PROJECTILE MOTION

DIRECTIONS: For each of the following problems, write your answer in the space provided at the right.

1. Sam Dupher hits a golf ball horizontally off a 24.0 m high cliff with a speed of 40.0 m/sec. How far from the base of the cliff will the ball strike the ground?

2. A physics student tests the theory of projectile motion by leaping off a 225 m tall building. She calculates that a safety net should be placed 94.7 m from the base of the building. If she jumps from the building with a horizontal speed of 12.5 m/sec, will she hit the net?

3. In problem #2, with what speed will the student strike the safety net (or the ground)?

4. Varnell has found an unusual way to measure the height of the school building. He throws a baseball with a mass of 42.8 g from the top of the building with a horizontal velocity of 15.8 m/sec. The ball lands 71.13 m from the base of the building. Calculate the height of the school building.

5. Mean Melvin throws a monkey wrench with a horizontal speed of 4.8 m/sec out of the window of his eighth floor apartment, 28.7 m above street level. If the cat he was trying to hit runs 12.0 m from the building when the wrench strikes, will the cat be hit?

6. Daredevil Dora hopes to ride her motorcycle off the top of Grogan's Cliff and over the Alligator River at the base of the cliff. The cliff is 12.5 m high and the river is 24.31 m wide at the base of the cliff. At what speed will Dora have to drive her bike off the cliff in order to clear the river?

7. Evil Kinevil will attempt to jump across HellsGate canyon on a jet powered motorcruiter. The canyon is 220 m across, and the landing area and safety net is located at a point 35 m below his take off point. (See the diagram below.) Evil's scooter can reach an horizontal take off speed of 81 m/s. Does he make it?