

ELECTROMAGNETIC RADIATION

NAME _____

SECTION _____

1. a. In the space below, draw a wave that has four wavelengths.



- b. If the distance from one side of the box to the other side is 1 meter, what is the wavelength of the wave you have drawn?
- c. What is the frequency of the wave?
2. Calculate the frequency of light that has a wavelength of 6.7×10^{-5} cm.
3. Describe the difference between the appearances of an emission spectrum and an absorption spectrum for any element.

4. Define quantization. What is a quantum of matter? What is a quantum of light (radiant energy)?
5. Calculate the energy of a photon of orange light with a frequency of $5.0 \times 10^{14} \text{ sec}^{-1}$.
6. Calculate the energy of a mol of photons of orange light with a frequency of $5.0 \times 10^{14} \text{ sec}^{-1}$.
7. Calculate the energy of a photon of light with a wavelength of 425 nm.
8. The energy required to break the oxygen–oxygen bond in O_2 is 496 kJ/mol. Calculate the minimum wavelength of light that can break the oxygen–oxygen bond.