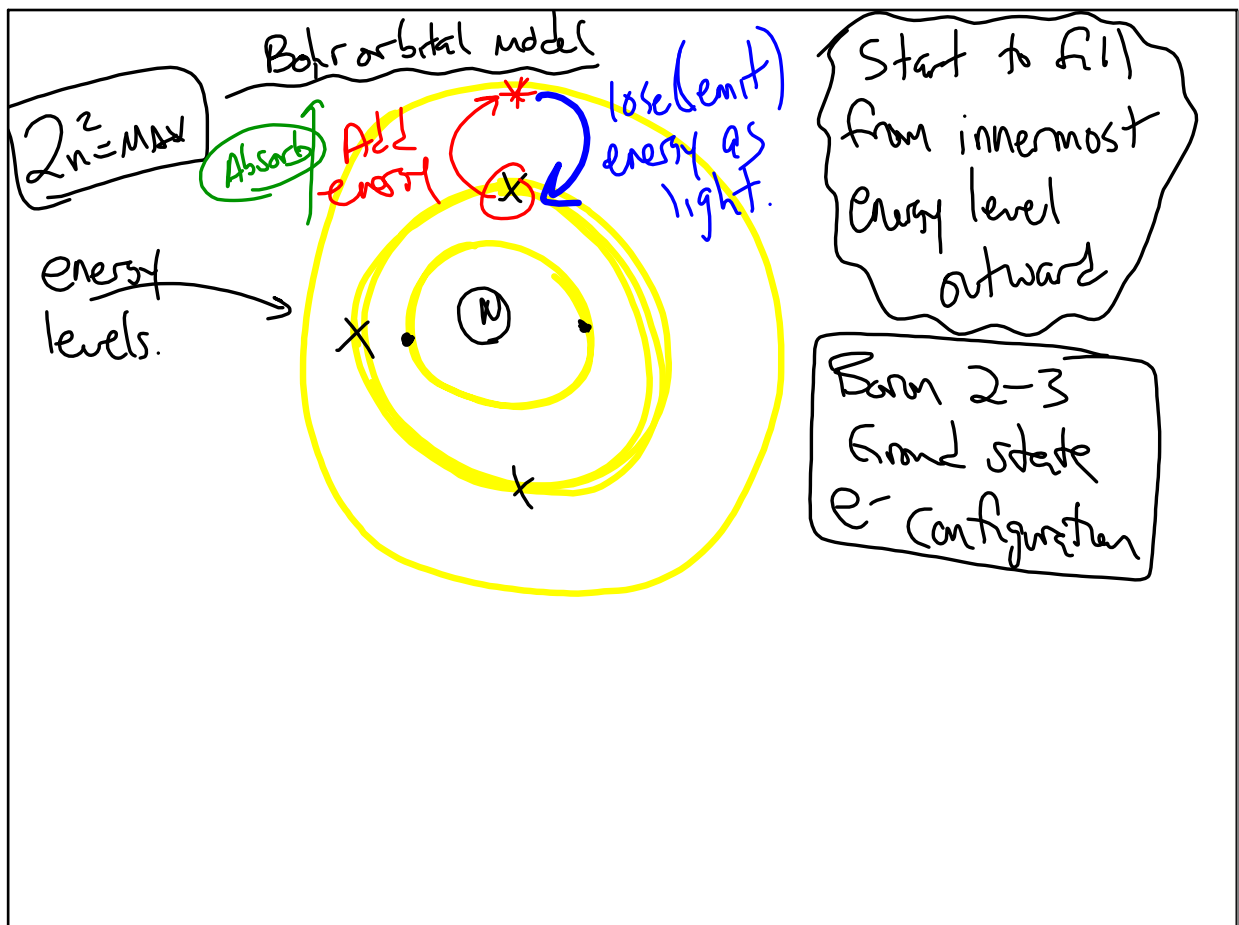


Light \rightarrow Spectrum

Light that we see is emitted
 Other colors, we can't see look dark (black)
 \Downarrow
Absorbed



* $E = \text{energy (Joules)}$

* λ (lambda) = wavelength = nm = 10^{-9} m
length of 1 wave of light.

* $f = \text{frequency how often.}$

Constants

Given $\left\{ \begin{array}{l} c = \text{speed of light. } 3 \times 10^8 \frac{\text{m}}{\text{sec}} \\ h = \text{(Planck's constant)} 6.63 \times 10^{-34} \frac{\text{J}}{\text{sec}} \end{array} \right.$

3×10^8

Calculator \rightarrow $\boxed{3}$ \boxed{EE} $\boxed{8}$ $\boxed{EE = * 10^x}$

$EE = \text{times ten to the } ^x$

$\boxed{c} = \underline{f} \underline{\lambda}$

Constant.

$c = f * \lambda$

$100 = 10 * 10$

$\downarrow \times 2$

$100 = 20 * \boxed{5}$

f and λ inversely related

$100 = 10 * 10$

$\downarrow \times 5$

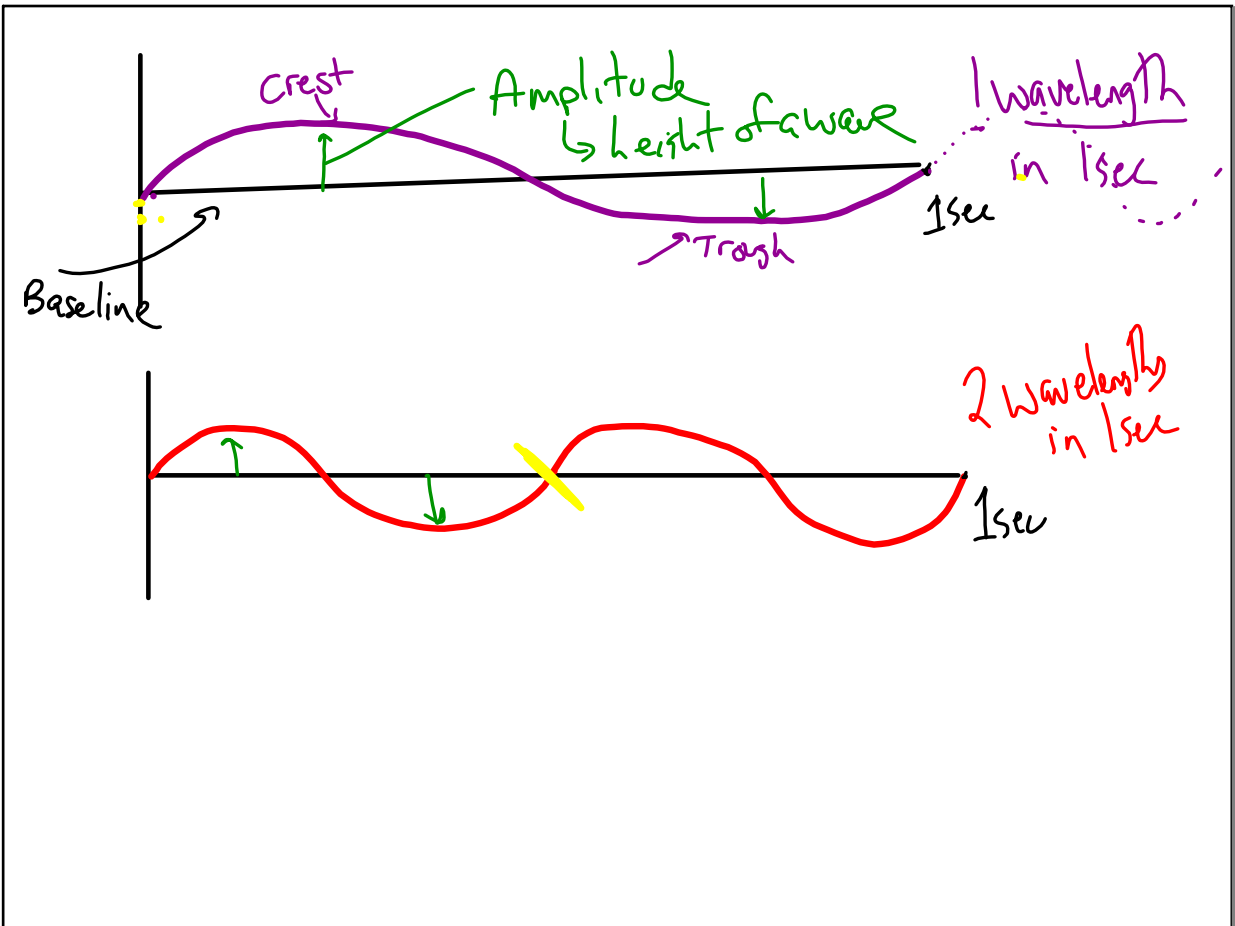
$100 = 50 * 2$

$\downarrow \div 5$

ROY G B I V

longest λ
 $\sim 700 \text{ nm}$
Short f

Shortest λ
 $\sim 400 \text{ nm}$
Big freq.



$c = \frac{f}{\lambda}$
↑ inc. ↓ dec.
inversely related.

$E = hf$
↑ directly related

Same side of f = sign.

Opposite sides of = sign

As $E \uparrow$, f will \uparrow and $\lambda \downarrow$
($E = hf$)

Demo - Spring

less E

Shorter = G

More E

↑ freq ↓ wavelength

