I. Glassware Accuracy

II. **Purpose:** In this lab, students use different types of laboratory glassware to measure 20 mL of water and determine the accuracy of each piece of glassware.

By the end of this lesson, students should be able to

- determine the accuracy of different pieces of glassware.
- explain why some pieces of glassware produce better accuracy than others.
- calculate percent error. $\frac{|experimental-theoretical|}{theoretical} \times 100=$

Procedure

1. Clean your glassware before you begin. Fill a large beaker out of your drawer with tap water, a pinch of Alconox, & put your TT brush in it. This is your "sink." Wash each piece and final rinse with DI water.

2. Out of your drawer 1 or 2, obtain one clean & dry beaker, Erlenmeyer flask, graduated cylinder & test tube capable of measuring exactly 20 mL. (hint: 1 mL = 20 drops)
3. Make sure the balance pan is dry with Kemwipes (green box- big middle drawer) & Tare (zero) the balance.
4. Place the beaker on balance. Record tare mass of beaker below.
5. While on the balance, fill the beaker exactly to the 20 mL line with water. Record mass of H2O plus beaker.
6. Repeat steps three and four for each of the other pieces of glassware and record readings below.

Data

20 ml H2O from:	Tare (g)	Total Mass (g)
1. Beaker		
2. Erlenmeyer Flask		
3. Graduated Cylinder .0 mL		
4. Test Tube		

Discussion:

1.Why can you use a known volume of water to decide whether or not glassware is accurate?
2.Do the same sizes and types of glassware have the same tare mass? How do you know?
3.Calculate the mass of each 20 mL water sample by subtracting the tare mass from the total mass.
4.Calculate the percent error (density) for each type of glassware tested. The actual mass of 20 mL of water is 20 g due to the density of water being 1.0 g/mL.
5.List the glassware in order of the most accurate to the least accurate. How were the rankings determined?
6.Why does some laboratory glassware have a large percent error?
7.List at least two sources of error for this experiment.

No Conclusion