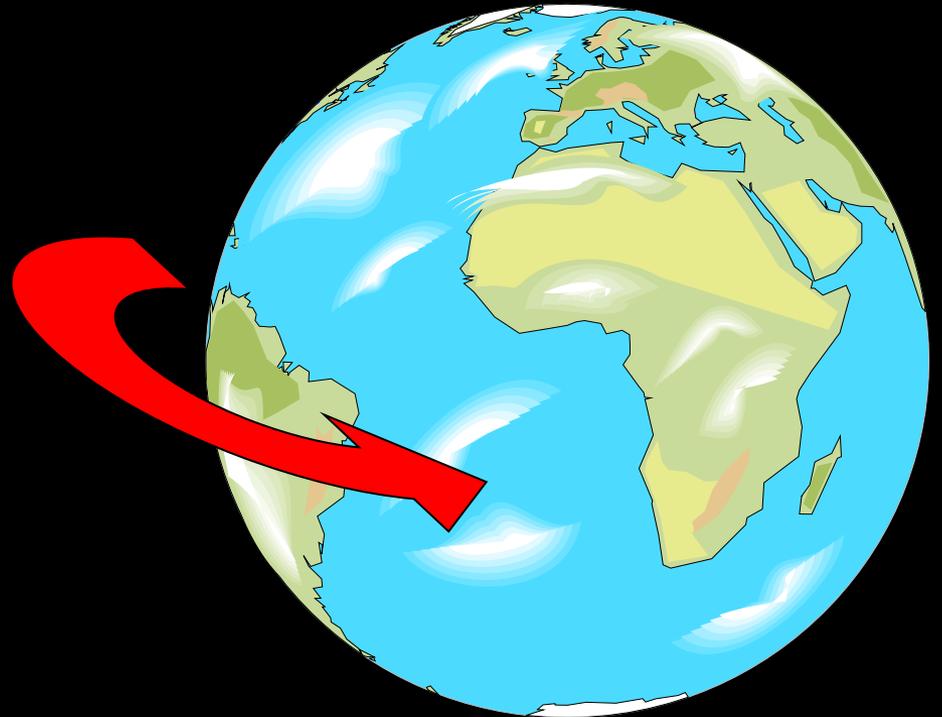
*8 minutes to the Sun*

*4.3 years to the nearest  
star*



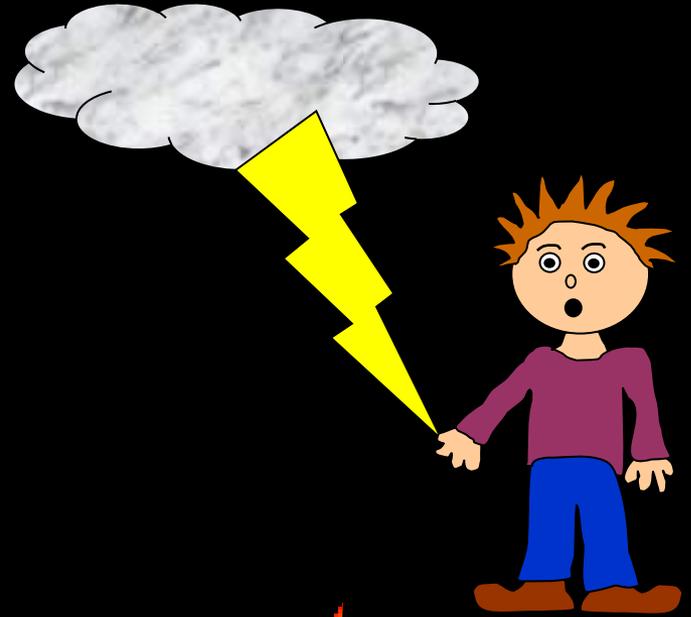
# Actual Speed of Light

*Changes depending on the substance the light passes through.*

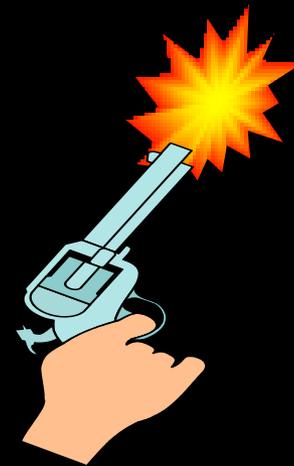


Light travels much faster than sound. For example:

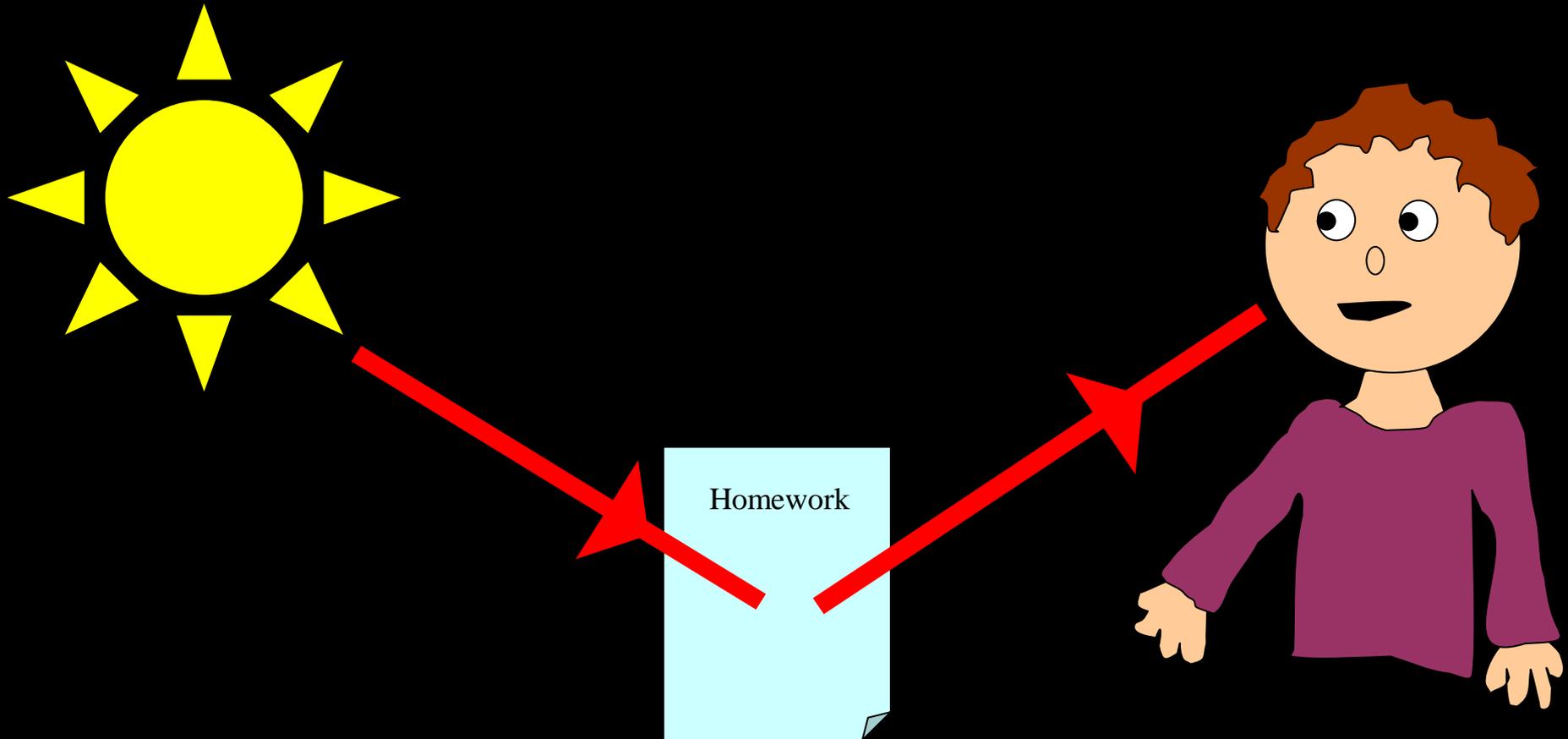
1) Thunder and lightning start at the same time, but we will see the lightning first.



2) When a starting pistol is fired we see the smoke first and then hear the bang.



We see things because they reflect light into our eyes:



# Luminous and non-luminous objects

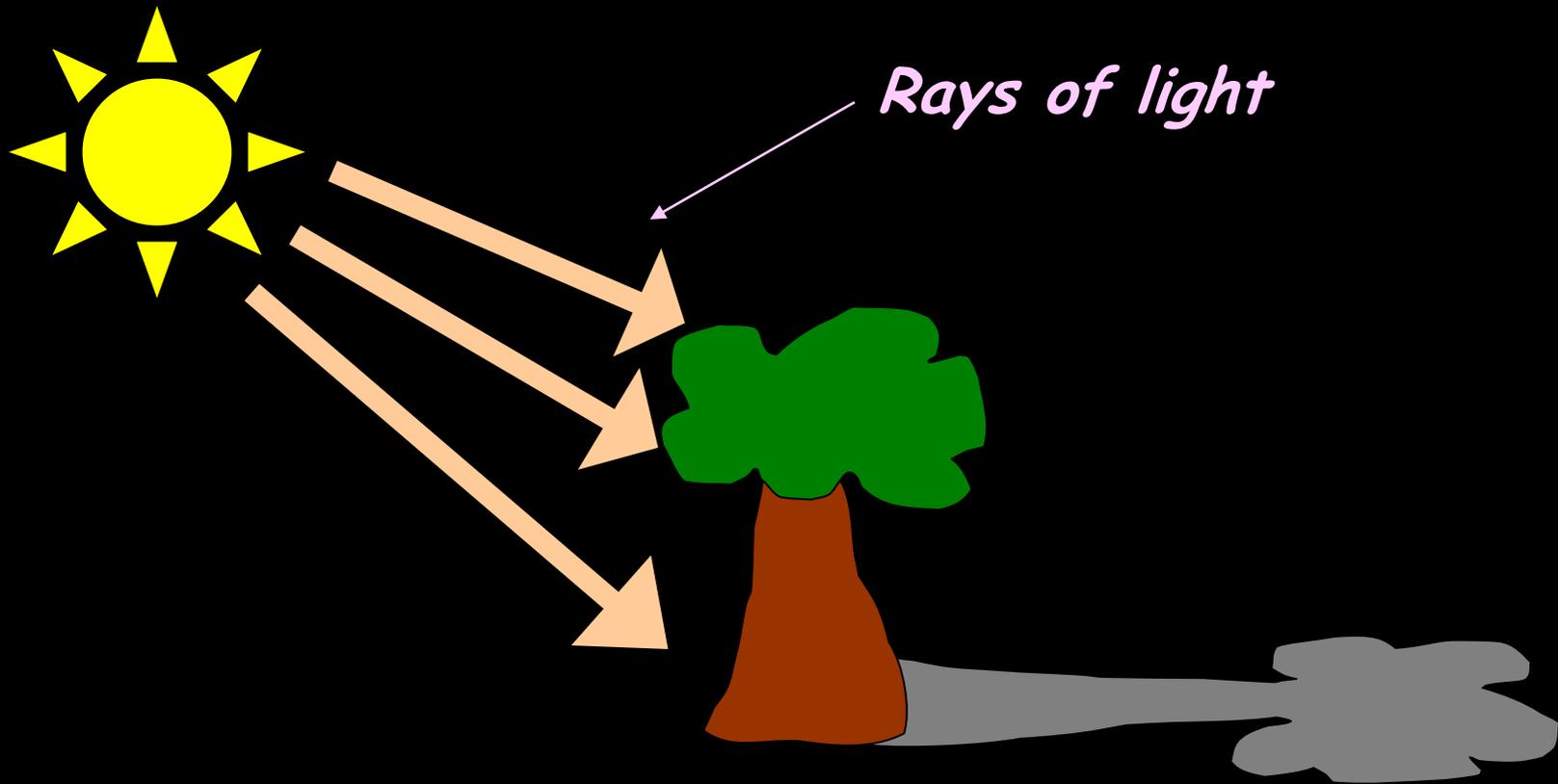
A luminous object is one that produces light.

A non-luminous object is one that reflects light.

| <i>Luminous objects</i> | <i>Reflectors</i> |
|-------------------------|-------------------|
|                         |                   |

# Shadows

Shadows are places where light is "blocked":



# "Just Passing Through:"

What happens when light strikes glass? Or waxed paper? Or a book?



If light travels through an object it is =transparent

If light is blocked by an object and a dark shadow is cast it is= **opaque**.

If some light passes through but not all and a light shadow is present it is=**translucent**.

# Properties of Light summary

- 1) *Light travels in straight lines*
- 2) *Light travels much faster than sound*
- 3) *We see things because they reflect light into our eyes*
- 4) *Shadows are formed when light is blocked by an object*