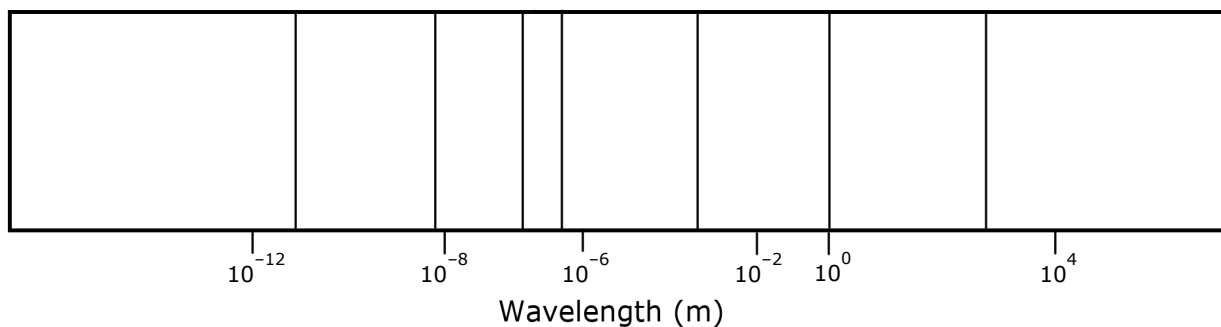


Worksheet 2

1. How are the frequency, wavelength, and energy of electromagnetic radiation related to each other? (Hint: Write the equations that relate them.)
2. Given the relationships above,
 - (a) As wavelength increases, frequency _____ .
 - (b) As energy decreases, wavelength _____ .
3. Label the types of electromagnetic radiation and the types of transitions you would expect them to cause on the picture below.



4. A spectrophotometer outputs photons with an energy of 22.2 eV. What type of electromagnetic radiation is it using? ($h = 6.626 \times 10^{-34}$ J s, $c = 2.998 \times 10^8$ m/s, $1 \text{ eV} = 1.602 \times 10^{-19}$ J)
5. Sketch an example of an atomic and a molecular absorption spectrum below. What are the major differences between the plots?