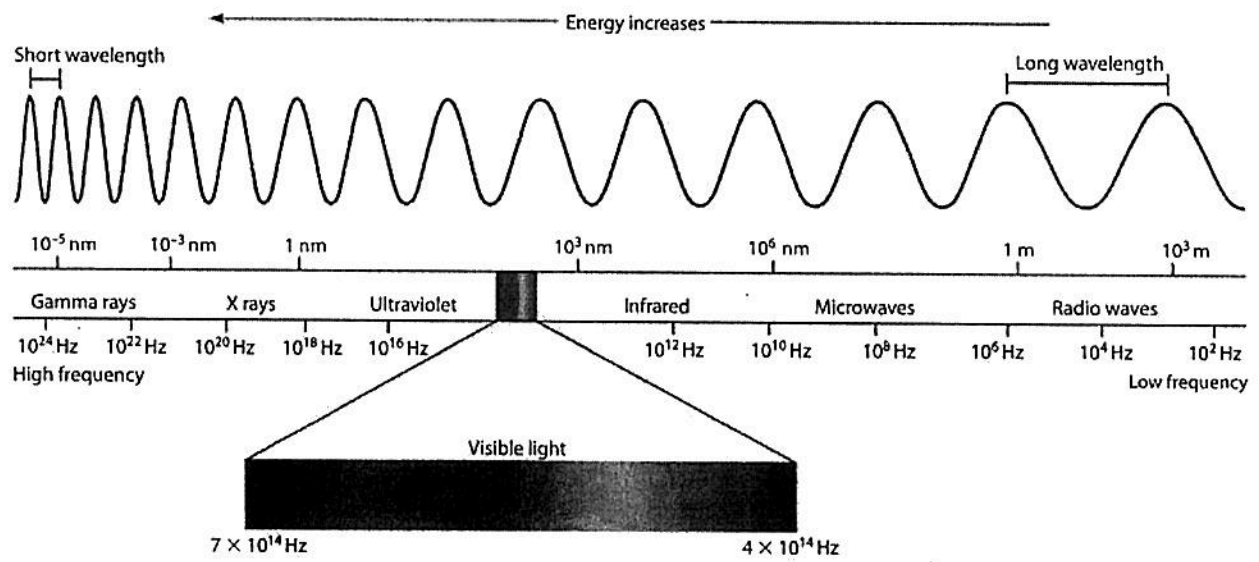


Electromagnetic Waves:

- Energy that is transferred through matter or Space by transverse waves

The Electromagnetic Spectrum is made up of:

1. Radio waves – for broadcasting radio signals, safest with longest wavelength
2. microwaves – for cooking, speed radar (radio detection and ranging), communications/cell phones, GPS (Global Positioning System)
3. Infrared rays – heat lamps, infrared camera
4. Visible light – light we can see
5. Ultra violet (UV) rays – high energy, cause sun burns, needed for skin to produce vitamin D needed for healthy bones and teeth
6. X RAYS – used to image bones and teeth, too much exposure can cause cancer
7. Gamma rays – most dangerous with shortest wavelength, used in medicine



How waves change direction:

1. Reflection – Bouncing of waves off a surface
2. Refraction – Bending of waves due to a change in speed
3. Diffraction – Bending and spreading of waves as they move around a barrier

Seeing color:

- The color an object appears depends on the colors of light it reflects
- For example, a red book only reflects red light

Name: _____ Date: 3/7/19 Period: _____

What Wave Are You On?

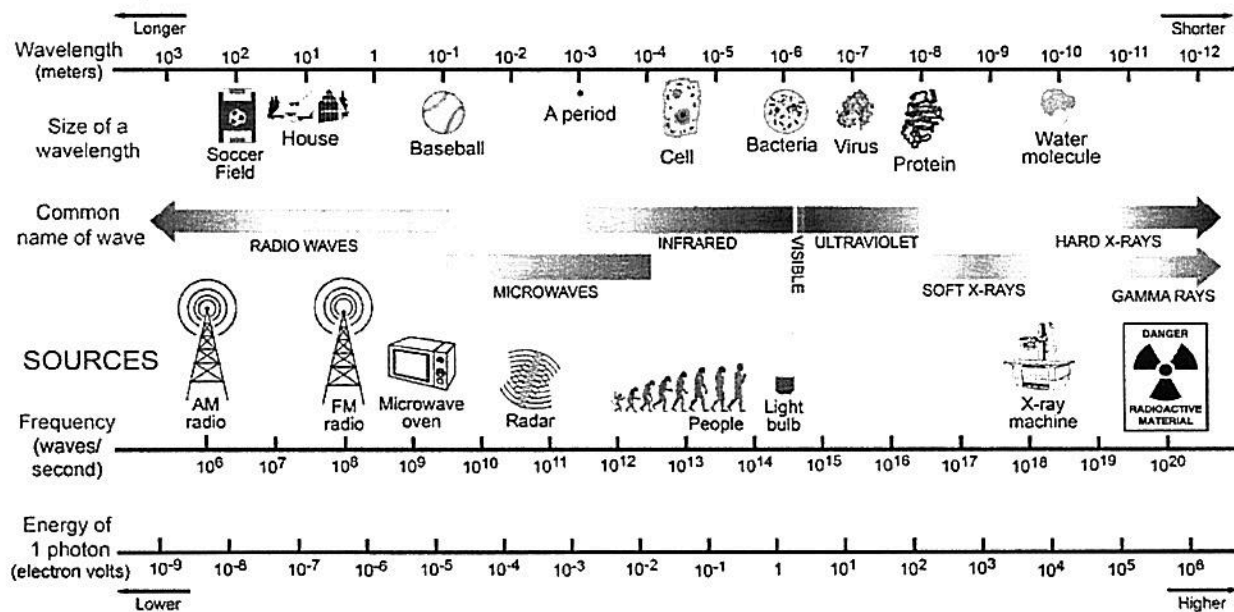
Energy waves are all around you, although the only type humans can see is visible light-as colors from red to violet. But light rays are merely a small part of the electromagnetic spectrum-the entire range of electromagnetic energy, from long radio waves to short gamma rays.

Electromagnetic energy travels through space or matter as waves. Electromagnetic waves are characterized by wavelength and frequency.

Wavelength is the distance between wave crests.

Frequency is the number of waves that pass a given point per second. Increasing wavelengths correspond to decreasing frequencies. For example, infrared radiation has a longer wavelength than ultraviolet light and, therefore, has a lower frequency.

This diagram shows the wavelength and frequencies of the entire electromagnetic spectrum.



Directions: Study the electromagnetic spectrum diagram above to answer the following questions.

1. What kind of electromagnetic radiation has the longest wavelength?
Radio Waves
2. Some insects, like bees, can perceive light of shorter wavelength than humans can see. What kind of radiation do you think a bee sees?
Ultraviolet
3. Which form(s) of electromagnetic radiation has a wavelength less than the size of water molecules?
Gamma Rays, Hard X Rays
4. Which form(s) of electromagnetic radiation has a wavelength larger than a baseball?
Radio Waves
5. Visible light has wavelengths about the size of what?
Bacteria
6. What is a source of visible light?
Light bulb
7. What type of radio waves has a frequency of 10^8 waves/second?
Fm Radio