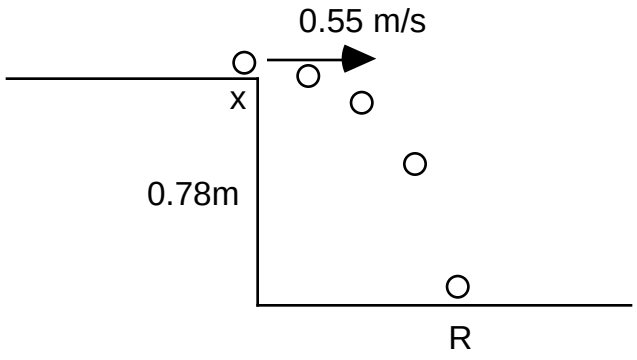
Kinematics 2-D Projectiles : W.S.-18

1) A marble with a velocity of 0.55 m/s, rolls off of a table as shown below. Assume that the initial displacement (point x) is [0.0, 0.0]m at t = 0.0s. Answer the following questions.



a) The initial velocity is [,] m/s.

b) The displacement at time t = 0.25s is [,] m.

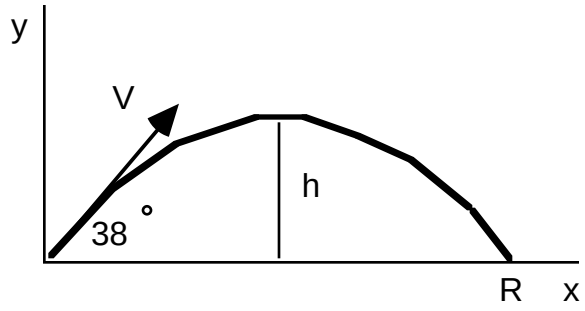
c) The velocity at time t = 0.25s is [,] m/s.

d) The time the marble hits the floor is t = _____ s.

e) The final displacement (point R) is [,] m.

f) The final velocity is [,] m/s.

2) A projectile is fired at an angle of 38° with a speed of 150 m/s. The initial displacement is [0.0,0.0] m. Answer the following questions.



a) The initial velocity is [,] m/s.

b) The maximum height is _____ m. (use $V_f^2 - V_i^2 = 2ad$)

c) Find the time it takes for the projectile to reach the maximum height h. t = _____ s.

d) The range R (maximum horizontal displacement) is _____ m.

e) Find the velocity at the point R. V = [,] m/s.

Answers: 1)a) [0.55,0.0] m/s, b) [0.14,-0.31] m, c) [0.55, -2.5] m/s, d) 0.40s, e) [0.22, -0.78] m, f) [0.55,-3.9] m/s, 2)a) [120,92] m/s, b) 440 m, c) 9.4 s, d) 2200 m, e) [120,-92] m/s.