

8. Find the mean (average value) and standard deviation of your range measurements. Show your work on your calculation paper. (Refer to the appendix for average and standard deviation calculations if necessary)

$$x = \text{_____} \pm \text{_____} \text{ m}$$

9. Find the mean (average value) and standard deviation of your initial velocity measurements. Show your work on your calculation paper.

$$v_0 = \text{_____} \pm \text{_____} \text{ m/s}$$

10. Repeat Step 4 through Step 9 for the 2nd and 3rd detents (medium and long range)

Medium Range Data (15 points)

Trial	x (m) (landing position)	v_0 (m/s) (initial velocity)
1		
2		
3		
4		

$$x = \text{_____} \pm \text{_____} \text{ m}$$

$$v_0 = \text{_____} \pm \text{_____} \text{ m/s}$$

Long Range Data (15 points)

Trial	x (m) (landing position)	v_0 (m/s) (initial velocity)
1		
2		
3		
4		

$$x = \text{_____} \pm \text{_____} \text{ m}$$

$$v_0 = \text{_____} \pm \text{_____} \text{ m/s}$$

Name: _____ Section: _____ Date: _____

Extended Datasheet:
Projectile Motion Part 1

11. If a projectile has twice the mass but the same initial velocity, what effect would this have on its the horizontal range of the projectile? Ignore air resistance. (5 points)
12. When an archer fires an arrow at a target, should they aim directly at the bullseye? If not, where should they aim? Discuss whether your answer depends on the distance between the archer and the target. (5 points)
13. Let up be the positive y-direction and down be the negative y-direction.
- a) Is the acceleration of a projectile fired vertically upwards positive or negative or zero? Or does it vary over the trajectory? Explain your answer. (5 points)
- b) Is the acceleration of a projectile fired vertically downwards positive or negative or zero? Or does it vary over the trajectory? Explain your answer. (5 points)
- c) Is the velocity of a projectile fired vertically upwards positive or negative or zero? Or does it vary over the trajectory? Explain your answer. (5 points)
- d) Is the velocity of a projectile fired vertically downwards positive or negative or zero? Or does it vary over the trajectory? Explain your answer. (5 points)

