

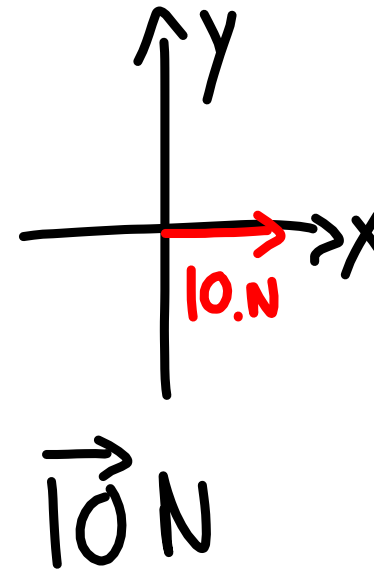
Vectors

- Direction and Magnitude

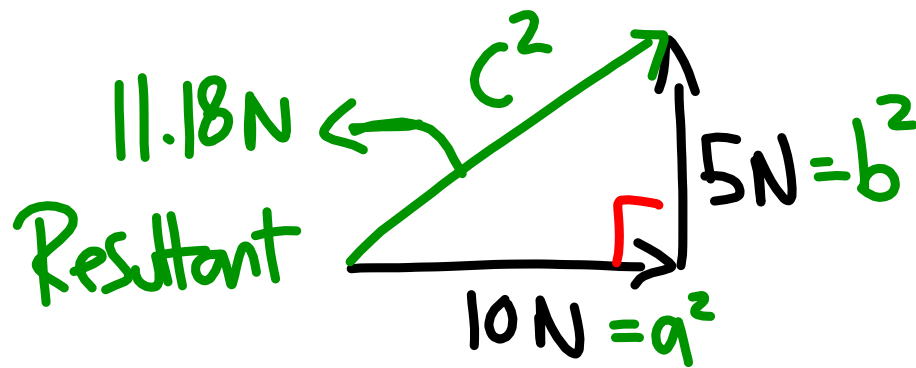
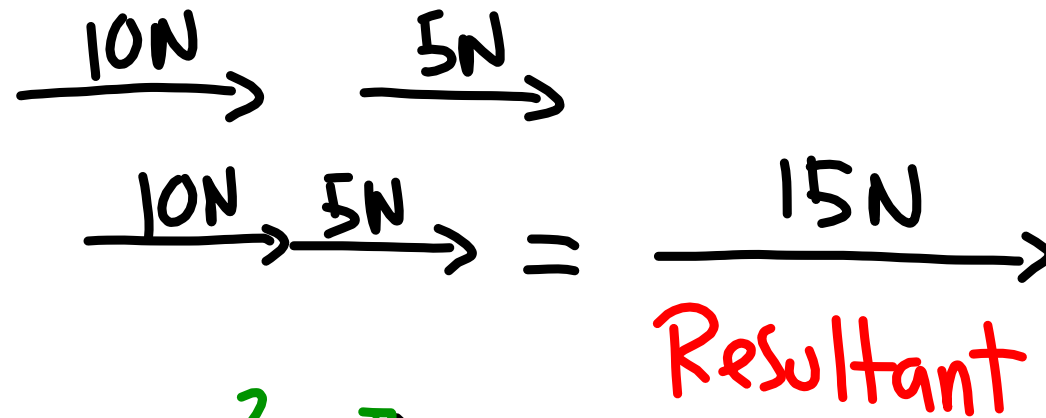
- Notation:

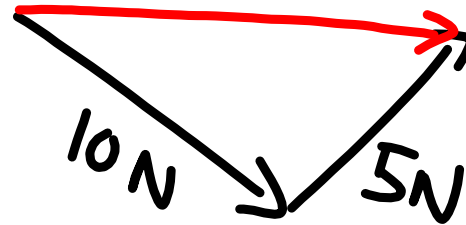
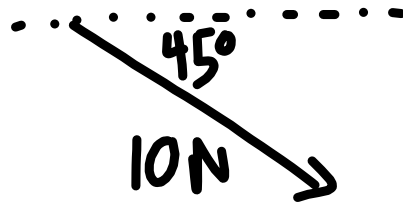
$\overrightarrow{\hspace{2cm}}$
10.N

$(10\text{N})\hat{i}$

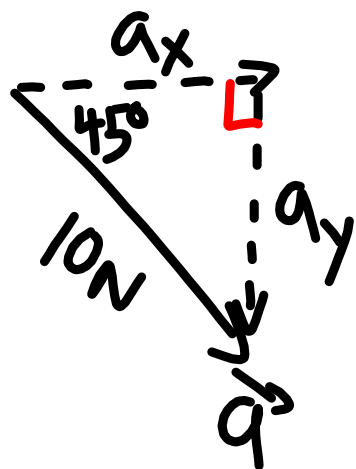


Addition: tip to tail

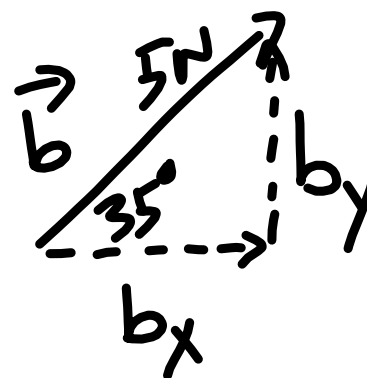




- Break vectors into components



SOHKAHTOA



$$\cos = \frac{A}{H}$$

$$\cos(\theta)H = A$$

$$a_x = 10 \cos(45^\circ)$$

$$a_y = 10 \sin(45^\circ)$$

$$a_x = 7.07$$

$$a_y = -7.07$$

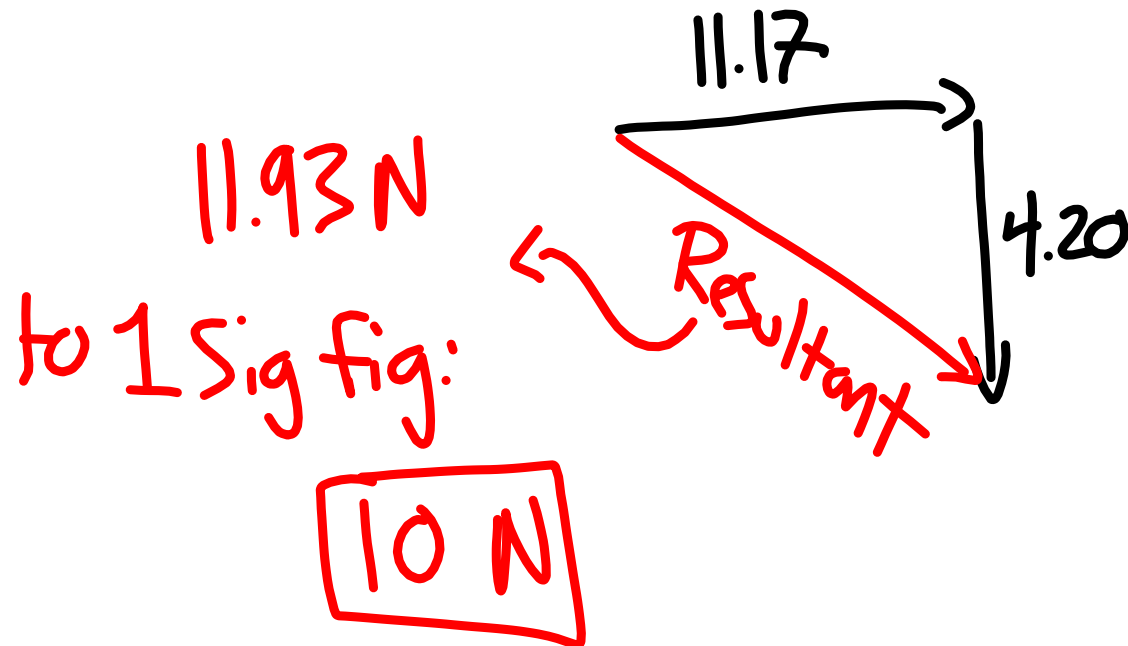
$$b_x = 5 \cos(35^\circ)$$

$$b_y = 5 \sin(35^\circ)$$

$$b_x = 4.10$$

$$b_y = 2.87$$

$$\left. \begin{aligned} a_x + b_x &= 11.17 \\ a_y + b_y &= -4.20 \end{aligned} \right\} \begin{array}{l} \text{components} \\ \text{of} \\ \text{Resultant} \end{array}$$



Subtraction: Add the Inverse

$$\begin{array}{c} \vec{a} \\ \hline 10\text{N} \end{array} \rightarrow \quad \begin{array}{c} \vec{b} \\ \hline 5\text{N} \end{array} \rightarrow$$

$$\begin{array}{c} \hline 10\text{N} \end{array} \rightarrow \quad \begin{array}{c} \hline \leftarrow 5\text{N} \end{array}$$

$$\begin{array}{c} 10\text{N} \rightarrow \\ \hline \leftarrow 5\text{N} \end{array} = \begin{array}{c} 5\text{N} \\ \hline \rightarrow \end{array}$$