Gravity - Long Version

1.) A cliff diver is on a 30.0 m high cliff. With what velocity should they leave the cliff, (assume the person jumps out horizontally) in order to miss 8.0 m of rock coming from the cliff's base?

2.) A mountain goat butts you off a 50.0 m high cliff with a horizontal velocity of 3.0 m/s. How far from the base will you strike the ground?

3.) A golfer strikes a ball giving it a velocity of 35m/s at 35°. If the course is completely flat how far will the ball travel before bouncing?

4.) Use the information in #3 to find the maximum height to which the ball will rise.

5.) A flying squirrel leaps off a building of height 30.0 m. If it left the building with a horizontal velocity of 1.0 m/s will it land safely on some garbage bags 5.0 m from the base of the building?

6.) What will be the **vertical** velocity of the cat above at the exact moment of impact?

7.) A baseball is hit at 30.0m/s on an angle of 40°, what is its maximum height?

8.) A stunt person jumps at 5.0 m/s horizontally, if she just lands on an airbag 24.2 m from the base of a building how high was the building?

9.) What is the velocity of the baseball in #7 3.0 s after leaving the bat?

10.) What is the velocity of the baseball in #7 when it reaches a height of 10 m?

Answers - 1.) Vox = 3.23 m/s   2.) dx = 9.58 m   3.) dx = 117 m   4.) dy = 20.4 m   5.) no, dx = 2.47 m

6.) Vfy = – 24.2 m/s   7.) 19.0 m   8.) 115 m   9.) 25.1 m/s at 23.7° down from horizontal

10.) Vf = 26.6 m/s at 30° up and down from horizontal