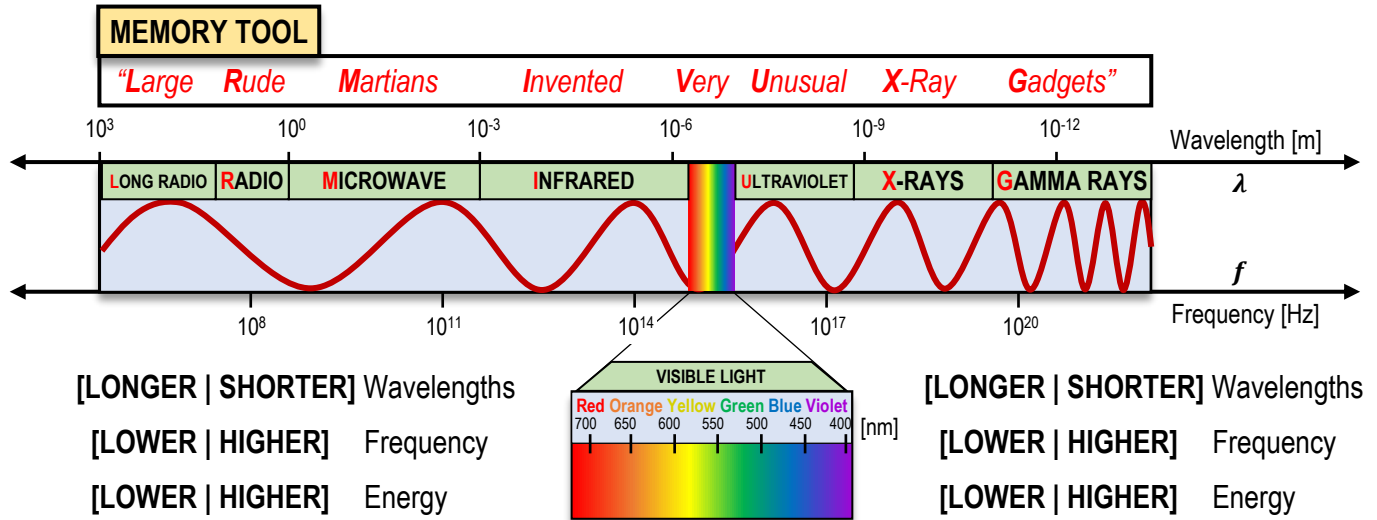


CONCEPT: THE ELECTROMAGNETIC SPECTRUM

- The Electromagnetic Spectrum is a _____ of EM waves (a.k.a light) of ALL wavelengths/frequencies.
 - Based on their properties, scientists have labeled certain portions or “bands” of the spectrum.



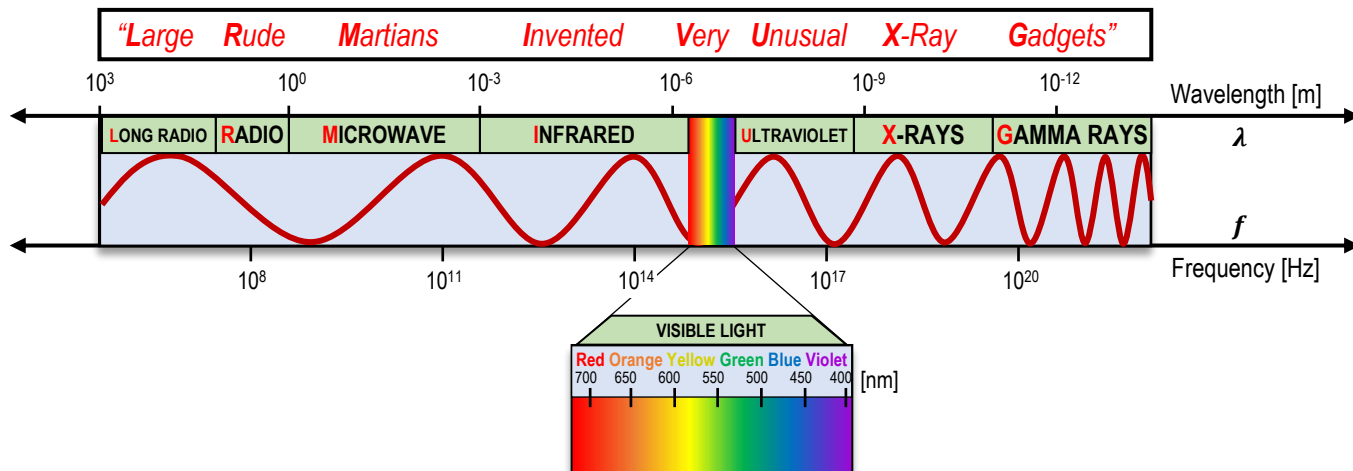
- Remember: ALL waves obey $v = \lambda f$. Because light is a wave and *always* moves at the same speed (c),

$$c = \underline{\hspace{2cm}}$$

EXAMPLE: Human beings continuously emit electromagnetic waves with wavelengths of approximately 9 micrometers.

- Calculate the frequency of these electromagnetic waves.
- Which band of the Electromagnetic Spectrum do these waves belong to?

$$c = 3 \times 10^8 \frac{\text{m}}{\text{s}}$$



PROBLEM: A standard cell phone transmits electromagnetic waves with a frequency of 1.90×10^9 Hz. Calculate the wavelength of these electromagnetic waves.

E.M. WAVES EQUATIONS

$$E = cB$$

$$c = \lambda f$$

CONSTANTS

$$c = 3.0 \times 10^8 \frac{m}{s}$$