

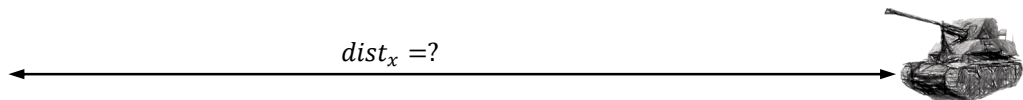
Name: _____

Date: _____

MCHS Honors Physics 2014-2015

Projectile Motion 2

- 1) A military bomber is cruising along at a height of 1200m and a speed of 430 km/hr towards its target. How far away from the target must the pilot be when he drops a bomb, if he is hoping for a direct hit.



- 2) Hugo Zacchini, human cannonball circus performer, is launched out a cannon at a velocity of 26.5 m/s and an angle of 45° from horizontal. The net, which will catch him, needs to be placed how far away from the cannon?
- a. Break his initial velocity into an x-component and y-component.

$$v_x = \text{_____} \text{ m/s} \quad \text{and} \quad v_y = \text{_____} \text{ m/s}$$

- b. Use $v = v_y + at$ to calculate how long it takes for $v = 0$ (this is how long it takes to reach the peak of his flight). Remember that a is negative!

$$t_{\text{peak}} = \text{_____} \text{ s}$$

- c. Remember that it takes him the same amount of time to rise to the peak of his flight (the answer from part b) as it does to come back down to earth. So just double the answer from part b to get his total flight time.

$$t_{\text{total}} = \text{_____} \text{ s}$$

- d. Use $\text{dist}_x = v_x t$ (also known as "*distance = rate \times time*") to calculate how far in the x-direction Hugo travels before he hits the ground, so you know where to put the net.

$$\text{dist}_x = \text{_____} \text{ m}$$