

Scientific / Engineering Notation

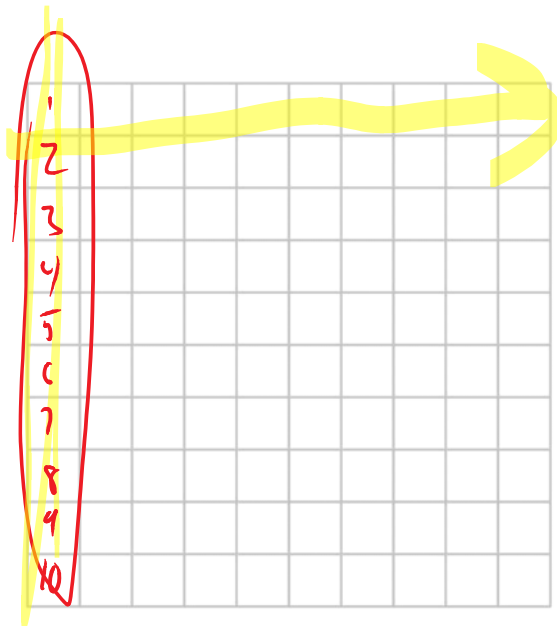
Last Class:

What did we cover?

unit conversions / Sig Figs

This grid is exactly 1 m^2
Convert to cm^2

$$\begin{aligned}
 & 1\text{ m}^2 \\
 &= \frac{100\text{ cm} \times 100\text{ cm}}{1\text{ m} \times 1\text{ m}} \\
 &= \frac{10^2 \text{ cm}^2}{1^2 \text{ m}^2} \\
 &= 10^4 \text{ cm}^2
 \end{aligned}$$



The speed of light is:

$$\begin{aligned}
 & 670,600,000 \frac{\text{mi}}{\text{hr}} \cdot \frac{1\text{ km}}{0.62\text{ mi}} \cdot \frac{1000\text{ m}}{1\text{ km}} \cdot \frac{1\text{ hr}}{3600\text{ s}} \\
 & \underline{300\,000\,000} \\
 & 3 \times 10^8 \frac{\text{m}}{\text{s}}
 \end{aligned}$$

Prefix	Symbol	Factor
femto-	f	$10^{-15} = 0.000,000,000,000,001$
pico-	p	$10^{-12} = 0,000,000,000,001$
nano-	n	$10^{-9} = 0.000,000,001$
micro-	μ	$10^{-6} = 0.000,001$
milli-	m	$10^{-3} = 0.001$
centi-	c	$10^{-2} = 0.01$
deci-	d	$10^{-1} = 0.1$
	Base Units	$10^0 = 1$
deka-	da	$10^1 = 10$
hecto-	h	$10^2 = 100$
kilo-	k	$10^3 = 1,000$
mega-	M	$10^6 = 1,000,000$
giga-	G	$10^9 = 1,000,000,000$
tera-	T	$10^{12} = 1,000,000,000,000$
peta-	P	$10^{15} = 1,000,000,000,000,000$

Let's get some practice...

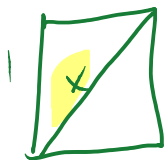
- 1) 0.000034 $\rightarrow 3.4 \times 10^{-5}$ $\left. \begin{array}{l} .034 \text{ m Units} \\ 34 \mu \text{ Units} \end{array} \right\}$
- 2) 6500. $\rightarrow 6.5 \times 10^3$
- 3) 3600 $\times 10^{10}$ $\rightarrow 3.6 \times 10^{(10+3)}$
- 4) 549 $\rightarrow 5.49 \times 10^2$ $(12-5)$
- 5) 0.000042 $\times 10^{12}$ $\rightarrow 4.2 \times 10^{(12-5)}$

0. <u>000000000000082</u>	0. <u>0000000000805</u>
0. <u>000070</u>	456.789
3654.87	215
3758.6	0. <u>01337</u>
21.8x10 ⁻⁴	42
	0. <u>0000001</u> x10 ⁸

How many Sig Figs?

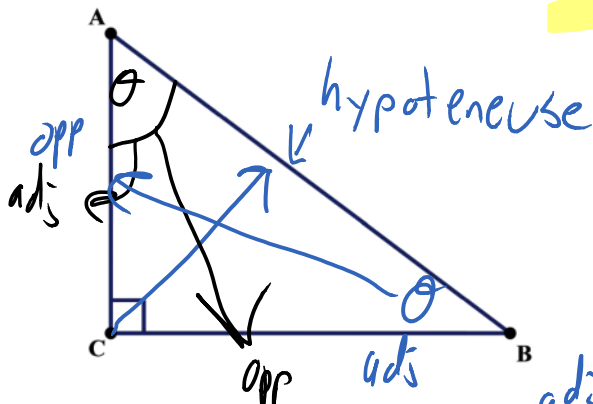
Do I round? → not optional

Let's do some Trigonometry:



1
 $x = \sqrt{2}$

$a^2 + b^2 = c^2$

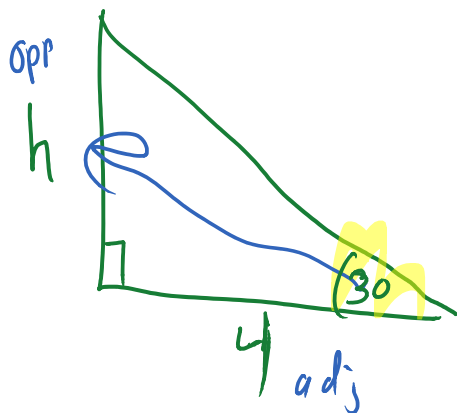


$\sin \theta = \frac{\text{opp}}{\text{hyp}}$

$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

~~SOH CAH TOA~~

$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\left(\frac{\text{opp}}{\text{hyp}}\right)}{\left(\frac{\text{adj}}{\text{hyp}}\right)} = \frac{\text{opp}}{\text{adj}}$



SOH CAH TOA

$\tan(30) = \frac{h}{4}$

$4 \tan(30) = h = 2.3 \text{ units}$

1 triangle has 6 pieces of information.

Complete all Triangles

