

Exp. No.	Experiment/Subject	Date
Name	Lab Partner	Locker/ Desk No.
		Course & Section No.

Raw and Processed data for Glassware analysis

25 mL graduated cylinder 10 mL volumetric 50 mL burette

Room Temperature	23	23	23
Density of Water	1.000 0.997	1.0032 0.997	1.0521 0.997
Vol Pipette Reading mL	/ / / / /	10 mL / / / / /	
Burette Initial Reading mL	/ / / / /	24.7 24.7 mL	15.3 15.3 mL
Burette Final Reading	/ / / / /	15.3 15.3 mL	8.7 8.7 mL
Measured Volume of H ₂ O mL	10 mL	10 10 mL	9.6 mL
Mass H ₂ O + Glassware (g)	21.3434 g	81.576	82.069 g
Calculated Mass H ₂ O g	10.146 gram	10.032 grams	10.525
Theoretical Vol H ₂ O (mL)	10.176 10.176	10.062	10.556
Error of Volume	17.60	0.21	5.62
Relative Uncertainty	1.76 1.76	0.21	5.62

ND

Signature	Date	Witness/TA	Date
		ND	

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Observations: Same breaker have different measurement in the balance which include how weights can variously depend on way and tools that you use. The measurement are very relatey close.

$$\text{Average: } \frac{11.197 + 11.195 + 11.194}{3} = 11.195, \quad \frac{71.544 + 71.543 + 71.544}{3} = 71.543$$

$$SD = \frac{\sqrt{(11.197-11.195)^2 + (11.195-11.195)^2 + (11.194-11.195)^2}}{3-1} = 0.0012, \quad \frac{\sqrt{(71.544-71.543)^2 + (71.543-71.543)^2 + (71.544-71.543)^2}}{3-1} = 4.71 \times 10^{-4}$$

$$\text{Mass H}_2\text{O} = 21.341 - 11.195 = 10.146 \text{ grams}, \quad 81.576 - 71.543 = 10.032, \quad 82.06 - 71.543 = 10.517$$

$$\text{density} = \frac{10}{10.146} = 1.0146, \quad \frac{10}{10.032} = 1.0032, \quad \frac{10}{10.517} = 1.002$$

$$TV \neq \frac{10.146}{1.0146} = 10, \quad \frac{10.032}{1.0032} = 10, \quad \frac{10.517}{1.002} = 10.5$$

$$\text{Error V} = \frac{(10.176 - 10) * 100}{17.60} = 17.60, \quad \frac{10.062 - 10 * 100}{6.21} = 6.21, \quad \frac{10.556 - 10 * 100}{55.62} = 55.62$$

$$RV = \frac{17.60}{10} = 1.760, \quad \frac{6.21}{10} = 0.621, \quad \frac{55.62}{10} = 5.562$$

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