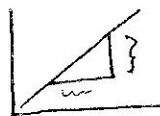


Density of Pennies Lab

The purpose of this lab is to determine the density of pennies using mass and volume data. Mass data will be obtained using a triple beam balance. Volume data will be obtained using the water displacement method. Mass versus volume will be graphed and the resulting best fit line used to find the average density.

Materials: 25 pre-1982 pennies
25 post-1982 pennies
triple beam balance
100 mL graduated cylinder
water



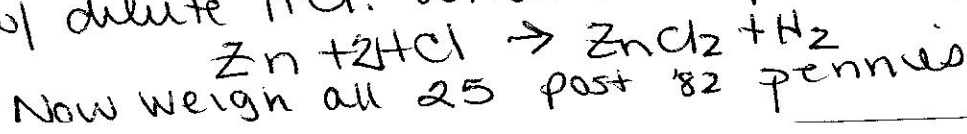
Procedure:

- 1) Obtain 25 pre-1982 pennies. Separate pennies into 5 stacks of 5.
- 2) Weigh the first stack of pennies on the triple beam balance
- 3) Record the mass
- 4) Add the second stack to the first and find the mass of both stacks together (KEEP TRACK OF WHICH STACK WAS FIRST, WHICH WAS SECOND...ETC)
- 5) Record the mass
- 6) Add the third stack, find and record the mass
- 7) Repeat with the fourth and fifth stacks
- 8) Measure out approximately 50mL of water into the graduated cylinder
- 9) Record the actual volume
- 10) Remove the 1st stack of pennies from the balance and place it into the water
- 11) Record the new volume
- 12) Repeat by adding the 2nd stack to the water (total of 10). Find and record the new volume.
- 13) Repeat by adding the 3rd, then 4th, and 5th stacks. Record the new volume each time.
- 14) REPEAT STEPS 1-14 with post 1982 pennies
- 15) Organize data into a table
- 16) Organize data into a graph
- 17) Use the slope of the line to find the density of each type of pennies

Conclusion question:

How do you account for the different densities of the pennies?

Let's Prove Your Idea - Make 3 notches in your post 82 pennies. Place them in a beaker & cover w/ dilute HCl. What is happening?





Gummy Bear Lab

Name _____

Hypothesis: What do you think will happen to a gummy bear when you put it in water over night?

Part A: Choose one gummy bear from the container on your table. Use the equipment available to measure your gummy bear and record the data in the chart for Day 1.

Measurements:

- The length of your gummy bear should be measured from the top of its head to the bottom of its feet to the nearest tenth of a centimeter.
- Measure the width at the widest point across the back of the bear to the nearest tenth of a centimeter.
- Measure the thickness from the front to the back at the thickest point to the nearest tenth of a centimeter.
- Calculate the volume by multiplying the length, width, and thickness. Round to the nearest hundredth.
- Measure the mass using a triple-beam balance or other scale to the nearest tenth of a gram.
- Calculate the density by dividing the mass by the volume. Round answer to the nearest hundredth.

Part B: Put the bear in a cup labeled with your name and class period. Add 50 ml of water to the cup and allow it to sit overnight. On Day 2, remove the gummy bear from the cup of water and use a towel to dry it off to prevent it from dripping all over the place. Repeat the measurements from Part A and record your data in the correct portion of the chart. Determine the amount of change for each measurement and record in the chart.

Experiment Data:

Day	Bear Color	Length	Width	Thickness	Volume	Mass	Density
1							
2							
Amount of change							

Questions:

1. Was your hypothesis correct? Why or why not?
2. Which change is greater - volume or mass? Explain.
3. Was there a change in density? Why?
4. How do your results compare to those of your classmates?