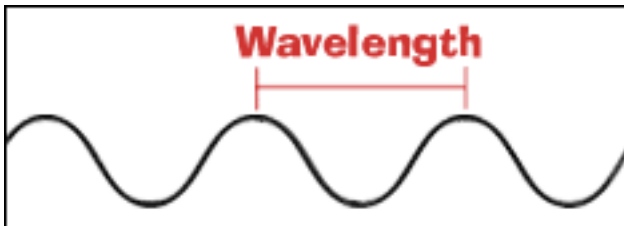


What is Light?

Read About

Light is a form of traveling energy. Energy from the sun travels as light and is absorbed by plants to create food, by the oceans to create clouds and rain, and by the human eye to generate a visual experience. We tend to explain light in terms of its properties; that is, how light behaves when we work with it. In some situations, light acts as if it were made up of waves, much like sound waves, or the ripples that form on the surface of a pond. Under other circumstances, light seems to behave as if it were discrete little packets of energy called photons. Whether waves or photons, light can be reflected off objects, such as mirrors, or refracted (bent) as it passes through materials. It can also be separated into its component colors with prisms.



Radiation

Light is a form of electromagnetic radiation, sometimes abbreviated "EM" radiation. EM radiation varies in terms of wavelength. The wavelength of light is the distance between the peaks of two waves. When we arrange EM radiation from the smallest wavelength to the greatest, we create the electromagnetic spectrum. Furthermore, the shorter the wavelength, the more energy the radiation has. The EM radiation with the shortest wavelength is known as gamma rays. These rays are so powerful they can go through just about anything, including metals. In nature, only powerful astronomical objects such as black holes and supernova can produce large amounts of gamma rays. Not quite so powerful are x-rays. X-rays are not able to pass through metal, but they can go through you to make your bones visible with a doctor's x-ray machine. Microwaves fall on the other end of the spectrum. Although not as energetic as gamma or x-rays, microwaves have just the right wavelength to excite water molecules to vibrate. This is how a microwave oven heats up your food. Radio waves are the longest wavelengths. These are the wavelengths used in sending television, radio, pages, and cell phone calls.

Spectrum

In the EM spectrum, "light" refers to the visible portion, a narrow band between violet and red. When all the colors of visible light are mixed, we end up with white

light, such as the light from a light bulb or the sun. If white light is a blending of all colors, then what do you think black represents? Black is the absence of light.



The region of wavelength slightly shorter than violet is known as ultraviolet (UV). Insects and some other animals are capable of seeing UV. "Black light" is a long wave form of UV and is very close to violet.

It can cause certain fluids and materials, such as fluorescent paints, to glow, but it does not have enough energy to cause sunburn. Short wave UV is more energetic than long wave UV; it can cause sunburn. It can also be used to kill microorganisms for air and water purification.

Just beyond the red end of the spectrum is infrared (IR). Some bathrooms will have special bulbs, usually red, that help to heat the objects in the room. There are also special cameras (called IR cameras) that can detect the infrared heat created by warm-blooded animals – including people.

It's hard to imagine that after thousands of years of study, scientists are still not exactly certain about the nature of light. With all of our knowledge and technology, there are still plenty of scientific mysteries to be solved!