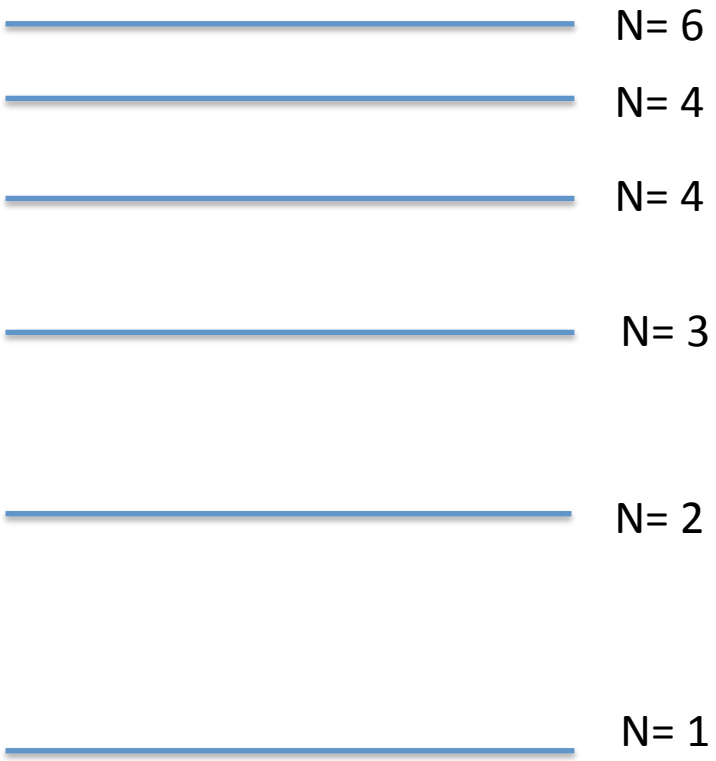
Calculate the wavelength of light emitted by a hydrogen atom for the cases below where an electron is dropping down to lower energy levels emitting a photon. Convert all wavelengths into nanometers. Indicate where it falls on the electromagnetic spectrum and its color (if visible)! Draw a visual depiction of the cases mirroring the pattern of the image on the right. Use Plank's formula to calculate the energy of the photon after finding lambda in J and eV.

An electron jumps from n = 3 to n=2.
An electron jumps from n = 4 to n=2
An electron jumps from n = 5 to n=2
An electron jumps from n = 6 to n=2
An electron jumps from n = 2 to n=1

Show Work

$$\frac{1}{\lambda} = r\left(\frac{1}{n_f^2} - \frac{1}{n_i^2}\right)$$

$$E = \frac{hc}{\lambda}$$



λ = wavelength of light in meters
r = Rydberg constant = $1.097 \times 10^{7} m^{-1}$
n_f = final energy level
n_i = initial energy level
E = energy in joules
c= speed of light = $3.00 \times 10^{8} m/s$
h = Plank's Constant = $6.62607004 \times 10^{-34}\ m^2\ kg / s$
1 Joule = $6.242 \times 10^{18} eV$