Name: Period:

Horizontally Launched Projectiles 1

**g = 9.81m/s2**

1) A car drives straight off the edge of a cliff that is 54 m high. The police at the scene of the accident note that the point of impact is 130 m from the edge of the cliff. How fast was the car traveling when it left the cliff?

2) A tiger leaps horizontally from a 7.5 m high rock with a speed of 4.5 m/s. How far from the base of the cliff will she land?

3) A ball thrown at 22.2 m/s from the roof of a building lands 36.0 m from the base of the building. How high is the building?

4) A hot air balloon is rising straight up with a speed of 3.0 m/s. A ballast bag is released when it is 9.5 m above the ground. How much time elapses before the bag strikes the ground?

5) A horizontal rifle is fired at a bull’s eye. The muzzle speed of the rifle is 670 m/s the barrel is pointed directly at the center of the bull’s eye, but the bullet strikes the target 0.025m below the center. What is the horizontal distance between the end of the rifle and the bull’s eye?

6) A rescue plane wishes to drop supplies to isolated mountain climbers on a rocky ridge 235 m below. If the plane is traveling at 69.4 m/s,

a) how much time will the supplies take to reach the ground?

b) how far in advance( horizontally) of the climbers should the supplies be dropped?

c) how fast is the package moving horizontally and vertically when it hits the ground?

Bonus: What is the angle and speed at which the package hits the ground?

Name: Period:

Horizontally Launched Projectiles 1

**g = 9.81m/s2**

1) A car drives straight off the edge of a cliff that is 54 m high. The police at the scene of the accident note that the point of impact is 150 m from the edge of the cliff. How fast was the car traveling when it left the cliff?

2) A tiger leaps horizontally from a 7.5 m high rock with a speed of 4.9 m/s. How far from the base of the cliff will she land?

3) A ball thrown at 22.2 m/s from the roof of a building lands 39.0 m from the base of the building. How high is the building?

4) A hot air balloon is rising straight up with a speed of 3.0 m/s. A ballast bag is released when it is 19.5 m above the ground. How much time elapses before the bag strikes the ground?

5) A horizontal rifle is fired at a bull’s eye. The muzzle speed of the rifle is 620 m/s the barrel is pointed directly at the center of the bull’s eye, but the bullet strikes the target 0.025m below the center. What is the horizontal distance between the end of the rifle and the bull’s eye?

6) A rescue plane wishes to drop supplies to isolated mountain climbers on a rocky ridge 235 m below. If the plane is traveling at 70.4 m/s,

a) how much time will the supplies take to reach the ground?

b) how far in advance( horizontally) of the climbers should the supplies be dropped?

c) how fast is the package moving horizontally and vertically when it hits the ground?

Bonus: What is the angle and speed at which the package hits the ground?