Physics 513 Homework Assignment # 11

Due Date: _____
Horizontal Motion
Read the textbook pp. 155-157
Answer the following questions.

Base your answers to questions 1-9 on the following information:

A ball of mass *m* is thrown horizontally with speed *v* from a height *h* above level ground. (neglect air resistance).

1. If the height above the ground from which the ball is thrown was increased, the initial vertical velocity of the ball would
   Increase, decrease or remain the same?

2. If the height above the ground from which the ball is thrown was increased, the time of flight of the ball would
   Increase, decrease or remain the same?

3. If the initial speed of the ball was increased, the time of flight of the ball would
   Increase, decrease, remain the same?

4. If the initial speed of the ball was increased, the horizontal distance traveled by the ball would
   Increase, decrease, remain the same?

5. If the initial speed of the ball was increased, the vertical acceleration of the ball would increase, decrease, remains the same?

6. If the ball was replaced with a ball of mass *2m*, the horizontal distance traveled by the ball would increase, decrease, remain the same?

7. If the ball was replaced with a ball of mass *2m*, the vertical distance would increase, decrease, remain the same?

8. As time elapses before the ball strikes the ground, the horizontal velocity of the ball

increase, decreases, remains the same?

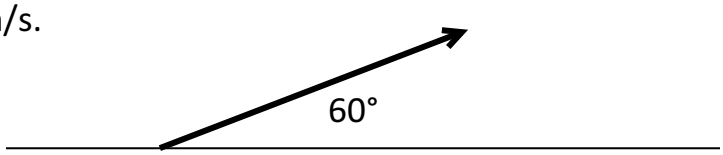
9. Compared to the total horizontal distance traveled by the ball in the absence of air resistance, the total horizontal distance traveled by the ball with air resistance is shorter, longer, the same?

10. A rock is thrown from the top of a cliff at 12 m/s. Determine the time required for the rock to fall 45 meters vertically.

Physics 513 Homework Assignment # 12

Due Date:_____
Objects Launched at an Angle
Read pp 158-161
Answer the following questions. Show all work when possible. Neglect Air Resistance!!

1. A projectile is launched at an angle of 60° to the horizontal at an initial speed of 10 m/s.



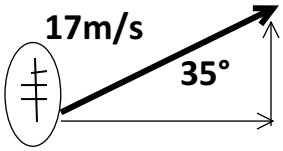
a) What is the magnitude of the vertical component of its initial speed?
b) What is the magnitude of the horizontal component of its initial speed?
c) How long will it take to reach maximum height?
d) How far will the object land from where it was launched?

2. A golf ball is hit off the green with an initial horizontal velocity of 14 m/s and an initial vertical velocity of 13 m/s.

a) Calculate the initial velocity of the golf ball.
b) At what angle was the ball launched?
c) What is the speed of the ball at maximum height?
d) What is the acceleration at maximum height?

e) With what velocity will the golf ball strike the ground?

3. A place kicker positions the football on a tee and kicks it with a velocity of 17 m/s at an angle of 35˚from the horizontal. Neglecting air resistance, how far down field will the ball land?



Physics 513 Homework Assignment # 13

Due Date:_____
Circular Motion
Read pp. 163-166
Answer the following questions and show all work when possible.

On p 166
Practice Problems #14-16
On p 172
49-51

Physics 513 Homework Assignment # 14

Due Date:_____
Universal Gravitation
Read pp. 181-192
Answer the following questions.

On p 188 # 5-7
On p 195 # 34-36