Answer on question #61762, Chemistry, General Chemistry

Calculate the percentage error likely to arise in an experiment if 1mL, 5mL, and 10mL pipets are used for transfer and each pipet contains 5 drops of water adhering to the inside of the barrel. A single drop of water has a volume of approximately 0.05mL.

Solution:

First, determine the amount of volume that remains inside the pipettes:

$$(5\ drops) \times [(0.05\ mL)/(1\ drop)] = 0.25\ mL$$

The error is determined simply by dividing this number of volumes by the volume of the pipette:

1-mL pipette:

$$error = [(0.25\ mL)/(1.00\ mL)] \times 100\% = 25\%$$

5-mL pipette:

$$error = [(0.25\ mL)/(5.00\ mL)] \times 100\% = 5\%$$

10-mL pipette:

$$error = [(0.25\ mL)/(10.00\ mL)] \times 100\% = 2.5\%$$

Answer: error= 25% (if 1mL), error= 5% (if 5mL), error= 2.5% (if 10mL)