Projectile Motion Problems- Shot Horizontally

Name: _____Hour:___

___ points, due _____ **Don't forget to use the GUE which now includes a sketch and splitting your givens into horizontal and vertical givens.**

Problem 1

You throw a ball horizontally from the top of a building at a speed of 16.5 m/s and it lands 37.2 meters from the base of the building. Find the height of the building. ***(ans. appprox.-25 m, The negative just tells you it is falling downward.)***

Sketch **Given:** horizontal vertical

Unknown:
Equation:

Problem 2

A cannon is fired horizontally from the top of the cliff. The shell leaves the cannon barrel with a velocity of 125 m/sec and hits the ground 6 seconds later. *(You can just put the time given under the word given.)*

Sketch **Given:** horizontal vertical

a) What is the vertical distance from the bottom of the cliff to the cannon barrel? ***(ans. -176.4 m)***

U:

E:

b) How far away from the bottom of the cliff (horizontally) will the shell land? ***(ans. 750 m)***

U:

E:

Problem 3 You find a machine that shoots small metal spheres. You shoot it horizontally off the table which 1.1 meters high. You measure that the metal sphere lands 2.4 meters from the base of the table (Δx). Using this information, calculate the horizontal velocity (that's v_x) **in miles per hour** of the ball as it left the mini launcher. ***(ans. 11.4 mph)***

Sketch **Given:** horizontal vertical

Problem 4 Sam is playing darts, and he needs a double 19 to win. He throws his last dart horizontally at a speed of 11.7 m/s. The dart hits the board 0.22 m below the height from which it was thrown (that's Δy). He hits a double 19 and is ecstatic! The other team says he stepped over the line as he was throwing the dart. The regulation distance players are supposed to stand from the dart board is 2.37 m. How far away was Sam standing when he threw the dart? Did he win the game? ***(2.5 m, yes)***

Sketch **Given:** horizontal vertical

Problem 5 A pilot needs to drop a box of supplies to shipwrecked victims in the ocean below. If he is traveling with a horizontal velocity of 125 **km/hour** at a height of 1001 meters, how far (Δx) before he is over the island should he drop the box of supplies? Neglect air resistance of course. **Make sure to convert your speed**. ***(496 m)***

Sketch **Given:** horizontal vertical