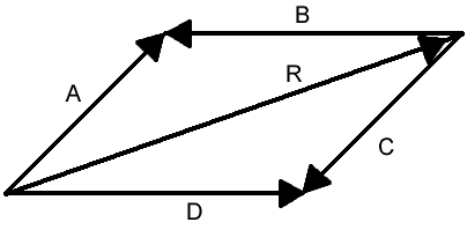
Due Tues., Sept 20

2011 PreAP Two Dimensions 3

1. *B = 2.1 cm at 150°. −3B =

2. If A = 3.5cm at 60°, then −2A =

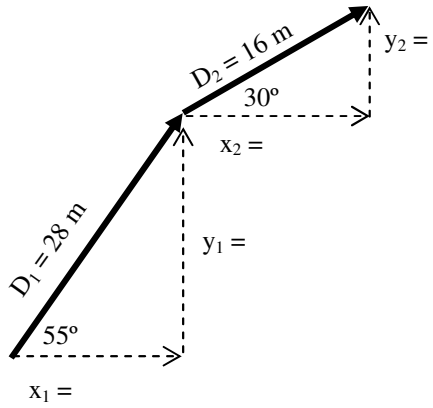


On the parallelogram at the right, R is the resultant (the resulting motion or your total displacement, start to finish). R starts at the bottom left and ends at the top right. Think of each of the arrows (A—D) as possible directions.

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 X_{total} and Y_{total}, draw the triangle.

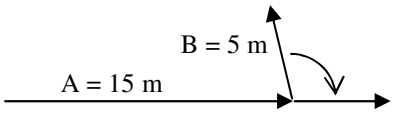
   D) Calculate the resultant's magnitude and direction.



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.



6. 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*?)

7. Vector (has magnitude and direction) or Scalar (only magnitude)?

   A. ____ * Mass
   B. ____ * Acceleration
   C. ____ Pressure
   D. ___ Displacement
   E. ___ Distance
   F. ___ Speed

8. Mass or Weight?

   A. ___ 18 Newtons
   B. ___ 15 kilograms
   C. ___ *Doesn't exist in space.
   D. ____Does exist in space.
   E. ____Same on the moon.
   F. ____Different on the moon.

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

10. What is the mass of a 150 N 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.

Force of Weight (*in Newtons*) → $F_w = mg$ ← Mass (*in kg*); Acceleration due to gravity ($9.8\ m/sec^2$)

Weight equals mass times the acceleration due to gravity.

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
4D) H = 15.6 m; θ = 50.2° 5) R = 43.1 m; θ = 46°
7A) Mass is a scalar because 5 kg to the right makes on sense.
7B) Acceleration is a vector.
8C) Weight (you still have your atoms and molecules in space, I hope)