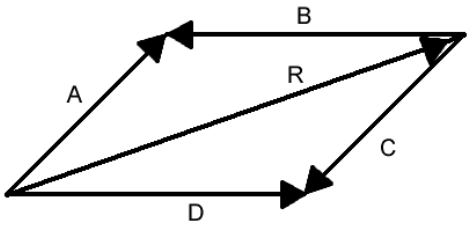
Due Thurs., Sept 30 (B-day)
Due Fri., Oct 1 (A-day)

2010-11 PreAP Two Dimensions 3

1. *B = 2.1 cm at 150°. −3B =

2. If A = 3.5cm at 60°, then −2A =

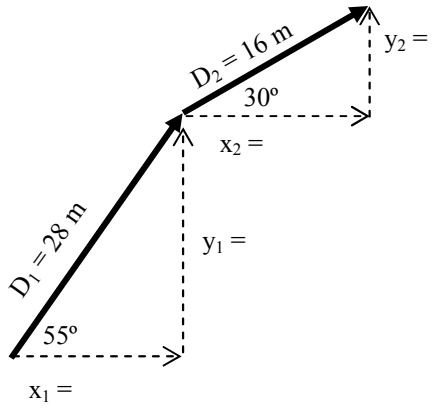


On the parallelogram at the right, R is the resultant (the resulting motion or your total displacement, start to finish). R starts at the bottom left and ends at the top right. Think of each of the arrows (A—D) as possible directions.

3. A. * How are B and D related?
   B. How are C and A related?
   C. Give three ways you could make R. *

4. A person walks 15 m west, 10 m north, 25 m east, 6 m south, then another 8 m north.
   A) ΔX_{total} = B) ΔY_{total} = C) Using Xt and Yt, draw the triangle:

   D) Calculate the resultant's magnitude and direction.



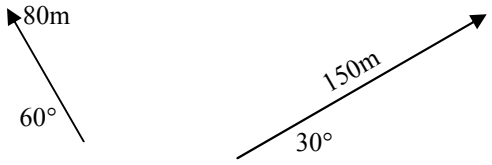
5. An object moves 28 m at 55° and then 16 m at 30°.
   A) On the diagram, resolve vector 1 and 2 into their components. *(Now you have only x's and y's. YEA! And the rest of this problem is like #9, above.)*

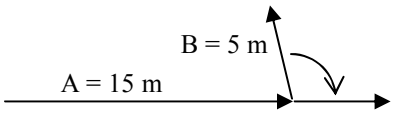
   B) Find X_{total}: C) Find Y_{total}:

   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:

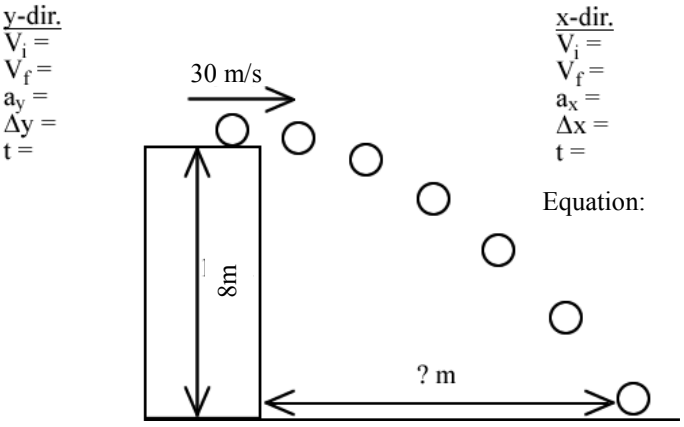
6. Add these vectors together, being sure that all angles start at the +x axis and keeping track of negatives.
   A. At the bottom right, add them graphically (You have two paths. Redraw like "Crazy and Lazy").
   B. Add them together doing the same procedure as above (or like on the graph in class).





7. Vector A = 15 m and Vector B = 5 m. Vector B can swivel, as shown.
   A. What is the largest the resultant could possibly be?
   (*What is the greatest displacement from your starting position*?)
   B. What is the shortest the resultant could possibly be?
   (*What is the shortest displacement from your starting position*?)

8. A cannon shoots its cannon ball from the ground to the ground. The cannon shoots the ball at 68° and 170 m/s. Calculate its range (how far away it lands). (*You should be able to do this, now.)*



9. * An object is launched horizontally from the top of an 8 m tall ledge going 30 m/s.

   A. *Since it is launched horizontally, what is its launch angle?

   B. * In the y-direction solve for the time to the ground.

   C. * In the x-direction find how far away it lands (its range).

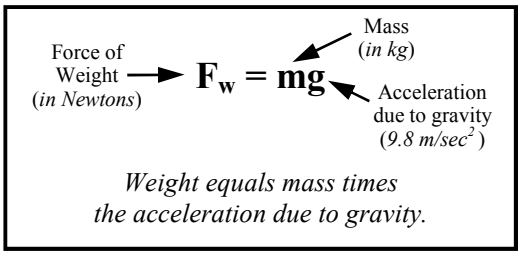
10. Another object is launched horizontally with an initial velocity of 22 m/s from the top of a 1.2 m tall table. How far away does it land?

11. Mass or Weight?

A.	____18 Newtons	D.	___ Does exist in space.
B.	____15 kilograms	E.	___ Same on the moon.
C.	____*Doesn't exist in space.	F.	___ Different on the moon.

12. What is the weight of a 12 kg object?

Mass (in kg) is all of an object's atoms and molecules (its matter). Weight (in N) is gravity's pull on your weight.



1: 3B = 6.3 cm at 150°; −3B = 6.3 cm at 330° (opposite direction).
3A: B = −D or D = −B. 3C: One way is A + D
9A: θ = 0°; 9B: t = 1.28 sec; 9C: Δx = 38.3 m
11C: Weight (you still have your atoms and molecules in space, I hope)