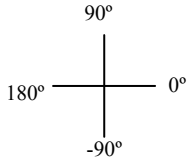
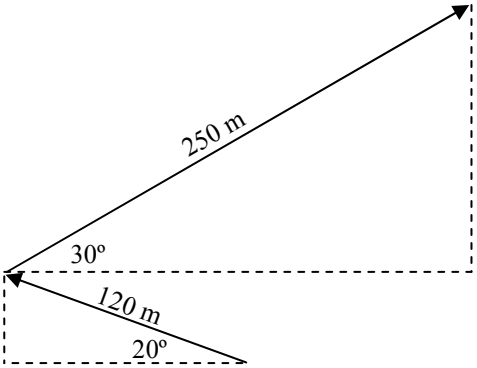
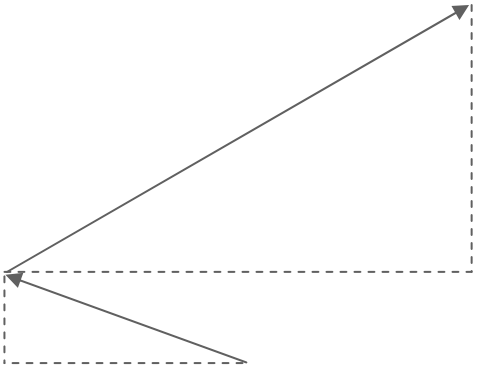
A-Day: Due Thurs., Oct 16 (Assigned: 10/14)
B-Day: Due Fri., Oct 17 (Assigned: 10/15)

2008 Two Dimensions 9—Test Review

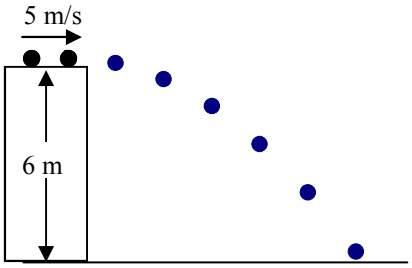


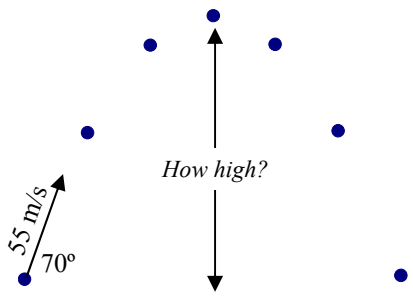
1. Adding Vectors (last time).
   A. What direction do we have to use for the 120 m vector (the diagram at the right might help.)
   B. On the diagram below, find the x and y components of the two vectors.
   C. Then, on the diagram at the right, draw your resultant from the start to finish. Also from your start to finish, draw the big right triangle and solve for R's magnitude and direction.





2. A ball is rolled off of a 6 m tall ledge. The ball is rolling 5 m/s when it rolls off. How far away does it land?
   A. Assuming the ledge is level, what is its initial angle?
   B. What is its Vx?
   C. What is its Vy?
   D. Since it falls off of the ledge, Δy = ____.
   E. What is a_y?
   F. Find the time it takes to fall and then the range. (*Use the information above to help you.*)



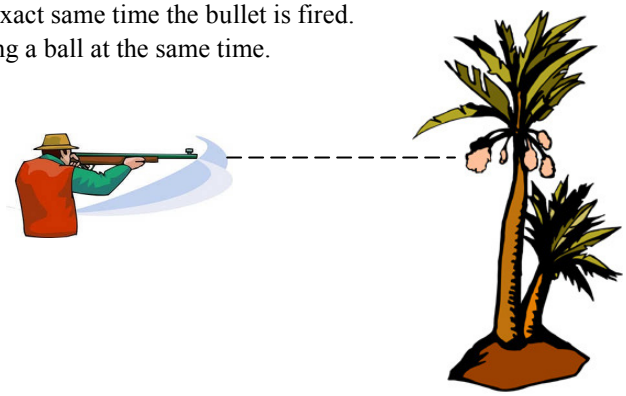


3. A ball is launched 55 m/s at an angle of 70º. How high does it go?
   A. Since this is a y-direction question only, find Vyi. (*Use the small diagram at the right if you need it.*)
   B. Since you want to know "how high" you want to know the top point. What is the Vy_f there?
   C. What variable are you looking for?
   D. Solve for "how high".

Use the "Satellite" notes.

4. How far does an object fall in 1 second?
5. How far does an object have to go horizontally in that 1 second to not hit the earth as it falls?
6. How fast does an object have to be moving to be a satellite?

7. A bullet is fired <u>horizontally</u> from a gun aimed directly at a coconut dropped from a tree 5 meters away. The coconut is at the exact same height as the gun and drops at the exact same time the bullet is fired.
   A. Thinking about my demonstration of throwing a ball and dropping a ball at the same time. What is the initial y-velocity of both the coconut and the bullet?
   B. What is the y-direction acceleration for both the bullet and the coconut?
   C. Will the bullet hit the coconut?
   D. Why or why not?



Let's move on to Forces.
$F_w = mg$ Where F_w is the weight of an object in Newtons (N). m is mass in kilograms (kg) and you already know what g is.

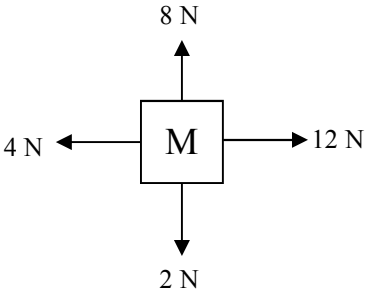
8. Find the weight of a 15 kg object.

9. Calculate the mass of a 220 N object.

10. What is the mass of a 25 kg object?

11. What is the weight of a 2 N object?

We also need to learn what this symbol means: "Σ". It is the "summation" symbol. It means to add up things.
Ex: if $x_1 = 2$; $x_2 = 6$; $x_3 = -4$, then $\Sigma x = x_1 + x_2 + x_3 = 2 + 6 - 4 = 8 - 4 = 4$. It is really that simple.



12. Positives and Negatives have not changed.
    A. Put Fy or Fx next to each force shown.
    B. What is ΣF_x? (*Add together all of the x direction forces, keeping track of positives and negatives.*)

    C. What is ΣF_y?