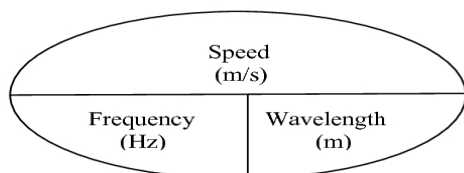


**Speed /Frequency / Wavelength****Equation: Speed of all Electromagnetic Spectrum Waves (c) =  $3.0 \times 10^8$  m/s****Speed (m/s) = Frequency x Wavelength****Frequency (Hz) = Speed  $\div$  Wavelength****Wavelength (m) = Speed  $\div$  Frequency**

1. Violet light has a wavelength of  $4.10 \times 10^{-12}$  m. What is the frequency?
2. Green light has a frequency of  $6.01 \times 10^{14}$  Hz. What is the wavelength?
3. What is the wavelength (in meters) of the electromagnetic carrier wave transmitted by The Sports Fan radio station at a frequency of 640 kHz?(Hint: convert kHz into Hz by multiplying by  $10^3$ .)
4. Calculate the wavelength of radiation with a frequency of  $8.0 \times 10^{14}$  Hz.
5. What is the wavelength of light with a frequency of  $7.66 \times 10^{14}$  Hz?
6. A helium laser emits light with a wavelength of 633 nm. What is the frequency of the light?
7. What is the wavelength of X-rays having a frequency of  $4.80 \times 10^{17}$  Hz?
8. An FM radio station broadcasts at a frequency of 107.9 MHz. What is the wavelength of the radio signal?  
(Hint: First, convert Mega Hertz [MHz] into Hertz by multiplying by  $10^6$ )
9. If the limits of human hearing are 20 Hz. to 20,000 Hz, what are the sound wavelengths that are associated with both of these two extremes, assuming the speed of sound is 345 m/s.  
Frequency = 20 Hz : Wavelength =  
Frequency = 20,000 Hz : Wavelength =