

# The Grand Prize Lab...

Your Name: \_\_\_\_\_

Your Group Name: \_\_\_\_\_

Other Group members: \_\_\_\_\_



## DUE MONDAY In Class!

PCA/CFA Physics 2 Lab- Projectiles, Energy (of Rubber bands)

1. Check out the spring constant of your Rubber band...
  - a. Stretch your band until it just begins to stretch. Write down that length. Upstretched Length: \_\_\_\_\_
  - b. Stretch your band 1 cm and release it... How far does it travel? Stretch 1cm, Distance: \_\_\_\_\_
  - c. Measure the height you release the band from: \_\_\_\_\_ this must remain constant... WHY? \_\_\_\_\_

- d. Stretch and release the band again and make a chart  
Do 3 different stretches, but do 2 trials for each one. You will be doing the Velocity later.

Trial	Stretch	Distance	Initial Velocity
1			
2			
1			
2			
1			
2			

- e. Assigned distances... \_\_\_\_\_ and \_\_\_\_\_  
BE CAREFUL to adjust for the height of the bucket!  
How far should you stretch the bands so you will hit the buckets? (You only get 1 attempt) If you miss you will be assigned new distances... The team that hits both buckets on their first time will be our grand prize winners. If no team wins on the first round, then the team with the most after the second or third round will win.
- f. Graph the **Stretch vs Distance** graph Which is your independent variable- (What you change)? (x), \_\_\_\_\_ and your dependent variable (What happens due to those changes) (y) \_\_\_\_\_.



What Kind of relationship is this- Linear, parabolic, other?.

g. How this works...  $d_f =$  \_\_\_\_\_

h. If the motion in the vertical (height) is independent of the range, then the time of flight can be determined from **Height =  $5 t_f^2$**  and distance on the floor **(range) =  $V_i t_f$**

**Solve for  $T_f$  from the first equation, then plug into the 2<sup>nd</sup> equation and solve for  $v_i$ . Plug those answers into your Chart in part D.**

Check Out your understanding here... <http://ezyang.com/projectilelab/>

**Try 5 randomly generated problems and get within 2% error. Copy and paste the error amounts and question into a word document and print it out. THIS IS PART OF THIS LAB!**