

A-Day: Due Mon., 9/28

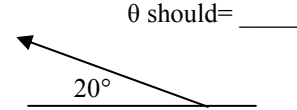
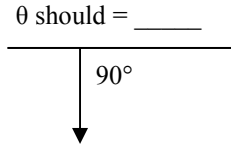
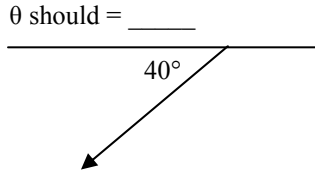
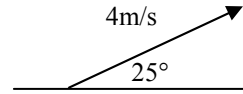
B-Day: Due Tues., 9/29

## PreAP Two Dimensions 2

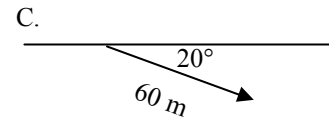
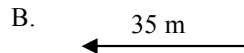
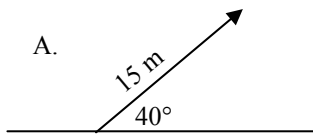
Make sure you wrote these on your equation chart:  $V_x = V\cos\theta$

AND  $V_y = V\sin\theta$  if all angles start from the +x axis.

- What is the magnitude of the vector at the right?
  - What is the direction of the vector at the right?
- For all vectors we must r\_\_\_\_\_ them into their x and y components.
- For the following three vectors, give the angles starting from the +x axis.



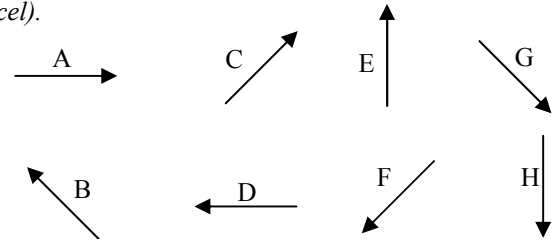
- Resolve the following vectors into their x and y components (remember that components can also be zero, negative).



Use the vectors at the right to answer the following (hint: notice that some cancel).

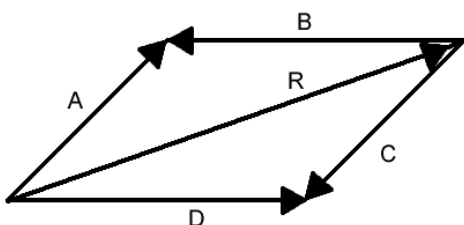
- Which vector or vectors...
 

i. _____ -X and -Y components	o. _____ direction = $-45^\circ$
j. _____ has -X and Y = 0	p. _____ direction = $135^\circ$
k. _____ have +X components	q. _____ x = y
l. _____ have -Y components	r. _____ = -C
m. _____ direction = $90^\circ$	s. _____ = -A
n. _____ direction = $180^\circ$	t. _____ direction = $0^\circ$



- Mathematically add:  $A + D + C + B + F =$
- Graphically do the following vector operations (draw these):
 

A) $E - F + 2D$	B) $2A - 2D - F$
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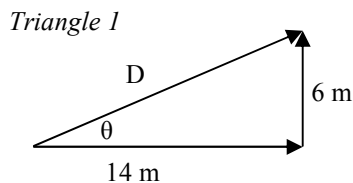


On the parallelogram at the right, R is the resultant (the resulting motion or your total displacement, start to finish). R starts at the bottom left and ends at the top right. Think of each of the arrows (A—D) as possible directions.

- Give three combinations of vectors that would correctly produce R. (Hint: remember that vectors can be added in any order, can be subtracted, and can be moved.)

PreAP Two Dimensions 2

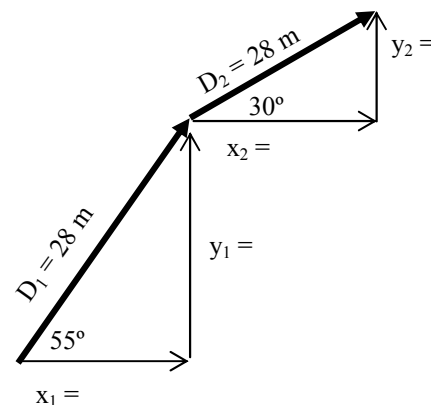
9. A) What is the x component?  
 B) What is y component?  
 C) Calculate the length of the hypotenuse.  
 D) Calculate the direction ( $\theta$ ). (Use trig)



10. A person walks 15 m west, 10 m north, 25 m east, 6 m south, then another 8 m north.  
 A)  $X_t =$                       B)  $Y_t =$                       C) Using  $X_t$  and  $Y_t$ , draw the triangle:  
 D) Calculate the resultant's magnitude and direction.

11. If an object is going 4 m/s for 10 seconds...  
 A) How far did the object move?  
 B) If the object was actually moving at  $30^\circ$  (from the x-axis), how fast was it moving in the x direction?  
 (Find the x-component of the object's velocity.)  
 C) In the 10 seconds it moved, how far did it move in the x-direction?

12. Now let's combine what we know, step-by-step...  
 A) Resolve vector 1 and 2 into their components. (Now you have only x's and y's. YEA! And the rest of this problem is like #9, above.)  
 B) Find  $X_{total}$ :                      C) Find  $Y_{total}$ :  
 D) With  $X_{total}$  and  $Y_{total}$ , draw your resultant's triangle below and calculate the resultant's magnitude and direction



Now on your own, using the "Adding Vectors" notes:

13. Add these vectors together, being sure that all angles start at the +x axis and keeping track of negatives.  
 1. Add them graphically.      2. Resolve them into their components.      3. etc. (follow the notes)

