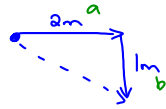
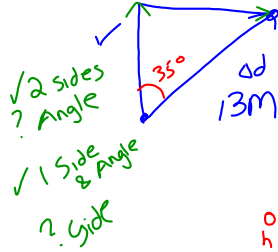


Intro to Vectors and Addition of Vectors



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 2^2 + 1^2 &= c^2 \\
 4 + 1 &= c^2 \\
 5 &= c^2 \\
 \sqrt{5} &= c \\
 2.3
 \end{aligned}$$



O = opposite
 h = hypotenuse
 a = adjacent

sine
 cosine
 tangent

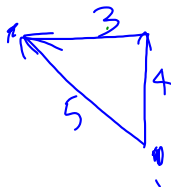
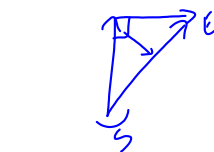
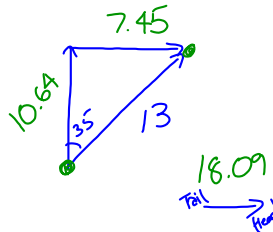
soh
 cah
 toa

$\sin \theta = \frac{o}{h}$
 $\cos \theta = \frac{a}{h}$
 $\tan \theta = \frac{o}{a}$

$\sin 35 = \frac{\text{opp}}{13}$
 $7.45 = \text{opp}$

$\cos 35 = \frac{a}{13}$
 $10.64 = a$

$(\sin 35) \times 13$
 $\sin 35$
 $\times 13$



Position: x

the separation and direction from a reference point

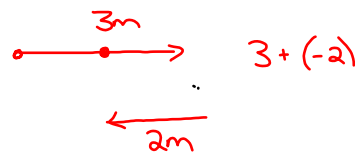
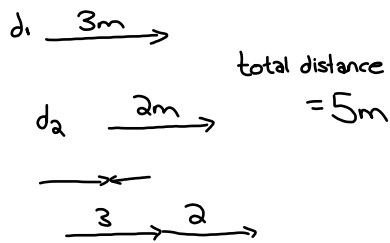
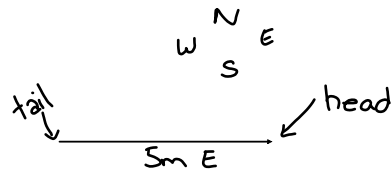
Distance: d

the total length of a journey along every path.

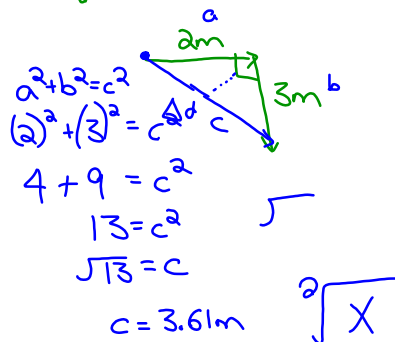
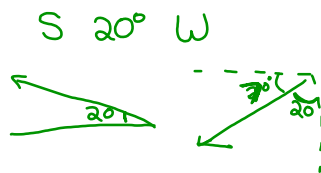
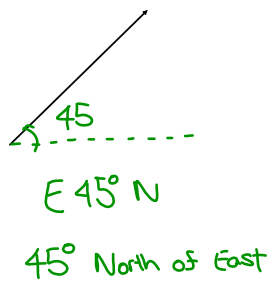
Displacement: Δd

the change in position of an object

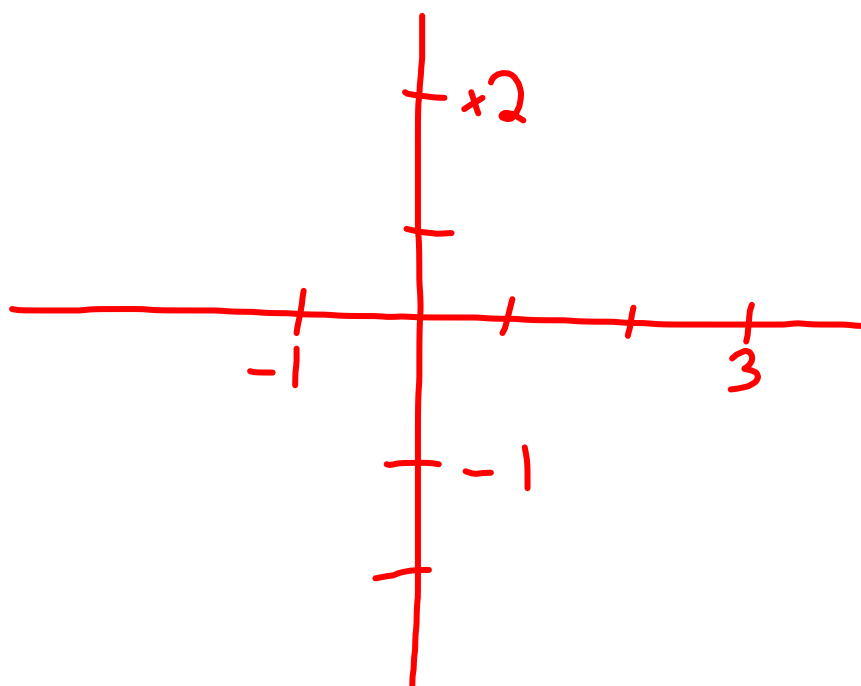
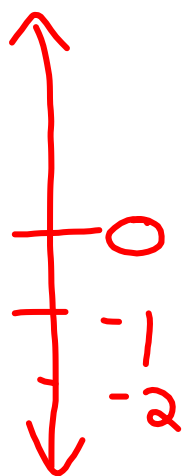
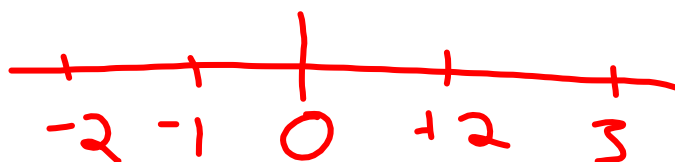
Intro to Vectors and Addition of Vectors



distance = 5m = d
 displacement = 1m = Δd



Intro to Vectors and Addition of Vectors



x component:

horizontal

arrow towards the left=negative

arrow towards the right=positive

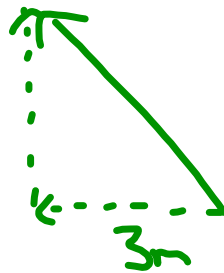


y component:

vertical

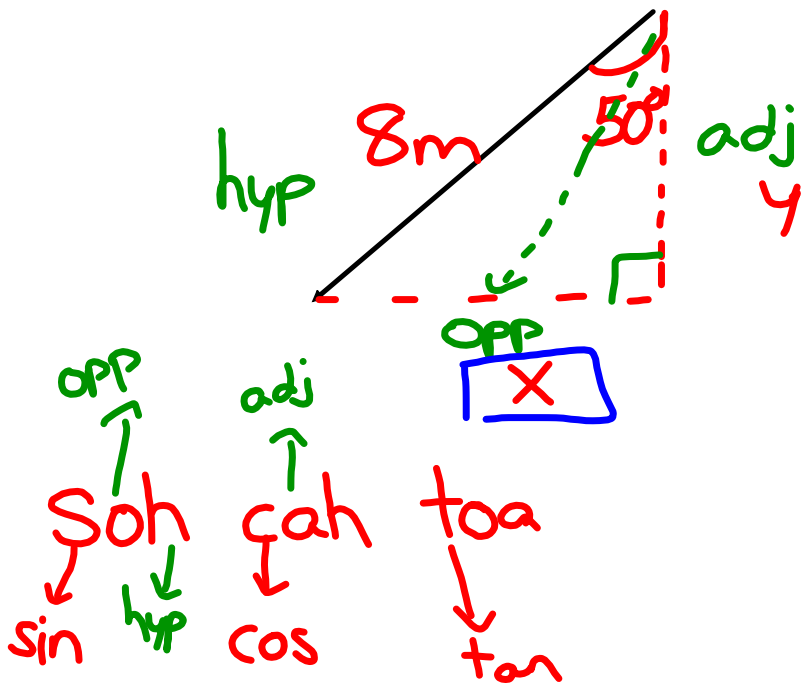
arrow going down=negative

arrow going up=positive



-3

Intro to Vectors and Addition of Vectors



Find x

OPP
hyp

soh

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

$$\sin(50) = \frac{\text{OPP}}{\text{hyp}}$$

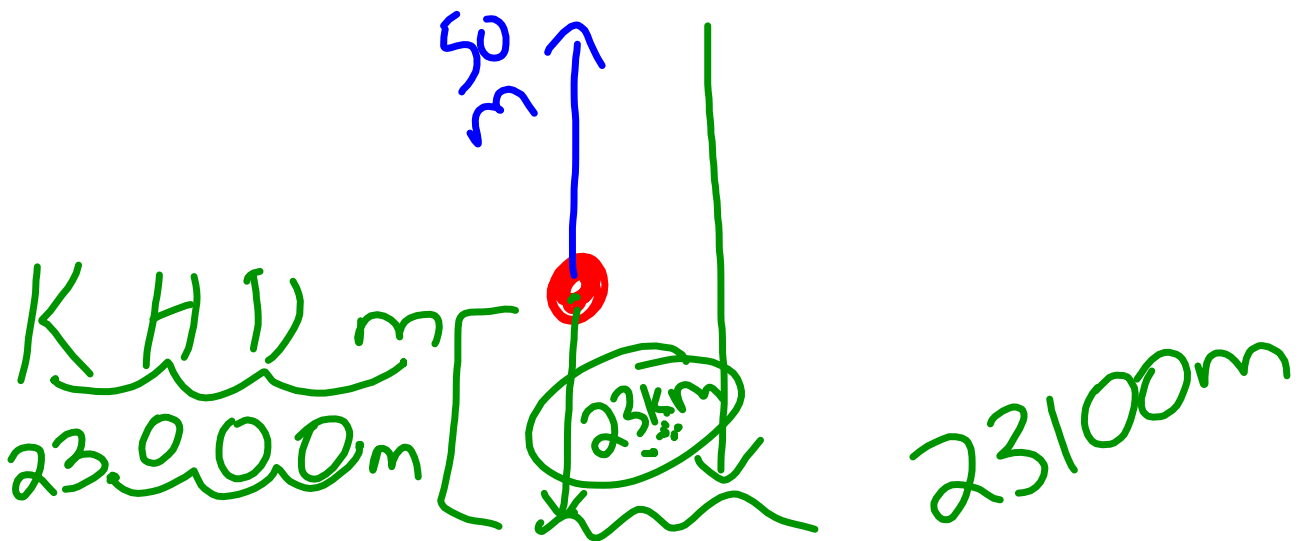
$$\frac{x \text{ hyp}}{(8)} = \text{OPP}$$

6.12
400
400

$$x = 6.1$$

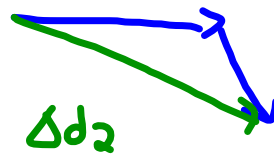
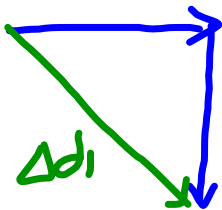
Ron starts out walking from his home. He walks to the park which is 50m [N] then back to the post office, which is 23km [S] (from the original point.)

What is Ron's resulting displacement?

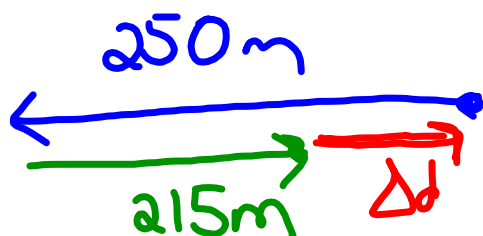


Adding Displacements

Resultant vector: a single displacement that has the same effect as all of the individual displacements combined.



Peyton takes her dog for a walk. They walk 250m [W] and then back 215m [E] before stopping and talking to a neighbor. Draw a vector diagram to find their resultant displacement at this point.



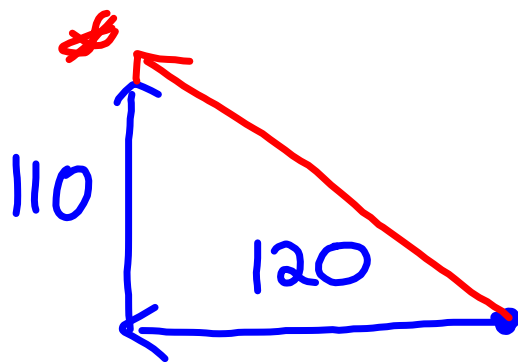
Jesse decides to go for a walk. He heads 30m [W], stops and goes a farther 50m [W] before returning 60m [E]. Draw a vector diagram to show his resulting displacement.

Draw the resultant vector given the x and y components:

$$x = -120\text{km}$$

$$y = 110\text{km}$$

$$[-120x + 110y]$$

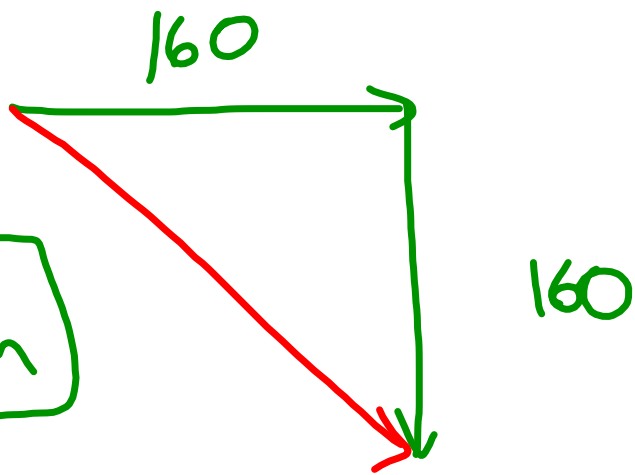


Draw the resultant vector given the x and y components:

$$x=160\text{m}$$

$$y=-160\text{m}$$

$$[160_x - 160_y]$$



N 30° W

