Name:_____

Projectile Motion: Homework (2)

Conceptual Questions

1. A tennis ball is launched at an angle of 25° above the horizontal at a speed of 14 m/s. The ball then returns to level ground. What changes would maximize the amount of time the ball would remain in the air?

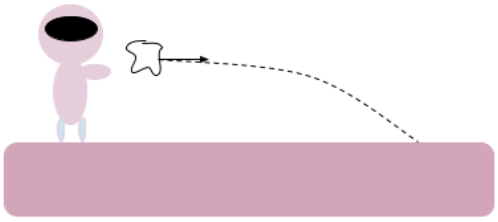
   A) Increase the angle and Decrease the initial speed
   B) Increase the angle and Increase the initial speed
   C) Decrease the angle and Increase the initial speed
   D) Decrease the angle and Decrease the initial speed

2. Two spheres, A and B, are simultaneously projected horizontally from the top of a tower. Sphere A is launched at 40 m/s and Sphere B is launched at 20 m/s. Which statements would be the outcome of both Spheres

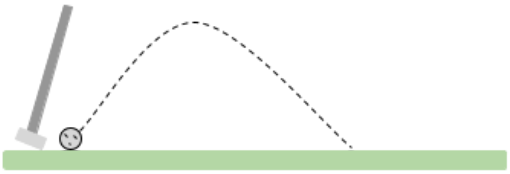
   A) Sphere A hits the ground before Sphere B, and Sphere A lands twice as far as Sphere B from the base of the tower
   B) Both Spheres hit the ground at the same time, but Sphere B lands twice as far as Sphere A from the base of the tower
   C) Both Spheres hit the ground at the same time, and land at the same distance from the base of the tower
   D) Both Spheres hit the ground at the same time, and Sphere A lands twice as far as Sphere B from the base of the tower

Questions

1. An astronaut on the planet Zircon tosses a rock horizontally with a speed of 6.95 m/s. The rock falls through a vertical distance of 1.4 meters and lands a horizontal distance of 8.75 meters from the astronaut. What is the acceleration of gravity on Zircon?



2. A golf ball is struck with a five iron on ground level. It lands 92.2m away 4.3 seconds later. What was the angle and magnitude of the initial velocity?

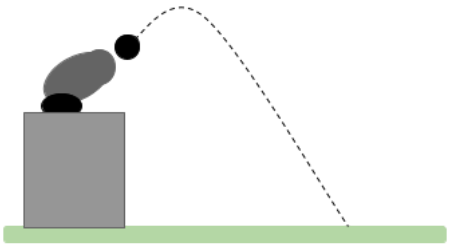


3. When the dried-up seed pod of a scotch broom plant bursts open, it shoots out a seed with an initial velocity of 2.62 m/s at an angle of 60.5 degrees above the horizontal.

(A) How long does it take for the seed to land?(Assuming it gets shot out from ground level)

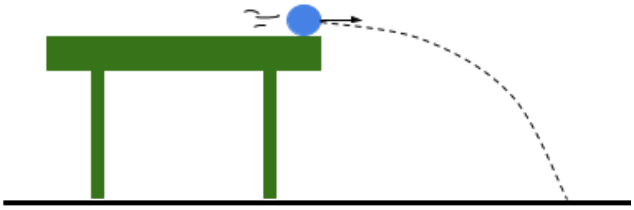
(B) What horizontal distance does it cover during its flight?

4. A cannon ball is shot at 10 m/s at an angle of 30 degrees. It takes 2.2 seconds for the ball to reach the ground.
(A) How high is the cliff that the cannonball is shot from?
(B) How far from the base of the cliff does the ball land?



5. If the same cannon (from question #4) is shot from the same height and same angle and the cannonball lands on another cliff that is lower in 1.7seconds. How high is the lower cliff from the ground?

6. A ball rolls off a table and falls .75m to the floor, landing with a speed of 4 m/s. (A) What is the acceleration of the ball just before it strikes the ground? (B) What was the initial speed of the ball? (C) What initial speed must the ball have if it is to land with a speed of 5 m/s?



7. A ball is thrown horizontally from the roof of a building 55 m tall with a speed of 3.8 m/s.

a. How much later does it hit the ground?

b. How far from the building will it land?

c. What is the speed of the ball just before it hits the ground?