

Density of Pennies

MATERIALS

- Scale
- 100 mL graduated cylinder
- ____ pennies dated before 1982 (make sure the number of pennies match)
- ____ pennies dated after 1982
- Water

PROCEDURE

1. Using the scale, determine the mass of the ____ pennies minted prior to 1982. Repeat this measurement two more times. Average the results of the three trials to determine the average mass of the pennies.
2. Repeat step 1 with the 40 pennies minted after 1982.
3. Pour about 50 mL of water into the 100 mL graduated cylinder. Record the exact volume of the water. Add the ____ pennies minted before 1982.
CAUTION: Add the pennies carefully so that no water is splashed out of the cylinder.
4. Record the exact volume of the water and pennies. Repeat this process two more times. Determine the volume of the pennies for each trial. Average the results of those trials to determine the average volume of the pennies.
5. Repeat step 3 with the ____ pennies minted after 1982.
6. Review your data for any large differences between trials that could increase the error of your results. Repeat those measurements.
7. Use the average volume and average mass to calculate the average density for each group of pennies.
8. Compare the calculated average densities with the density of the copper listed in **Table 4** on page 38 of the textbook.

