

<u>Purpose</u>: Enhance data collecting and graphing skills while investigating how the height from which three types of objects are dropped affects their bounce heights.

Hypothesis:

Part 1: Gathering Data

All data will be recorded in your data tables!

- 1. Look through your three data tables.
- 2. Decide which order the three objects will be tested, the name of each ball type is at the top of each data table

Quick Check: How many Trials will you be doing for each drop height?

- 3. Hold the meter stick straight up and align the object to the height of the first drop.
 All of the height measurements will be taken from the <u>bottom</u> of the object
- 4. Release the object and measure the maximum height of the first bounce.
- 5. RECORD this height in the appropriate area in your data table.
- 6. Repeat the test at this height with this object two more times.
- 7. In the Total column, total up trials 1, 2, 3 by adding them together **Average = (Trial 1 + Trial 2 + Trial 3) ÷ 3
- Find the average of the three bounces by dividing your total by 3 and record in the data table.
 **ROUND the averages

Quick Tip: Put a star above the "Average column" in each data table

- 9. Repeat steps #3 #6 for each height listed for that object on the data table.
- 10. Repeat steps #3 #7 for the remaining two objects.



Item #1: Golf Ball

	Trial #1	Trial #2	Trial #3	Total	Average
10cm					
20cm					
30cm					
40cm					
50cm					
60cm					
70cm					
80cm					
90cm					
100cm					

Item #2: Bouncy Ball

	Trial #1	Trial #2	Trial #3	Total	Average
10cm					
20cm					
30cm					
40cm					
50cm					
60cm					
70cm					
80cm					
90cm					
100cm					

Item #3: Tennis Ball

	Trial #1	Trial #2	Trial #3	Total	Average
10cm					
20cm					
30cm					
40cm					
50cm					
60cm					
70cm					
80cm					
90cm					
100cm					

Part 2: Graphing

Remember your graphing guidelines!!!

- 11. Make a Line graph to represent the data from each of the three objects
- 12. Graph the <u>AVERAGES</u> of each data table ONLY!!!!!
- 13. 1 graph with 3 lines -1 for each ball type
- 14. Use the ENTIRE sheet of graph paper!!
- 15. Remember to use 3 different colors (1 for each line)
- 16. Make a key
- 17. Put a descriptive title on your graph
- 18. Label X-axis & Y-axis
- 19. Staple your graphs to this paper

Part 3: Analysis Questions

Answer the following questions using *complete* sentences. Explain your thoughts clearly!

- 1. Why do we bother to graph data when we had perfectly good data tables to look at?
- 2. What was the independent variable in this lab?
- 3. What was the dependent variable in this lab?
- 4. What were the three controls in this lab experiment?
- 5. Why did you conduct three experimental trials at each height? Is this important? Explain.
- 6. Which of the objects tested had the greatest bounce height at 10 cm?
- 7. Which of the objects tested had the greatest bounce height at 100cm?
- 8. Describe the shape of each line graph. Did you expect this result? Explain.

Conclusion:

After you explore your problem or topic and form a hypothesis, you conduct an experiment to see whether your hypothesis holds true. Typically, you want to conduct multiple trials of your experiment. This point means that you either go through the experimental procedure several times, or you conduct your tests on multiple subjects at once. Describe what you learned in this lab, including the purpose for doing this activity. Revisit and analyze your hypothesis. Also think about the variables, controls, trials, experimental procedures, scientific method, etc... **Must be at least a paragraph long!**