

DENSITY OF Unknown LAB

Fifteen plastic cylinders are provided for this lab. Your goal is to determine the density of each cylinder through the graphing method used for the penny density lab. The cylinders are numbered and must be returned to their stands when you conclude your measuring.

AVAILABLE MATERIALS

- Set of density cylinders
- 100-mL graduated cylinder
- water
- electronic balance
- ruler

PROCEDURE

Design a procedure to determine the density of the cylinders using the graphing method (see analysis). You need to provide a data point for each cylinder. Your procedure must be recorded in your lab notebook. (You may find volume by displacement or by geometry.)

DATA

Prepare a data table to display your measurements. The data table should be recorded in each member's lab notebook. Record the appropriate number of sig figs for each measurement.

ANALYSIS

1. Construct a graph of your results so that the slope of the line will equal density. Plot the data for the cylinders. Can you draw a straight best-fit line that goes through the point (0,0)? Why or why not.
2. As you fill out the "evaluation of data" section in your lab notebook, be certain to check your green lab-report-instruction sheet, making certain that you include all necessary items.

CONCLUSIONS

Write a conclusion that follows the guidelines of your lab-report-instruction sheet and answers the following questions. In your discussion of precision and accuracy, make it clear that you understand the difference between these two terms.

- Based on your graph of the mass and volume values of the plastic cylinders, what conclusion have you come to about the density of the items you measured? Explain your conclusion.
- Was your conclusion any different after graphing 15 data points than it was after graphing three? After graphing six? Explain your reasons for this.
- Examine your graph and discuss the precision of your measurements. Clearly explain **how** your graph demonstrates precision.