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 = sum of sample weights of samples / number 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
You will be given a pipet to calibrate

Calibration will be done by using the equation:

\[
\text{Density} = \frac{\text{Mass}}{\text{volume}}
\]

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 μl 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