

Lesson #107

The Electromagnetic Spectrum (continued)

Visible light waves include the energy waves that can be seen with the human eye. The light in the visible range can be divided into a spectrum of seven different colors: red, orange, yellow, green, blue, indigo, and violet. You may recognize these as the color of the rainbow. The different colors that we see are due to visible waves with different amounts of energy. The highest energy of visible light is violet light while the lowest energy light is red. *When all of the colors of the rainbow are mixed together, the light we see is white.* White light can be separated into the seven colors with the help of a prism.

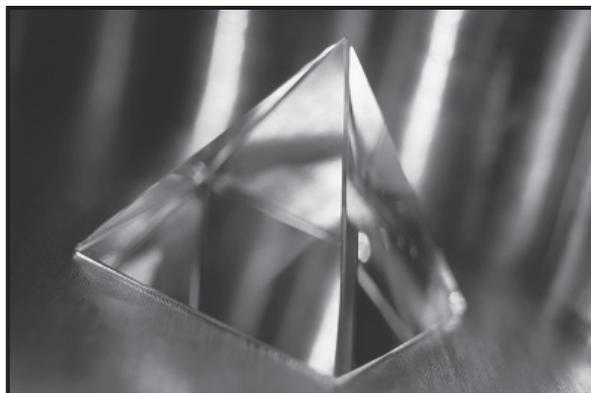
Infrared waves have less energy than visible light waves. We cannot see infrared radiation, but we can feel it! Many forms of infrared radiation give off heat. In restaurants, special lamps called heat lamps use infrared radiation to keep food warm. The remote control for a television set also uses infrared radiation. Waves travel from the remote to the television to change a channel or turn the TV on or off.

Next are **microwaves**. Near the end of the electromagnetic spectrum, wavelengths are much longer. The wavelengths of microwaves vary from several centimeters to almost one foot in length. Microwaves are low energy waves and can be a very helpful form of radiation. They are used to cook food in microwave ovens. Wireless computers use microwave technology, as do radar devices which measure the speed of moving cars.

Radio waves are the last type of electromagnetic radiation. The longest wavelengths can be longer than a football field! Radio waves have the lowest energy of the electromagnetic spectrum. Radios, televisions, and cellular phones all use radio waves for communication. Radio waves can even carry information from outer space!

1. What makes white light?

White light can be separated into the seven colors of the rainbow with the help of a prism. Here is an easy way to remember the seven colors: ROY G BIV.



2. Which rays are the only ones on the electromagnetic spectrum that humans are able to see?
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- 3 – 10. Complete the chart below by filling the missing information.

The Electromagnetic Spectrum		
Wave Type	Description	Useful For
A)	have the most energy and the shortest wavelengths; can kill human cells; used to destroy cancer cells	B)
X-Rays	allows dentists to find cavities and enables doctors to view the skeletal system	C)
D)	longer than x-rays and have less energy but still have a great deal of energy; responsible for sunburn	E)
Visible Light Rays	F)	provide light; allow humans and other animals to see
G)	less energy than visible light waves; give off heat; may cause burns	H)
Microwaves	I)	microwave ovens, wireless computers, radar devices
J)	lowest energy; longest wavelengths - wavelengths may be longer than a football field	K)