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|-------|----------------|------------------------------|------------|
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| ONYEN | Jjamoni        |                              | jinjo      |

**Template Instructions:** Remove and replace any highlighted text. Do not resize, remove, or add answer boxes.

# Experiment 1: Mass, Volume, and Density

## Post-Lab Results

**RESULTS:** The “Results” section of a published article is where the data is presented (most often) through figures and tables. Answer boxes and fillable tables are provided below for you to present your data from experiment 1. Include a caption for each figure and a title for each table. Construct figures and fill in tables using your in-lab measurements and recorded data as appropriate. Also include a simple description of the figure data. See notes and examples below.

**Note on Figure Captions:** A proper caption provides enough information about the graph that the reader understands what is being displayed. According to American Chemical Society (ACS) guidelines<sup>1</sup>, the reader should be able to understand the caption without reference to the text or, in this case, the lab manual. For graphs that include experimental data, include relevant measurement conditions such that the reader can understand not only what the data is but also how the data was collected could repeat the measurement, if so desired. The first sentence can be a sentence fragment but doesn't have to be.

1: <https://pubs.acs.org/doi/full/10.1021/acsguide.40303>

**Example of a Figure Caption:** “Reaction yield as a function of added catalyst with reaction yield determined by absorption measurements. Reactions were held at a constant temperature of  $22 \pm 2$  °C. Concentrations of all other reactants were kept constant at the values shown in Table 9. Each data point is the average of three trials.”

**-NOTE TO STUDENTS:** Don't feel the need to include things just to make the caption longer. As a start, aim for something similar to the first sentence of the figure caption example (what is being displayed in the figure) and include one other sentence that plainly states a relevant measurement condition (e.g., the temperature of the solution was allowed to equilibrate for 5 min. before recording each measurement.) If other (obviously important) measurement conditions are identified, those can be included but the main goal here is learning what to include in the caption, not making a lengthy caption.

Also, in the example figure caption above, the end of the first sentence states, “...with reaction yield determined by absorption measurements”. The general idea is to state what experimental technique was used to determine the dependent variable values, which was “reaction yield” in this example. This information is needed in a figure caption for experimental data.

**Note on Table Titles:** The ACS states that each table must include a one phrase (or sentence) title that describes the contents of the table. The title should be understandable without reference to the text or, in this case, the lab manual.<sup>1</sup>

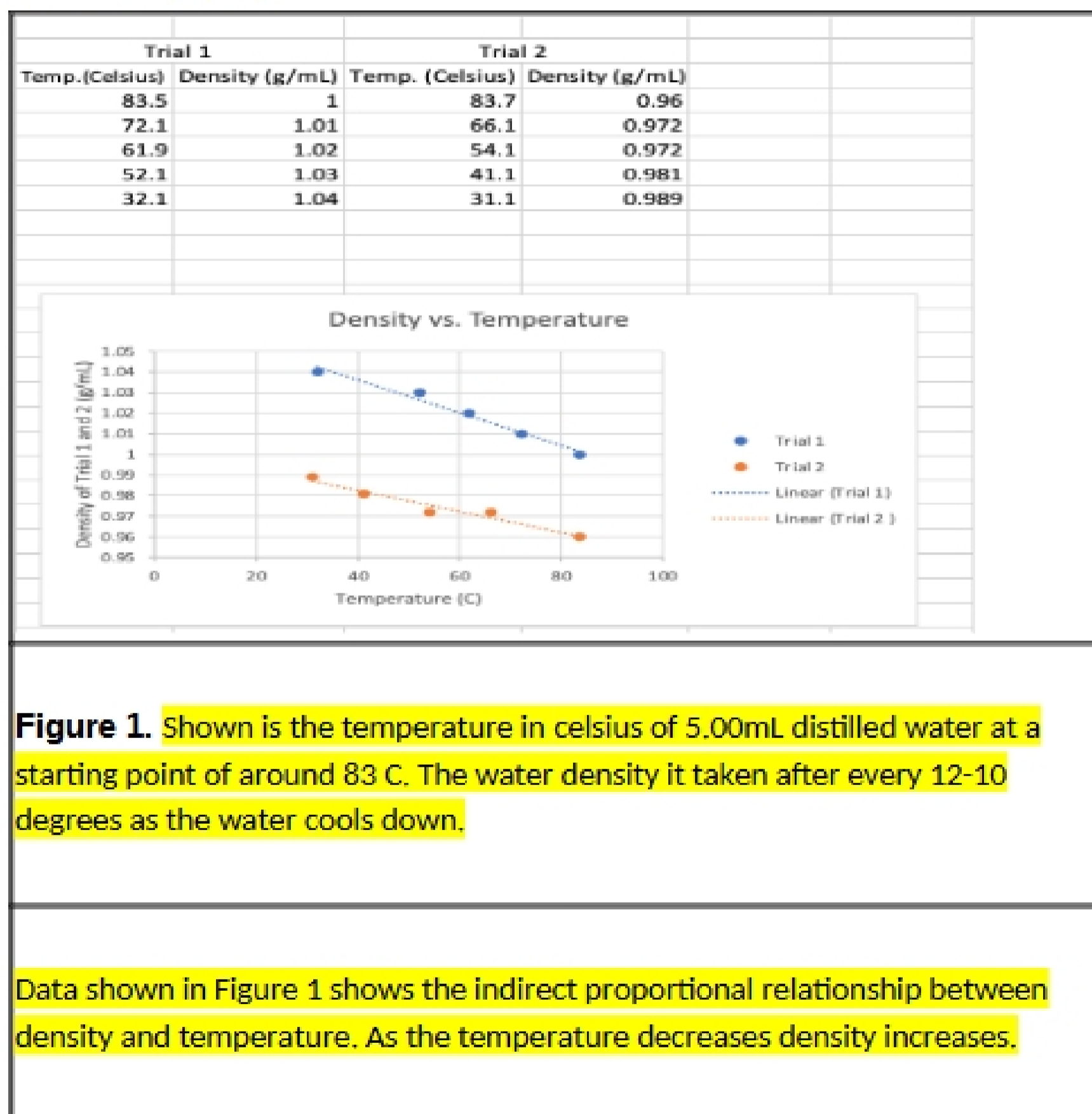
**Example of a Table Title:** "Rate constants for substitution reaction A as a function of temperature."

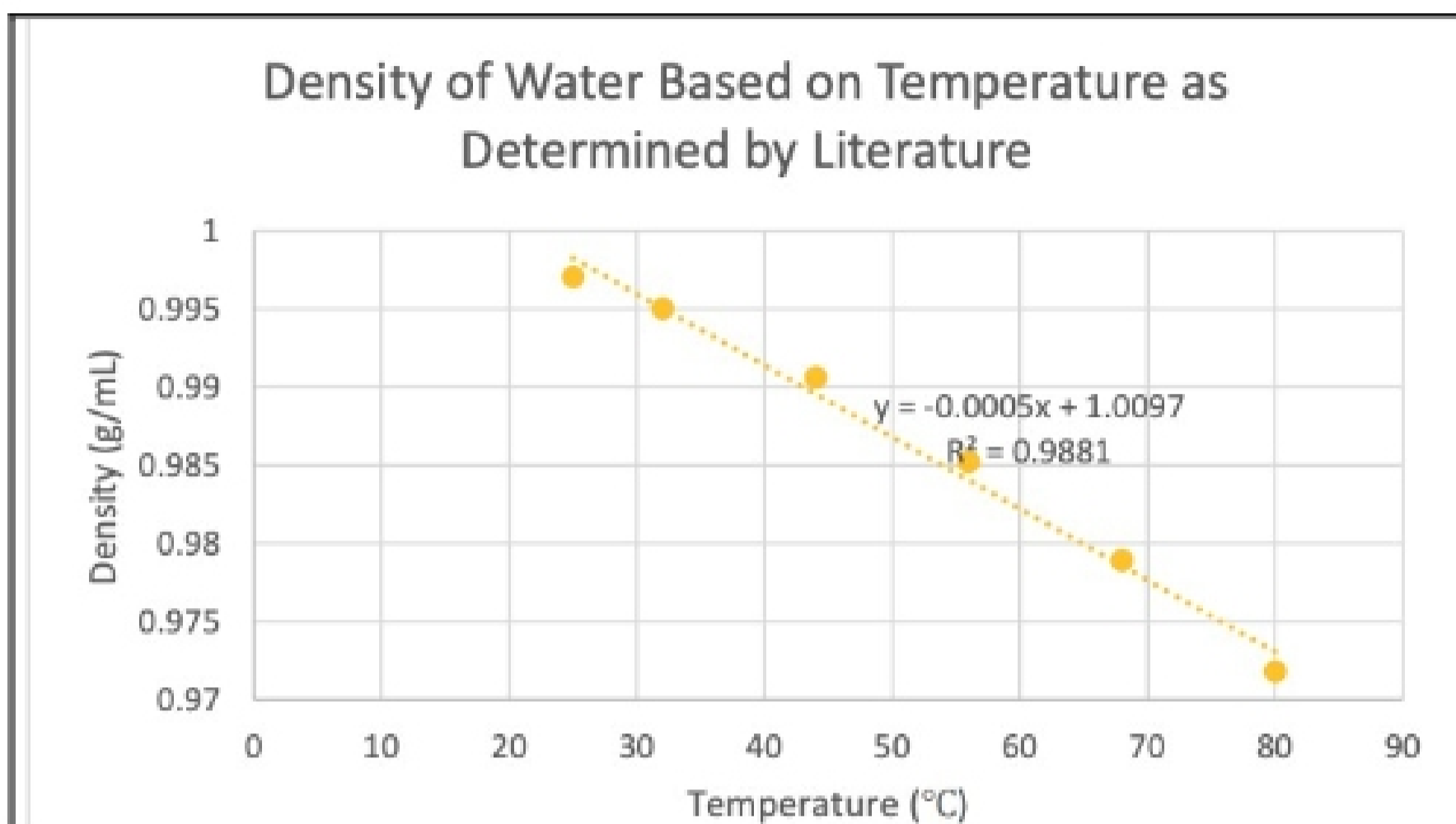
**Note on Units for Table Entries:** For each entry in a table, units should be included, either in the column header or in a separate column (similar to how units are treated in Excel), unless the quantity is actually unitless. The ACS does not require a separate column for units in a table but is requested here to avoid confusion.

**Note on Description of Data:** In addition to tables and figures, the Results section includes text describing the results displayed in the figures and tables. Space is provided below for you to provide a description of data displayed in the figures. To simplify this post-lab assignment, a description of the tables will not be included at this time.

**Example of Description of Figure Data:** "Figure 5 displays the reaction rate measured as a function of temperature for each of the catalysts used here. Each data set was modeled using an exponential function with the best fit parameters summarized in Table 7."

### FIGURES 1 & 2 (6 pts)





**Figure 2.** Shown is density of water from distilled sample as it relates to the literature values. Density of the sample decreases as the temperature of the area surrounding the buret increases up to 80 C.

Displayed is the density of water as the temperature increases from room temperature to 80 C.