# Measurement and Uncertainty

Student Name

Date

## Data

Data Table 1: Determination of Uncertainty in Lab Balance

| **Trial** | **Cup #1**  **Mass (g)** | **Cup #1**  **Deviation from Average (g)** | **Cup #2**  **Mass (g)** | **Cup #2**  **Deviation from Average (g)** |
| --- | --- | --- | --- | --- |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| Average |  |  |  |  |

1. Suppose you continued Activity 1 using a third plastic cup of the same type. Would you expect the average deviation from the average mass to be the same or different? Explain your answer.

Data Table 2: Determination of Uncertainty in Common Glassware

|  | **10-mL Graduated Cylinder** | **50-mL Graduated Cylinder** | **25-mL Erlenmeyer Flask** | **250-mL Beaker** |
| --- | --- | --- | --- | --- |
| Mass of empty glassware |  |  |  |  |
| Estimated volume of water |  |  |  |  |
| High volume interval |  |  |  |  |
| Low volume interval |  |  |  |  |
| Uncertainty |  |  |  |  |
| Mass of glassware with water |  |  |  |  |
| Mass of water |  |  |  |  |

1. Which piece of glassware has the highest degree of precision? Why?

Data Table 3: Determination of Accuracy in Common Glassware

|  | **10-mL Graduated Cylinder** | **50-mL Graduated Cylinder** | **25-mL Erlenmeyer Flask** | **250-mL Beaker** |
| --- | --- | --- | --- | --- |
| Mass of water in Activity 2 |  |  |  |  |
| Current water temperature |  |  |  |  |
| Density of water at room temperature |  |  |  |  |
| Calculated volume of water |  |  |  |  |

1. Accuracy is gauged by comparing the measured value of a known standard to its true value. Assuming the mass of the water represents a standard for the true volume of water, which piece of glassware has the highest degree of accuracy? Why?