Name: Period:

Horizontally Launched Projectiles 3

**g = 9.81m/s2**

1. In a game of ping pong, the ball rolls across the table top at 15m/s then plunges off the top. It takes 4.3 seconds to reach the ground. Ignoring air resistance, what is the horizontal distance the ball will travel when it hits the ground? (The ping pong table is on the roof of a building in case you were wondering.)

2. An Air Soft™ pellet is shot at 30m/s horizontally off a hill. It strikes a target 15m away (horizontal distance). How far below the gun is the target?

3. A bird, flying above the ground spots a target for, um, “target practice”. Yeah, let’s call it “target practice”. A beautiful Mercedes that just came from the car wash. The bird is 20m above the ground and traveling at 5m/s. How far in advance must the bird release its, um, “projectile”?

4. A cloud is drifting across the map at 10m/s. The cloud deck is 500m above the ground. How far beyond the release point will the drop hit the ground?

5. A football player does a stunt shot with the ball. He throws the ball off the building to a receiver 15m below the top of the building. The receiver catches the ball 30m away. What is the velocity that the ball is thrown?

6. Same situation as above. If he leaves from a spot directly under the thrower at exactly the same time that the ball is thrown, how fast must the receiver run in order to catch the ball?

7. A rider in a balloon throws a water balloon from the balloon basket backwards to hit a target directly under him at the time of release. The splat is seen 3.5 seconds later when the balloon is 50m away from the target. In order to hit the intended target, how fast must he throw the balloon backwards?