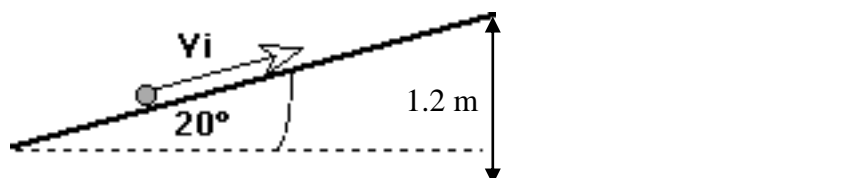
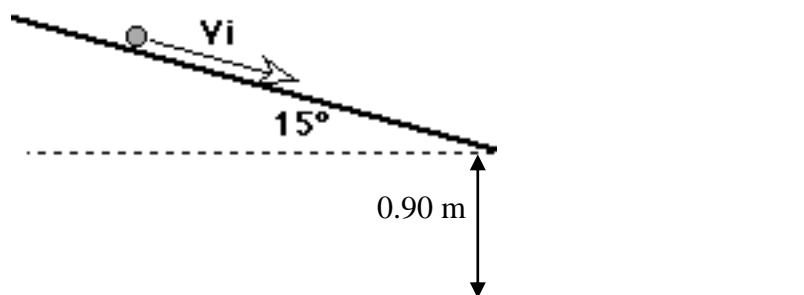


Particle Motion in Two Dimensions Model Worksheet 4: Projectile Motion Problems

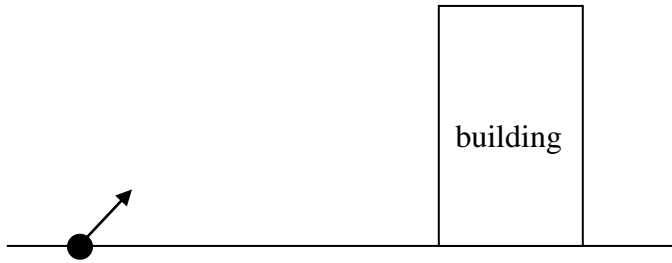
1. A metal sphere is launched with an initial velocity of 1.5 m/s as it leaves the ramp. The end of the ramp is 1.20 m above the floor. Calculate the range of the sphere. (*Range* is the horizontal displacement of the projectile.)



2. Now the ramp is tilted downwards and the sphere leaves the ramp at 1.5 m/s as shown below. The bottom of the ramp is 0.90 m above the floor. Calculate the range of the sphere.



3. A water balloon is launched at a building 24 m away with an initial velocity of 18 m/s at an angle of 50° above the horizontal.
- a. At what height will the balloon strike the building?



- b. If the balloon misses or shoots over the building, how far will the balloon land from its launch location?
- c. The balloon can be launched from less than 24 m away from the building at the same speed and angle and still hit exactly the same height you calculated in part a. Determine this second launch location.