Pipette Calibration

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- Procedure
- Pipette, water and balance
- Test the maximum volume or minimum volume
- Pre-wet tips
- Test 5 volumes per setting

The Best of Both Worlds
Precision + Accuracy

Precision

Accuracy

Pipette Calibration Criteria

- Calibration Acceptance Criteria
- Accuracy (mean error): How close a measurement is to an accepted value. Difference between the dispensed mass and the selected volume of a pipette
- Precision (random error): Indicates how close together or how repeatable the pipette volumes are. A precise measuring instrument will give very nearly the same result each time it is used.

Averages for Sample Weights and Correction Factors

- Mean weight = $\frac{\text{sum of sample weights}}{\text{number of samples}}$
- of samples
- Mean volume = (ave. weight + e) x Z
- of samples
- w = mean weight in mg
- v = mean volume ul
- e = evaporation rate in mg
- Z = factor for correction

Introduction to Calibration Activity

You will be given a pipet to calibrate

Calibration will be done by using the equation

Density = Mass/volume

Using a balance that can weigh up to 0.001mg

Place a weigh boat on the balance and tare it

Calibration Activity Continued

- Adjust pipet to 100 ul volume
- Attach a fresh pipet tip to the end of the pipet
- Press the top button down until you meet resistance
- Place tip into water and slowly release button
- Now place water into weigh boat on balance
- Weigh the amount of water present to 1 mg

Calibration Acceptance Criteria

Accuracy

The closeness of a dispensed volume to the expected volume as set on the pipette

It can be determined by how close the volumes measured are to the values expected volumes