

cwk

Date

1 - How Light Travels

- Level 3 - Give some examples of sources of light
- Level 4 - Describe evidence for light travelling in straight lines
- Level 5 - Represent light using ray diagrams
- Level 6 - Calculate using the speed of light
- Level 7 - Explain observations of light travelling in straight lines.

Qatar International School Science Department

Bell Task

How many different sources of light can you name?

Q

- How do we see things?

Empedocles (450 BCE)

light streams out of our eyes and touches objects.

Ibn Al-Haytham (1000CE)

rays of light enter our eyes from each point on an object.



Starter

An object which give off light is carrying out an energy transfer.

Which energy transfers are taking place in the sources of light you have just listed?

eg The Sun
Nuclear energy → Light energy

Light travels in straight lines.

We represent this by always drawing light ray diagrams with a ruler. The arrow on the ray shows the direction the light is travelling.

source →

Have a pupil stand just outside the classroom and read this loud enough for the class to hear.

Light waves travels in straight lines, this is why you cannot see me. You cannot make a straight line between your eyes and me without passing through opaque objects.

Sound waves can bend around corners, which is why you can hear me.

Task

Draw a diagram representing what the pupil has just said, use your knowledge of light diagrams and sound wave diagrams.

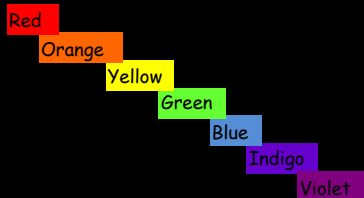
Main

Light can have different wavelengths just like sound.
Different wavelengths of light give us different colours.

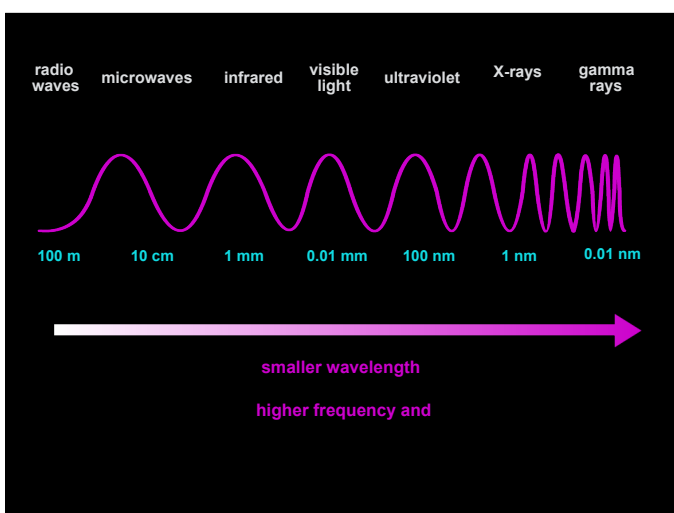
What we call white light is actually made up of all the colours together.

Main

What does ROYGBIV stand for?



- The colours of light are part of a bigger spectrum, *the electromagnetic spectrum*.
- This is a group of *waves* that are all related to each other because they all have something in common.



Extension Questions

What would happen if something was moving towards us faster than the speed of light?

What would happen if something was away from us faster than the speed of light?