Physics 200 (Stapleton)   Names: _____
Projectile Launcher Contest

Directions: For each of the problems below, use your trajectory spreadsheet to determine the best launch angle and initial velocity for your projectile. Enter those values below. Then use your graph of launcher settings vs. initial velocity to determine your launcher setting for each shot. In tomorrow's contest, you will get two shots at each target, and only your best shot for each target will count. Your contest score will be based on your average percent error (relative to the horizontal target distance). Shots that hit obstacles will be given a score based on the obstacle's distance from the target.

Your grade for this project will be determined by: 1) the correctness of your solutions to the problems below, 2) your submission of a reasonable graph of initial velocity vs. launcher setting (**attach your graph to this sheet**), and 3) your participation in the contest. *You may receive extra points for winning the contest, but poor performance will not lower your grade.

Problems:

*Obstacle positions are described in terms of their horizontal distance from the launch point and their vertical distance above the floor.

1.   Release height = 01.63m   Target Distance = 5m   Target Height = 0.025m
        Obstacle 1 Position: 2m from the launch point, 1.18m-2m from the floor
        Ceiling Height = 2.57m

        Θ = _____ V_0 = _____   Launcher Setting = _____

2.   Release height = 0.55m   Target Distance = 1m   Target Height = 0.025m
        Obstacle 1 Position: 0.4m from the launch point, 1.5-1.8m from the floor
        Obstacle 2 Position: 0.65m from the launch point, 0-0.86m from the floor
        Ceiling Height = 2.57m

        Θ = _____ V_0 = _____   Launcher Setting = _____

3.   Release height = 0.55m   Target Distance = 8m   Target Height = 0.025m
        Obstacle 1 Position: 2m from the launch point, 0-0.86m from the floor
        Obstacle 2 Position: 4m from the launch point, 1.38m-2.2m from the floor
        Ceiling Height = 2.57m

        Θ = _____ V_0 = _____   Launcher Setting = _____

Staple your graph to this sheet