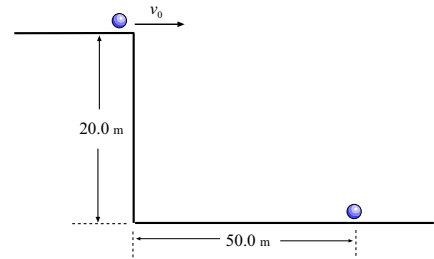# Phys 2010 (NSCC), Fall 2007
Problem Set #3

1. A golf ball is hit off the edge of a cliff (of height 20.0 m) so that its initial velocity is horizontal. When it strikes the ground below it has travelled a horizontal distance of 50.0 m.

   How long was the golf ball in flight? What was the initial speed of the ball?

2. In problem 1 what was the speed of the golf ball when it hit the gound?

3. A football is kicked from ground level with a speed of $24.0 \frac{m}{s}$ at an angle of $50.0°$ up from the horizontal. It flies toward the goal post which is 54.0 m away. The bar (height of the goal) is 3.8 m above the ground.

24.0 m/s 50° 54.0 m 3.8 m

Find the components of the ball's initial velocity.
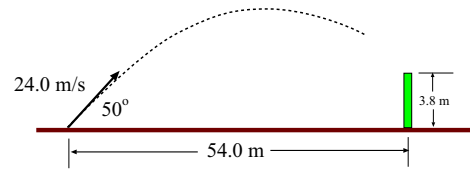
4. For the ball in problem 3, find its coordinates at $t = 2.00$ s.

5. We want to find if the ball eventually clears the goal. At what time t is the ball directly above (or below) the goal. To do this, find the time at which $x = 54.0$ m

6. What is the height of the ball at the time found in problem 5. Did the ball clear the goal?

7. A 2.0 kg mass moves in one dimension; it is acted on by two forces, a 10.0 N force in the $+x$ direction and another force acting in the $-x$ direction. The acceleration of the mass is $a_x = 3.0 \frac{m}{s^2}$.

What is the magnitude of the second force?
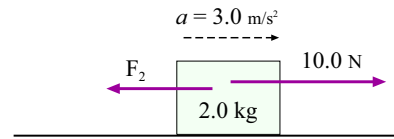
8. A small 5.0 kg mass and a 10.0 kg mass are separated by a distance of 50.0 cm. Find the force of gravitational attraction between the two masses.