Using the constants provided with the equations, evaluate the energy from the Bohr model of Hydrogen for the n=2 and n=3 energy levels.

$$E = \frac{-m_e k^2 e^4}{2n^2 \hbar^2} = \frac{-(9.11\times10^{-31})(8.99\times10^9)^2(1.602\times10^{-19})^4}{n^2(2)(1.05\times10^{-34})^2}$$

$$= \frac{-2.199\times10^{-18}}{n^2}$$

$E(n=2) = -5.4975\times10^{-19}$ Joules

$E(n=3) = -2.4433\times10^{-19}$ Joules

If a photon were emitted by an atom in the n=3 level and resulting in an n=2 level, then what frequency of light would result?

$\Delta E = E(n=3) - E(n=2) = hf$

$-2.4433\times10^{-19} - (-5.4975\times10^{-19}) = 6.63\times10^{-34}\ f$

$3.0542\times10^{-19} = 6.63\times10^{-34}\ f$

$f = 4.61\times10^{14}$ Hz

What would be the associated wavelength?

$v = f\lambda$

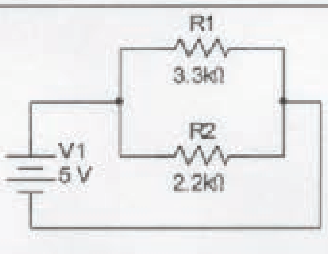
$3\times10^8 = 4.61\times10^{14}\ \lambda$

$\lambda = 6.50\times10^{-7}$ m

$= 650\times10^{-9}$ m

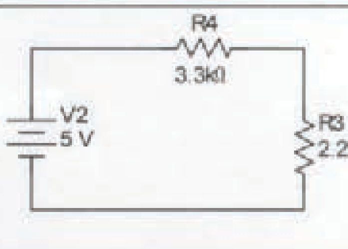
$= 650$ nm   Red color from Balmer series

Ohms Law and combinations of resistors



$\frac{1}{R_{eq}} = \frac{1}{3.3} + \frac{1}{2.2}$

$R_{eq} = 1.32$ kΩ



$R_{eq} = 3.3 + 2.2$

$R_{eq} = 5.5$ kΩ

Series or Parallel? Parallel	**Series or Parallel?** Series
Equivalent Resistance: 1.32kΩ	**Equivalent Resistance:** 5.5kΩ
Current: $V = IR$ $I = V/R = 5/1.32 = 3.79$ mA	**Current:** $I = V/R = 5/5.5 =$ .91mA