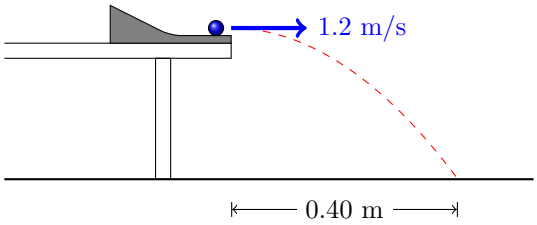
Name: Date: Period:

Post-Marble Lab Problem

1. If you want to find out how far a projectile will go, you usually need to do two calculations. What are those two calculations?

2. In the lab we did last class, you found that the marble exited the ramp at about 1.2 m/s. Let's calculate how high we would need to place the ramp if we wanted the marble to hit 0.40 m from the base of the table.

   (a) Label this diagram and write down knowns and unknowns.



   (b) How much time would the marble be in the air?

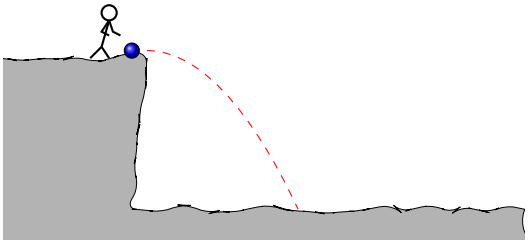
   (c) From what height should the marble be launched?

   (d) What is the x- and y- velocity of the marble just before hitting the ground?

   (e) What is the magnitude and direction of the resultant velocity just before hitting the ground?

3. You kick a soccer ball horizontally off a cliff that is 13 meters tall. The soccer ball lands 11.5 meters away from the base of the cliff.

   (a) Label this diagram and write down knowns and unknowns.



   (b) How much time was the soccer ball in the air?

   (c) What was the initial velocity of the soccer ball?

   (d) What is the x- and y- velocity of the soccer ball just before hitting the ground?

   (e) What is the magnitude and direction of the resultant velocity just before hitting the ground?