

### Uncertainty Lab Activity - **ANSWERS**

**Instructions:**

- With your lab partner, visit 10 stations. Complete the table with the following information:
  - Station #
  - Name of the instrument
  - Measurement reading, its uncertainty, and units.
- Before you can move on to another station, each entry needs to be approved by the instructor, or the lab technician. Note – you will only get a yes or no answer. It is up to you to find the error.
- You will have access to the Uncertainty Values for Various Lab Equipment document on Moodle. However, not all instruments will necessarily be on this document.

Station #	Instrument Name	Measurement Reading, Uncertainty, and Units
1	Burette	$27.45 \pm 0.05 \text{ mL}$
17	Beaker $50 \pm 5\%$ of capacity = 2.5 mL	$23 \pm 3 \text{ mL}$
16	Beaker $250 \pm 5\%$ mL	$130 \text{ mL} \pm 10 \text{ mL}$
8	Graduated cylinder $10 \pm 0.05 \text{ mL}$ (increments = 0.1 mL)	$7.30 \pm 0.05 \text{ mL}$
9	Graduated cylinder $25 \pm 0.1 \text{ mL}$ (increments = 0.2 mL)	$17.4 \pm 0.1 \text{ mL}$
10	Graduated cylinder $100 \pm 0.5 \text{ mL}$ (increments = 1 mL)	$72.5 \pm 0.5 \text{ mL}$
11	Graduated cylinder $250 \text{ mL} \pm 1 \text{ mL}$ (increments = 2 mL)	$200 \pm 1 \text{ mL}$
12	Graduated cylinder $1000 \pm 5 \text{ mL}$ (increments = 10 mL)	$820 \pm 5 \text{ mL}$
13	Erlenmeyer flask $500 \text{ mL} \pm 5\% = 25 \text{ mL}$	$370 \pm 30 \text{ mL}$ OR $3 \times 10^1$
14	Erlenmeyer flask $250 \pm 5\% \text{ mL} = 12.5 \text{ mL}$	$160 \pm 10 \text{ mL}$ OR $1 \times 10^1 \text{ mL}$
15	Erlenmeyer flask $125 \pm 5\% = 6.25 \text{ mL}$	$115 \pm 6 \text{ mL}$
3	Volumetric flask $50 \pm 0.05 \text{ mL}$	$50.00 \pm 0.05 \text{ mL}$

4	Volumetric flask 100 mL $\pm$ 0.08 mL	100.00 $\pm$ 0.08 mL
5	Volumetric flask 250 mL $\pm$ 0.12 mL	250.00 $\pm$ 0.12 mL
6	Volumetric flask 500 $\pm$ 0.2 mL	Not filled to line; no exact reading
7	Volumetric flask 1000 $\pm$ 0.30 mL (given on flask)	1000.0 $\pm$ 0.30 mL
2	Thermometer ( $\pm$ ½ smallest increment, 1 °C)	23.0 $\pm$ 0.5 °C

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