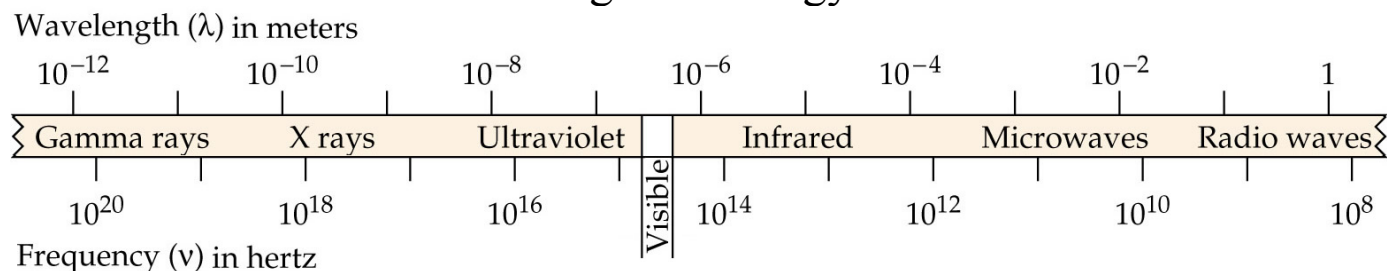


Light & Energy



Use the information in Chart B and the above spectrum to solve the following problems:

1. What is a quantum of energy? Explain how quanta of energy are involved in the amount of energy matter gains and loses?
2. **Interpreting Scientific Illustrations** Use the spectrum above and your knowledge of light to match the numbered items on the right with the lettered items on the left. The numbered items may be used more than once or not at all.
 - a. longest wavelength
 - b. highest frequency
 - c. .greatest energy
 1. gamma rays
 2. infrared waves
 3. radio waves
3. What does it mean for light to be quantized?
4. Explain the wave-particle dual nature of light.
5. What is one quantum of light called?
6. What is the energy of a photon with frequency 7.30×10^{12} Hz? What region of the spectrum is it in?
7. What is the frequency of a photon with energy of 3.75×10^{-15} J? What region of the spectrum is it in?

8. What is the energy of a photon with wavelength 600. nm? [Hint: convert to frequency first!] What region of the spectrum is it in?

9. What is the wavelength (in mm) of a photon with energy 5.52×10^{-22} J? [Hint: convert to frequency first!] What region of the spectrum is it in?