Sample Lab Report Format for Virtual Academy Science Labs

I. Title: 5 pts

Title of the Experiment *This can be found in the Student Guide in Edgenuity*.

II. **Purpose/Problem: 5 pts**

This can often be found in the Student Guide in Edgenuity.

State the purpose of the experiment in complete sentences. What question are you trying to answer? Why are you doing the experiment?

III. Hypothesis: 10 pts

This can often, but not always, be found in the Student Guide in Edgenuity.

Write a possible solution to the problem using complete sentences. A hypothesis is an initial answer to the question posed, or a possible explanation based on prior research or knowledge. A good scientific hypothesis states conditions, expected results and possible reasons for those results. Hypotheses should be structured using the format "**If**…**then**…**because**…", which is described next. The "**if**" portion of the hypothesis describes something you will change in the experiment. The "**then**" portion of the hypothesis describes what you think will happen as a result of that change. The "**because**" portion of the hypothesis describes the reason why you think that change will occur. ex. *If the plant receives fertilizer (independent variable) then it will produce more fruit (dependent variable) because fertilizer adds extra nutrients to the soil (describes the reason).*

IV. Variables: **10 pts**

There can be up to three types of variables. *This can often, but not always, be found in the Student Guide in Edgenuity*.

Independent variable (IV): This is the factor that is directly manipulated, or changed by the experimenter, in the experiment. It is sometimes called the manipulated variable. In the traditional format for a hypothesis, "If X…then Y…" the X is the independent variable. Remember, the independent variable (IV) is something I change.

Dependent variable (DV): This is the observable factor that changes due to the independent variable. This is the variable that you **measure** because you changed the independent variable. In the traditional format for a hypothesis, "If X…then Y", the Y is the dependent variable.

In a study of how different doses of a drug affect the severity of symptoms, a researcher could compare the frequency and intensity of symptoms when different doses are administered.

Here the **independent variable** (what the experimenter changes) **is the dose** and the **dependent variable is the frequency/intensity of symptoms** because he/she can measure the frequency/intensity of symptoms.

Controlled variables: These are variables that could affect the dependent variable, **but** which you prevent from changing during the experiment. By holding other variables constant, you can focus an experiment on the relationship between the independent variable and the dependent variable

V. Materials: 5 pts

This can often be found in the Student Guide in Edgenuity.
List all the materials and equipment used in the experiment. List all major pieces of equipment first, then list common materials.

VI. Procedure: 10 pts

This can often be found in the Student Guide in Edgenuity.
(*List, step by step, exactly what you did as you performed the experiment. Describe each step using accurate, concise language so that someone who has never performed the experiment could repeat it.***)**
[Step 1]

[**Step 2**]

[**Step 3**]
etc…

VII. Data: 20 pts

This section should include any data tables, observations, or additional notes you make during the lab. Record **all** the data collected during the experiment. <u>You will need to copy your data from the computer while you complete the lab.</u> Your lab report should display that data in formal tables or graphs. **Some Student Guides in Edgenuity have data tables already set up for you to copy into your lab report.** Be sure to label each column and row in the headers. *Quantitative (measurement) data* should include all measurements and calculations, including correct SI units of measurement, such as width in cm, mass in g, volume in cm^3, density in g/cm^3, speed in m/s, etc. Make sure that units are consistent. *Qualitative (description) data* should include descriptions of what you saw, heard, felt, or smelled during the experiment.

VIII. Analysis: 20 pts

The analysis portion of your lab report should describe the data and results **in words**. You should:

- analyze and state the relationship between the independent and dependent variables by describing how the dependent variable reacted to the change in the independent variable. If you used a control, you should compare the data to the control.
- explain all trends in the data, as well as any significant observations that you made during the lab.
- describe specific data points that help explain the outcome of the experiment.
- present and interpret statistics, such as the range, variance, standard deviation, trend equation, or correlation.
- interpret graphs with descriptions

IX. Conclusion: 15 pts

The conclusion of your lab report should explain the understandings you've gained as a result of the lab experiment. It should also answer the question (the problem from above) that led to the experiment. Below is a list of steps you should take when writing your conclusion.

- **Determine whether the hypothesis was supported.** First, restate your hypothesis. A hypothesis is not an answer, so it cannot be described as "correct" or "incorrect." *Avoid this common error*. Instead, state whether the hypothesis was "**supported**" or "**not supported**" by your results. Be sure to explain *how* and *why* you came to that conclusion.
- **Identify possible sources of error.** Scientific errors are factors that could have contributed to the uncertainty in the outcome of your experiment. Could measurements have been more accurate? Could you have performed more trials? Could environmental factors, such as the lab's lighting or temperature, have had an effect? State these possible sources of error and analyze or estimate how much they may have affected your results.
- **Suggest improvements and further investigation.** Even if your hypothesis is not supported by the results of the lab, you can still produce an excellent lab report as long as you show a thorough understanding of the scientific concepts. This is often where your results are linked to your background research. You can now suggest revisions for future experiments based on what you've learned. In this

section, you should explain applications of the experiment—how could your findings or those of similar experiments be used in the real world? Lastly, include any related questions you may want to explore in the future.

- Conclusion Do's and Don'ts
    - **Do** draw an illustration or a graph, if appropriate.
    - **Don't** list the data again, but summarize, discuss, and analyze the data.
    - **Do** explain why your hypothesis was supported or not supported from your observations or data.
    - **Don't** give the procedure again but do point out possible sources of error.
    - **Don't** forget to break up your ideas with more than one paragraph.
- Here is a helpful format for writing a conclusion (**length of blank lines does NOT indicate the length of your entries—additional sentences are needed and encouraged**)

This lab (experiment) investigated _____. To study the problem, we _____.

My results showed _____, thus my hypothesis was (supported/not supported). The results are (accurate/inaccurate) because _____.

To further investigate this problem, next time I would _____.

The above was adapted from Cheryl Randall's Science Lab Report found at *http://donnayoung.org/apologia/lab/labhow~cr.htm*

This format provides a clear structure for students to follow when writing their lab reports. Review for proper grammar, spelling, punctuation, formatting, and other conventions of organization and good writing.

LAB REPORT RUBRIC

Title (5 pts)

I. Purpose/Problem (5 pts)

II. Hypothesis (10 pts)

III. Variables (10 pts)

IV. Materials (5 pts)

V. Procedure (10 pts)

VI. Data and Observations (20 pts)

VII. Analysis (20 pts)

VIII. Conclusions (15 pts)