

11 point Scientific Method Lab Write-up Rubric
AP BIO
S.S. Magrogan

1. Title: (Research Question) (1pt.)

To What Extent Does A affect B?

Example: To what extent does increasing the temperature of water affect the solubility of sugar into the water?

2. Hypothesis (1 pt)

Hypothesis: I believe that increasing A will decrease B to a particular extent (not at all, some, a little, profoundly)

Example: I believe that increasing the temp of water will increase the solubility of sugar into water greatly.

3. Independent Variable: (1 pt.)

What is being altered in the experiment or the (A) of your research question.

Example: the independent variable is 5 sets of varying temperatures from a range of 0°C to 40°C

4. How the independent variable was modified. (1 pt.)

See table below

5. The number of trials for each modification of the independent variable (1 pt.)

See table below

4.How IV was modified	Modification #1-0°C	Modification #2-10°C	Modification #3-20°C	Modification #4-30°C	Modification #5-40°C
5.# of trials	3	3	3	3	3

Make sure you average data from the trials

6. Dependant Variable- (1 pt.)

State the dependant variable, the (B) in your research question. It must have units and must be measurable.

Example: Sugar solubility in terms of grams in ml of water is my dependant variable

7. Constants (1 pt.)

List all of the constants that you held in the lab experiment. Be thorough.

Example: I am using granulated sugar and tap water from the same source for all my experiments as well as the same beaker and thermometer

8. Control (positive, negative, a base line, or all three) (1pt.)

List the controls in the experiment that you set up to compare all of the measured data from the dependant variable to.

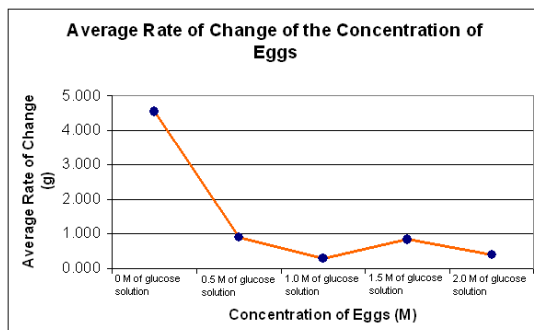
Example: My 0°C temp –in which I know no sugar will dissolve is my negative control. I will compare all my data to this control

9. Organized Data (1pt.)

Organize the observed data in a data table. Organize the independent variable versus the dependant variable in the appropriate graph form with proper X and Y axis labels, keys, and numerical gradient.

Example:

Effect of Concentration on Weight of Egg					
	Weight of 0 M Glucose	Weight of 0.5 M Glucose	Weight of 1.0 M Glucose	Weight of 1.5 M Glucose	Weight of 2.0 M Glucose
Initial Time	72.4 g	68.2 g	89 g	84.4 g	84.5 g
15 Minutes	72.8 g	70.1 g	88.5 g	82.6 g	82.7 g
30 Minutes	73.2 g	71.9 g	88.2 g	81.4 g	82.3 g
45 Minutes	73.6 g	73.8 g	88 g	80.8 g	82 g
60 Minutes	74 g	75.6 g	87.8 g	80.2 g	81.6 g
75 Minutes	74.4 g	77.5 g	88.3 g	80.2 g	82.2 g
90 Minutes	74.7 g	79.3 g	87 g	80.1 g	80.9 g



10. Conclusion or Analyzation of the Data (1pt.)

What are the trends in the data? What actually occurred?

Example: Graph1- This graph depicts that each phase of Mitosis consists of the same number of cells.

Graph 2- This graph depicts that interphase has the most cells while the rest of the mitotic phase have fewer number of cells. This graph also informs us that Telophase has nearly twice as much cells as Anaphase.

11. Inference (1pt.)

Explain why or why not your hypothesis was proven or disproven. Relate your reasoning to the concepts learned in class.

Example: Cellular Respiration: oxygen is consumed as a reactant along with the organic fuel. As temperatures began to increase, cellular respiration of the crickets increased as well. However, at extreme hot temperatures, the rate of respiration began to decrease.

Metabolism: totality of an organism's chemical reactions. The crickets metabolism was at a greater rate when at higher temperatures. The Krebs cycle also occurs more which results in a higher respiration rate.

Mitochondria: site of cellular respiration. The mitochondria within the crickets works at a faster rate, especially at higher temperatures, which produces a higher respiration rate.