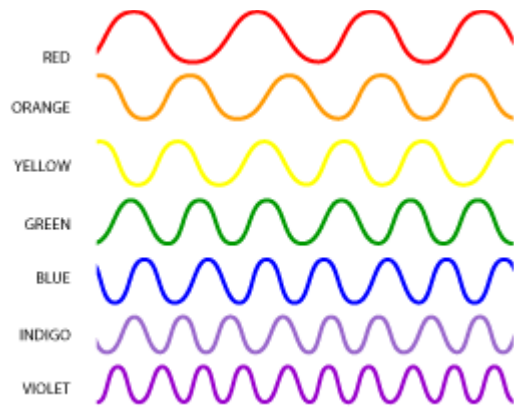


Physics for Kids

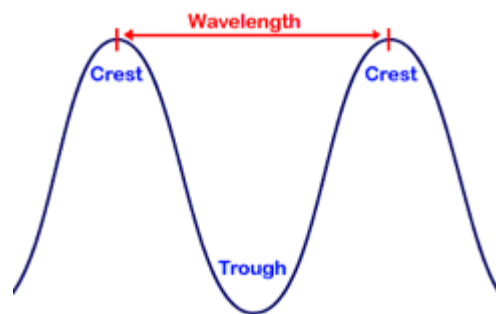
The Science of Light Spectrum



Frequency and Wavelength

One of the characteristics of light is that it behaves like a wave. As a result, light can be defined by its wavelength and frequency. The frequency is how fast the wave vibrates or goes up and down. The wavelength is the distance between two peaks of the wave. Frequency and wavelength are inversely related, meaning that a low frequency wave has a long wavelength and vice versa.

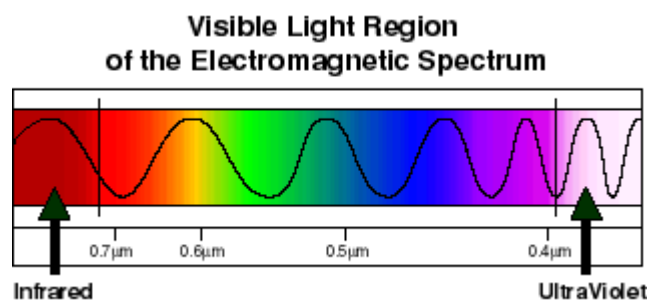
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We can only see light within a certain range of wavelengths and frequency. This range is called the visible spectrum. The frequency range of the visible spectrum is from 405 Terahertz to 790 Terahertz.

The Electromagnetic Spectrum

The electromagnetic spectrum includes a wide range of light waves, some that we can't see. Some of the non-visible types of waves are radio waves, microwaves, infrared rays, and X-rays. These types of waves have all sorts of uses in science and technology.



In the visible spectrum of light, the color of the light depends on the frequency. The visible spectrum is always the same for a rainbow or the separated light from a prism. The order of colors is red, orange, yellow, green, blue, indigo, and violet. A fun way to remember this is by using the first letter in each color in order to spell out the name ROY G. BIV.

Colors of light

What we are seeing when we see an object is reflected light. When light hits an object some wavelengths are absorbed by that object and some are reflected. Light of different wavelengths looks like different colors to us. When we see an object of a certain color that means that light of that color's wavelength is being reflected off the object. For example, when you see a red shirt, the shirt is absorbing all the colors of light except for the red color. The frequency of light that we see as red is being reflected and we see that shirt as red.

Black and white are a bit different from other colors. White is a combination of all colors, so when we see white, the object is reflecting all the colors of light the same. Black is the opposite. When we see a black object that means almost all the colors of light are being absorbed.

Additive colors

Light from the three additive primary colors may be combined to make any other color. These three colors are red, blue, and green. This fact is used all the time in technology such as computer screens and televisions. By combining just the three main types of light in various ways, any color can be made.

Subtractive colors

If you have white light and want to subtract colors to get any other color, you would use the primary subtractive colors to filter or remove light of certain colors. The primary subtractive colors are cyan, magenta, and yellow.