

Name _____ Hour _____

The Marble Lab

20 pts. DUE _____

Purpose: Roll a marble down a ramp and hit the target – a target in the room and then a target in the commons off 2nd floor ☺
(5 pts. for this sheet, 5 pts. for hitting the target in the room, 10 pts. for hitting the target in the commons)

*****Our group has ramp # _____. You will need to use the same ramp for both days of this lab!*****

Data:

Part 1: “Calculate v_x ”

a) Find v_x for your ramp. Do ten trials from the same height. Do this carefully!

Height (Δy) in the room for part 1 = _____ m

Δx

Trial 1	_____	Trial 6	_____
Trial 2	_____	Trial 7	_____
Trial 3	_____	Trial 8	_____
Trial 4	_____	Trial 9	_____
Trial 5	_____	Trial 10	_____

average Δx = _____ m

b) Calculate v_x for your ramp.

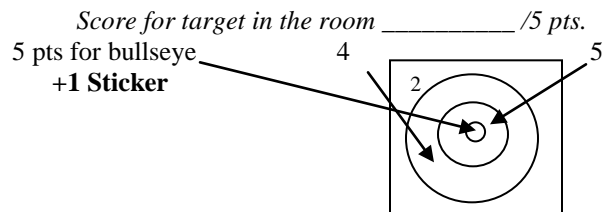
Part 2: “Hit the target in the room”

a) Select a new starting position for your ramp in our classroom and clear it with Mrs. B.
height (Δy) in the room for part 2= _____ m

b) Calculate where it is going to land using what you learned in the part 1. Show your calculations below.

****You may not try this first!** You are to do this all mathematically, place your target carefully, and then call Mrs. B. over when you are ready to test it. You get one try.

c) Call Mrs. B. over to watch. You get one try.



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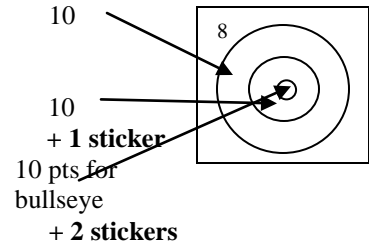
Part 3: "Hit the target in the commons" (Use the SAME RAMP! I had ramp # _____)

- a) Select a new starting position for the marble ramp in the commons! Yes, off of 2nd floor. . .
Our height for part 3: _____m
- b) Calculate where it is going to land using what you learned. Show your calculations below.
****You may not try this first!** You are to do this all mathematically, place your target carefully, and then call Mrs. B. over when you are ready to test it.

c) Call Mrs. B. over to watch.

Score for target in the commons _____ / 10 pts.

1) Why can we use the **constant velocity equation** when solving in the x direction? (1 pt)



2) Explain in words and the relevant equations how you can calculate where to put the target when you only know the height and v_x . (1 pt)

3) Let's say you were going to take your ramp to the roof of Eastview and roll the marble off trying to hit the target. Calculate how far away from the base of the school you would need to place your target. Let's assume Eastview is 3 stories tall and that each story is 10 feet high. (**1 in = 2.54 cm**) (3 pts)