Physics 11 U1 Worksheet 5 – Projectile Motion

Name: _____   Date: _____

1. A ball is dropped off an 11 m cliff. How long will it take to hit the ground?

2. What did Galileo demonstrate from the top of the Leaning Tower of Pisa?

3. What were we trying to demonstrate when we shot a potato horizontally off the gym roof and at the same instant dropped another potato?

4. A car traveling at 25 m/s drives off a 73 m high cliff. How far away from the cliff does the car land?
   - find drop time first
   - then calculate horizontal distance

5. Imagine a ball is thrown straight up and is later caught by the same hand.

a) What is the direction of the acceleration due to gravity when a ball is travelling up?
_____

b) What is the direction of the acceleration due to gravity when a ball is travelling down/
_____

c) What is 1 g in meters per second squared? _____

d) What is the acceleration of the ball at the very top of its flight? _____

e) What is the velocity of the ball at the very top of its flight?
_____

6. A ball is thrown straight up at 16.8 m/s. Find the maximum height of the ball.

7. A car drives off a 50 m cliff at 20.0 m/s.
a) How long until it hits the ground?

b) What is its horizontal speed when it hits the ground?

c) How far from the base of the cliff does the car hit?

d) What is the vertical velocity when it hits the ground?

8. a) A football is kicked at 21 m/s at an angle of 53 degrees from the horizontal. Find how far away it lands.

- find V_x and V_y first

- then use V_y and calculate flight time

- then use flight time and V_x to calculate d

9. An arrow is shot at 58 m/s at an angle of 67 degrees above the horizontal.

a) Find the maximum height of the arrow.

b) Find the range of the arrow (←--------→).

10. Challenge problem.
A projectile is shot at 44 m/s 30 degrees above the horizon. A very tall wall is 68 m way. At what height does the projectile strike the wall?