

- Units - SI

S	m	kg
time	length	mass

English

S	foot	slug
lb _m = pound mass	pound-force	

Unit Conversion

* Dimensional Analysis
Magic "Ones"

$$\frac{2.2 \text{ lbs}}{1 \text{ kg}} \quad \frac{2.54 \text{ cm}}{1 \text{ in}}$$

$$F = ma$$

$$N = \frac{\text{kg} \cdot \text{m}}{\text{s}^2} = \text{kg} \cdot \frac{\text{m}}{\text{s}^2}$$

$$\begin{array}{l} \mu\text{m} = 10^{-6} \\ \text{nm} = 10^{-9} \end{array} \quad \begin{array}{l} \text{Gm} = 10^9 \\ \text{M} = 10^6 \end{array}$$

$$x = \underbrace{Avt}_m + \overbrace{B \sin(ct)}^m$$

$$x = m$$

$$v = m/s$$

$$t = s$$

$$+ D t^{1/2} \quad \frac{m}{\sqrt{s}} = m$$

A, B, C, D + E

$$A = \text{unitless}$$

$$B = m$$

$$E = m$$

$$C = 1/s$$

$$D = \frac{m}{\sqrt{s}} = m s^{-1/2}$$

$$\frac{D + 1/2}{\sqrt{s}} = m$$

$$D = 6 m/\sqrt{s}$$

$$F = ma$$

$$F = m \cdot ?$$

$$k s m / s^2 \quad k s$$

$$v = Bt \left[\sqrt{Ax} + \cos^2(ct) \right]$$

$$m/s$$

$$- D \alpha^{Et}$$

$$E = 1/s$$

$$A = \frac{1}{m} \frac{m}{s^2} s = \frac{m}{s}$$

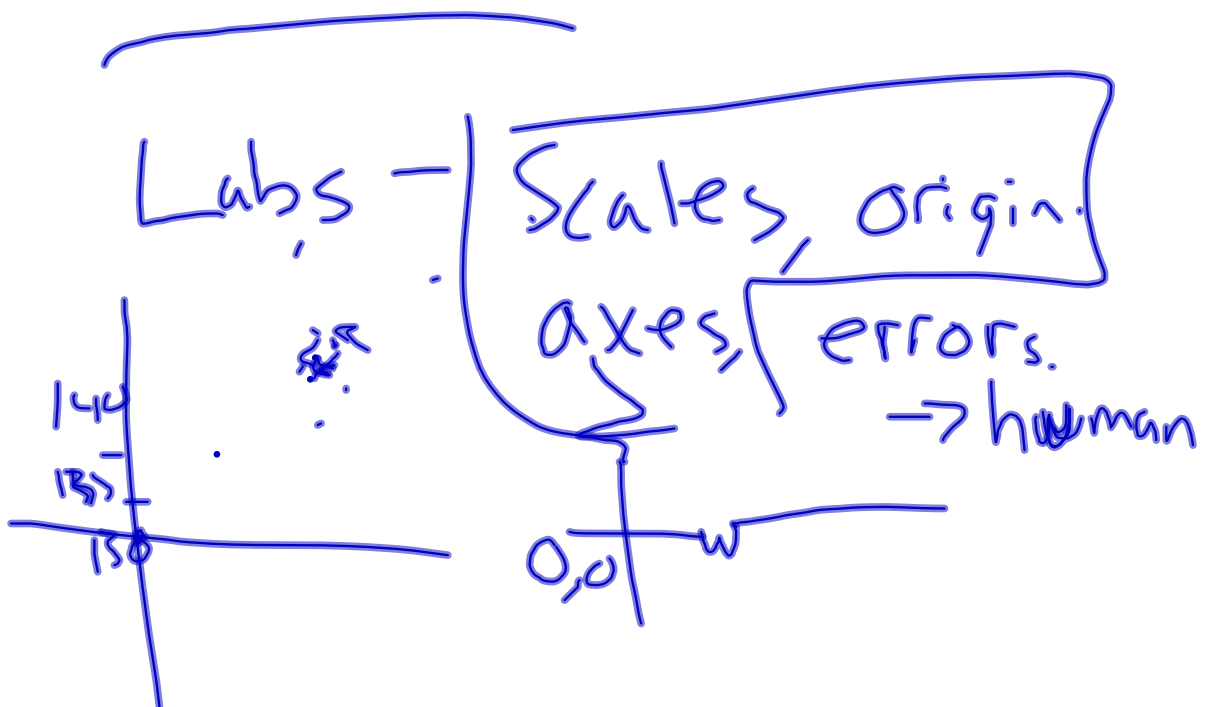
$$D = \frac{m}{s}$$

$$C = 1/s$$

Order of Magnitude

$$= 10^x \quad 45m$$

$$\text{height} = 10^0$$



Significant

$$3.046 = 4$$

$$0.046 = 2$$

$$0.0460 = 3$$

$$300 = ?$$

$$300. = 3$$

$$30\bar{0} = 3$$

$$3.00 \times 10^2$$

$$\begin{aligned} & 30.0 \times 10^1 \\ * & 3.00 \times 10^2 \end{aligned}$$

Vectors

mag + direction



Notation \vec{v} $[v]$

\mathbf{v} ← Bold

$|\vec{v}|$ = magnitude of vector

$\|\vec{v}\|$