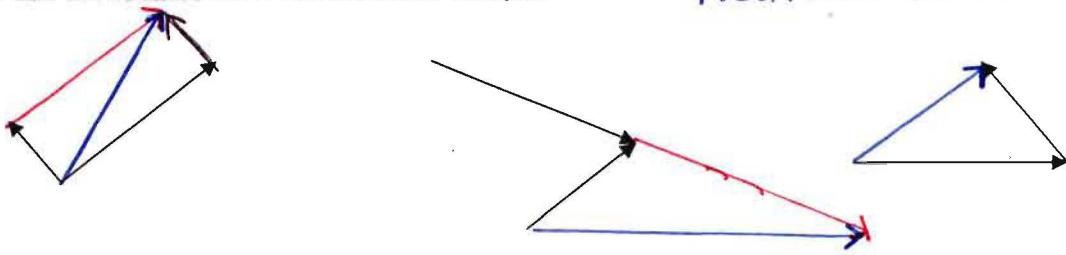
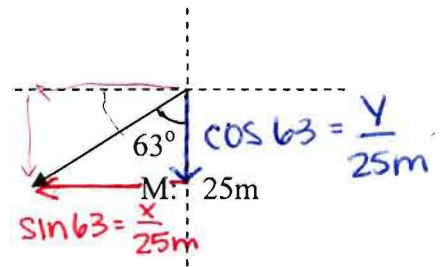
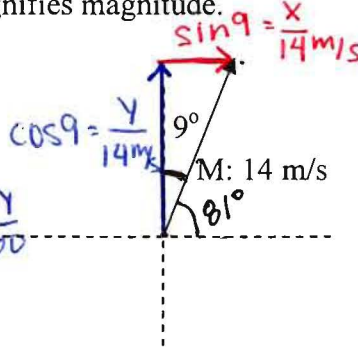
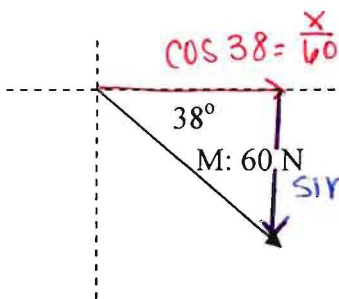


### Vector Practice

1. For this set of lines draw the resultant vectors.



2. For the following vectors draw in the x and y components and solve for each component. Also describe the direction of the angle. 'M' signifies magnitude.



x component: 47.28 N →

x component: 2.19 m/s →

x component: -22.28 m ←

y component: -36.94 N ↓

y component: 13.83 m/s ↑

y component: -11.35 m ↓

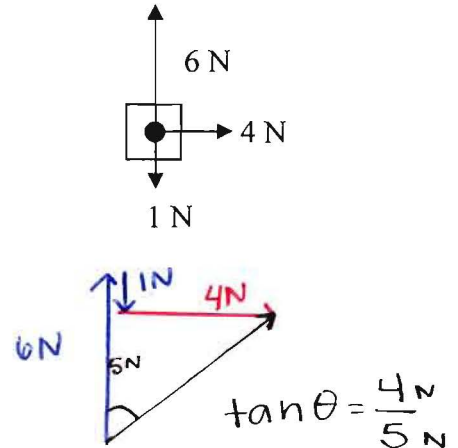
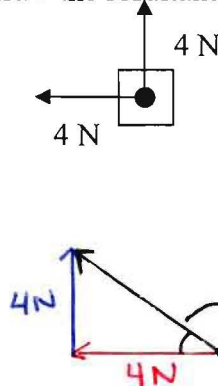
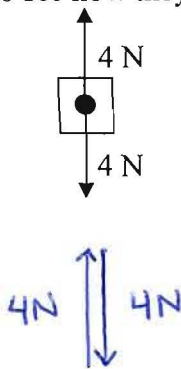
Direction of Resultant Angle:

38° South of East  
52° East of South

91° North of East  
9° East of North

27° South of West  
63° West of South

3. Find the magnitude and direction of net force for each of the diagrams below. Hints: Redraw the vectors to see how they add together and draw the resultant below the diagram.

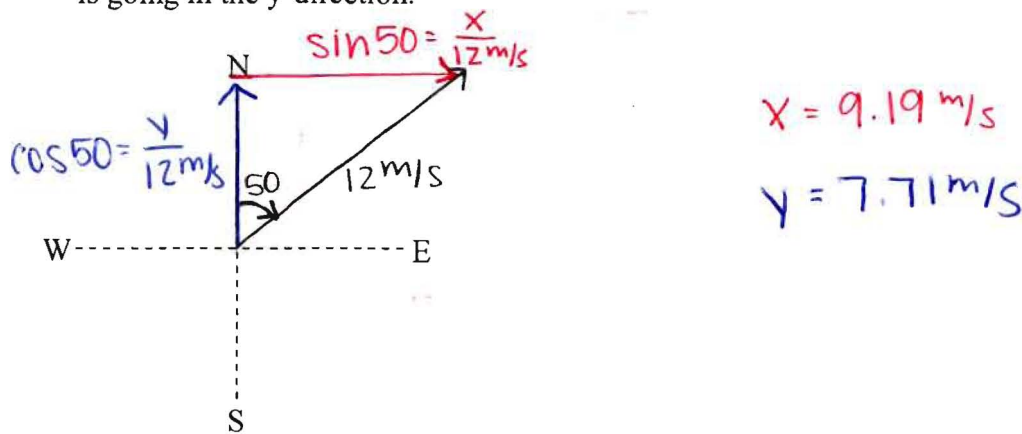


0 N

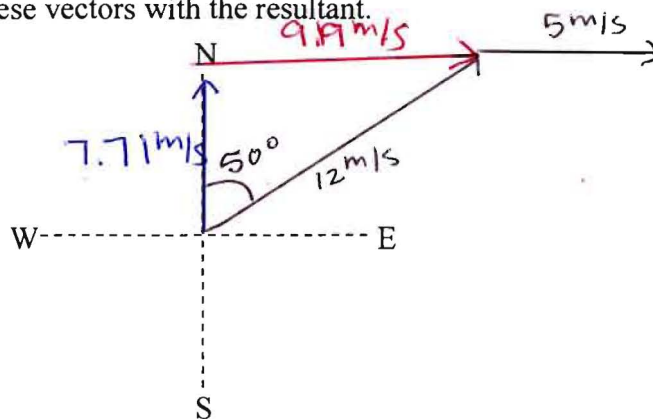
5.66 N @ 45° N of W  
45° W of N

6.4 N @ 38.6° E of N

4. A ball is thrown at a  $50^\circ$  angle East of North. The initial speed of the ball is 12 m/s. Use the diagram below to first draw in the initial vector. Then find how fast it is going in the x-direction and how fast it is going in the y-direction.



5. A person now throws the ball the same way so that it is moving at 12 m/s at an angle of  $50^\circ$  East of North. However just as the ball is released a gust of wind blows so hard that it will push the ball 5 m/s directly East. Draw these vectors with the resultant.



- a. What are the x and y components of the two vectors?

$$\begin{array}{l} v_1 \quad x \quad y \\ \quad 9.19 \quad 7.71 \\ v_2 \quad 5 \quad 0 \end{array}$$

- b. Draw the new resultant vector.

see above

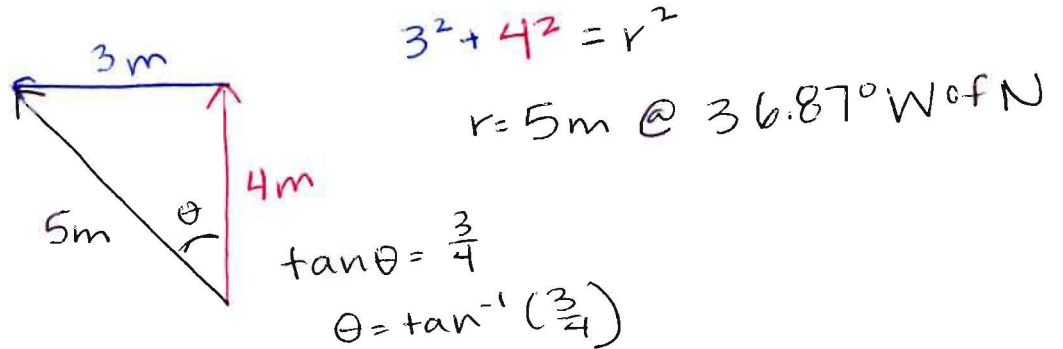
- c. What are the x and y components of this new resultant vector?

$$x = 14.19 \quad y = 7.71$$

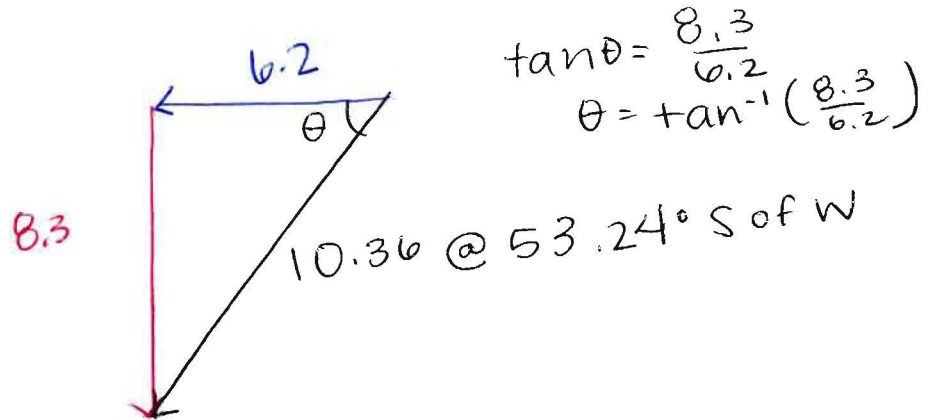
- d. What is the magnitude and direction of the resultant vector?

**Insert....between 5 and 6 ☺**

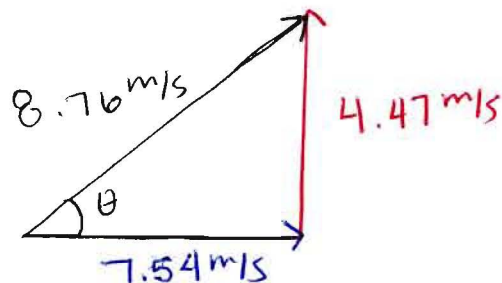
8. What is the resultant displacement vector when someone travels directly north for 4m and then travels directly west for 3m?



9. What is the resultant velocity if the x component is 6.2 m/s west and 8.3 m/s south?



10. What is the total (resultant velocity) when a stream is flowing at 7.54 m/s east and a boat can travel directly north at a velocity of 4.47 m/s? If the river is 12 m wide, how far upstream does the boat hit the shore?



$8.76\text{m/s} @ 30.66^\circ \text{ N of E}$

$\tan \theta = \frac{4.47}{7.54}$   
 $\theta = \tan^{-1}\left(\frac{4.47}{7.54}\right) \quad \theta = 30.66$