**What is Light?**

[**What is Light?**](https://youtu.be/IXxZRZxafEQ)

Light is energy given off in waves. These waves are made up of energy carrying particles called \_\_\_\_\_\_\_\_\_. Though some light can be seen by the human eye, most is invisible.

**Wave terminology (Match with Diagram)**

Amplitude:

Wavelength:

Crest:

Trough:

**Light Waves**

Light waves are more complicated than the simple wave in the simulator. \_\_\_\_\_\_\_ are small bundles of energy that produce \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ fields. These field oscillate in a special type of wave - an \_\_\_\_\_\_\_\_\_\_\_\_\_ wave.

The energy contained in these waves is also known as electromagnetic radiation. Light in a vacuum always travels at a speed of 3.0x108 m/s, or 300,000,000 m/s - according to the theory of relativity nothing can travel faster than this speed.

[**The Electromagnetic Spectrum**](http://www.youtube.com/watch?v=bjOGNVH3D4Y)

There are \_\_\_\_\_\_\_\_\_ forms of light. They are all made of photons, travelling in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, at the same \_\_\_\_\_\_ in a vacuum, but they have different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - these different forms of light make up the electromagnetic spectrum. The \_\_\_\_\_\_\_\_\_\_\_ the wavelength, the more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the light.

**Visible Light**

The different \_\_\_\_\_\_\_ of the visible spectrum are created by photons of different \_\_\_\_\_\_\_\_\_\_\_ (ranging from 400 nm to 700 nm). When you see an object of a given colour, it is because that object is directing photons of a given wavelength into your eyes.

So, what wavelength is white?

What about black?

**White Light**



White light, and so the colour white, is the result of a \_\_\_\_\_\_\_\_\_\_\_ of photons of all the colours of the visible spectrum.

If you direct white light through a Prism the white light will separate out Into its constituent colours - this is known as \_\_\_\_\_\_\_\_\_\_.

The colour black is the \_\_\_\_\_\_\_ of photons in the visible spectrum.

**Dangerous Light**

The shorter the wavelength, the more energy the light possesses. Generally light with wavelengths shorter than visible light can be dangerous, with gamma rays being the most dangerous.

EM radiation can be divided into ionizing radiation which has the ability to \_\_\_\_\_\_ electrons from atoms or molecules (gamma rays, x-rays and some UV light), and \_\_\_\_\_\_\_\_\_\_\_ radiation which cannot free \_\_\_\_\_\_\_\_\_ from atoms or molecules.