

Vectors

- vectors have mag + dir
- scalar has only mag.
- Vectors
 - bold or $\rightarrow$
 - can be broken down into components
 - i.e. its a resultant
 - ex. right triangle



- C is the resultant of $\vec{A} + \vec{B}$
- A is the resultant of $\vec{C} + \vec{B}$
- B $\vec{C} + \vec{A}$

Vector Addition $\rightarrow$

Pythagorean theorem

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

SOHCAHTOA

$\sin \theta = \frac{\text{opp}}{\text{hyp}}$ $\cos \theta = \frac{\text{adj.}}{\text{hyp}}$ $\tan \theta = \frac{\text{opp}}{\text{adj.}}$
 angles in degrees

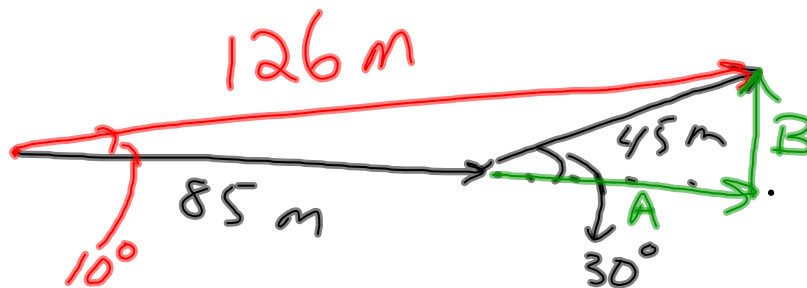
- Graphical - graph paper + ruler
- Math - Pyth. theor. + SOHCAHTOA
- Vector can be moved
- Vectors can be added in any order.
- Vectors can be multiplied by a scalar, the result is a vector

ex. $\vec{A} = \vec{V} \cdot t$
 ↑ ↑
 vector scalar

- Always place vector Head-to-tail

Section Rev.

②



$$\cos 30^\circ = \frac{A}{45m}$$

$$A = 39m$$

$$\sin 30^\circ = \frac{B}{45m}$$

$$B = 22.5m$$



$$\tan \theta = \frac{22.5m}{124m}$$

$$\theta = \tan^{-1} \left(\frac{22.5m}{124m} \right)$$

$\theta = 10^\circ$ above the horizontal

$$\sin 10^\circ = \frac{22.5m}{H}$$

$$H = \frac{22.5m}{\sin 10^\circ} = 129m$$

