Name _____ Date _____ Period _____

Projectiles - Problem Set 1

Answer the following questions on a separate sheet of paper. Show all work and circle your answer.

1. A projectile is fired with a horizontal velocity of 330. m/s from the top of a cliff 80.0 m high.
    a. How long will it take to hit the ground?
    b. How far from the foot of the cliff will it hit?
    c. With what velocity will it strike the ground?
2. A stunt flier is moving at 15.0 m/s parallel to the ground 100. m below. What must the horizontal displacement along the ground be if he drops a water balloon and it is to hit the bull's eye below?
3. A marble with a speed of 20.0 m/s rolls off the edge of a table 80.0 cm high.
    a. How long does it take to drop to the floor?
    b. How far, horizontally, from the table edge does the marble strike?
4. A body projected upward from the level ground at an angle of 50.0^{o} with the horizontal has an initial speed of 40 m/s.
    a. How long will it be before it hits the ground?
    b. How far from the starting point will it strike?
    c. At what angle with the horizontal will it strike?
5. A hose lying on the ground shoots a stream of water upward at an angle of 40^{o} to the horizontal. The speed of the water is 20.0 m/s as it leaves the hose. How high up will it strike a wall which is 8.00 m away?
6. A ball is thrown upward at an angle of 30^{o} to the horizontal and lands on the top edge of a building that is 20 m away. The top edge is 5.00 m above the throwing point. How fast was the ball thrown?
7. A baseball is thrown with an initial velocity of 100. m/s at an angle of 30o above the horizontal. How far from the throwing point will the baseball attain its original level?
8. A flower pot is projected upward at an angle of 30^{o} with the horizontal from the top of a building 170 m high. Its initial velocity is 40.0 m/s.
    a. How long will it take before striking the ground and breaking into a million pieces?
    b. How far from the foot of the building will the daisies land?
    c. At what angle with the horizontal will the dirt hit?
9. A plane flies 300 m overhead and drops a water balloon 37.0^{o} to the horizontal. If the initial velocity of the plane is 80.0 m/s, where will land downrange from the dropping point?
10. General Custer orders the firing of cannons. One of the cannons is aimed 53.0o from the horizontal, has a muzzle velocity of 100. m/s and is located at the edge of a cliff that is 20 m above the target. Answer the following:
    a. Time in flight?
    b. Downrange distance?
    c. Maximum height the cannon ball rises above the cliff?
    d. Time when the cannon ball is 40 m above the cliff top?
    e. Impact velocity?