***Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***Experiment***

***Pennies: Pre and Post 1982***

***Purpose:***

To determine the difference in density of pennies from before and after 1982.

***Materials and Methods:***

The materials used for this lab included the following:

· 30 pre-1982 and 30 post-1982 pennies

· One 50 mL graduated cylinder

· One digital scale

1. Use the digital scale to determine the mass of 5, 10, 15, 20, 25, and 30 pre-1982 and post-1982 pennies.

2. Use the water displacement method to measure the volume of 5, 10, 15, 20, 25, and 30 pre-1982 and post-1982 pennies: fill the 50 mL cylinder about half full with water and accurately record the volume. Add 5 pennies and accurately record the new volume. Determine the volume difference to find the volume of 5 pennies. Repeat this process for 10, 15, 20, 25, and 30 pennies.

***Results:***

***Data Table 1: Mass and Volume of Pennies***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Set A: Pre 1982** | | | **Set B: Post 1982** | | |
| **# of Pennies** | **Mass (g)** | **Measured Volume (mL)** | **Penny Volume (mL)** | **Mass (g)** | **Measured Volume (mL)** | **Penny**  **Volume (mL)** |
| **0** |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |
| **10** |  |  |  |  |  |  |
| **15** |  |  |  |  |  |  |
| **20** |  |  |  |  |  |  |
| **25** |  |  |  |  |  |  |
| **30** |  |  |  |  |  |  |

***Data Table 2: Penny Density***

***Density = mass / volume***

|  |  |  |
| --- | --- | --- |
| **# of Pennies** | **Pre 1982** | **Post 1982** |
| **5** |  |  |
| **10** |  |  |
| **15** |  |  |
| **20** |  |  |
| **25** |  |  |
| **30** |  |  |
| **Average** |  |  |

***Table 3: Experimental Density Compared to True Density***

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Experimental Value** | **Reference Value** | **Percent Error** |
| **Pre 1982** |  | **Cu = 8.96 g/mL** |  |
| **Post 1982** |  | **Zn = 7.13 g/mL** |  |