

APPLE JUICE LAB REPORT RUBRIC

Student Name: _____ Due Date: _____

If the task has been completed, all points are awarded. If the task is incomplete half points may be awarded. No points are awarded if the task is not complete.

| Category | Scoring Criteria | Points | Student Evaluation | Teacher Evaluation |
|---|--|--------|--------------------|--------------------|
| Lab Introduction <i>12 points</i> | The question to be answered during the lab is stated. | 3 | | |
| | The hypothesis clearly shows it is based on facts. | 3 | | |
| | A connection is made between the lab and the "real world" | 3 | | |
| | A brief summary of your experimental approach | 3 | | |
| Methods <i>10 points</i> | Procedures <i>reflect what you actually did in paragraph form</i> | 7 | | |
| | There are no "understood" procedures. | 3 | | |
| Results <i>17 points</i> | Measurements show proper units. | 2 | | |
| | A before diagram of your beakers | 3 | | |
| | An after diagram of your beakers | 3 | | |
| | A graph of your results compared to the class data | 3 | | |
| | Data Table of your group results | 3 | | |
| | Data Table of your class results | 3 | | |
| Graphs <i>10 points</i> | The graph properly displays all of your data | 5 | | |
| | On graph paper (or printed), used ruler, proper units and headings | 5 | | |
| Discussion <i>35 points</i> | Summarize the essential lab data. (come to a conclusion) | 10 | | |
| | Show how the essential data answers the lab question. | 15 | | |
| | Identify the area of the lab most likely responsible for measurable error. | 5 | | |
| | Last sentence restates the final conclusion | 5 | | |
| Presentation <i>15 points</i> | Report is printed in black ink on white paper using 12 point font. Paragraphs are double spaced with 1 inch margins on all sides with no visible corrections. | 5 | | |
| | A diagram of the essential apparatus used in the experiment is drawn in the largest available white space on the front of the lab report (or cover). | 5 | | |
| | Report is written so that other students could accurately duplicate the experiment. | 5 | | |
| Participation <i>5 points</i> | No group members were cited for safety or participation violations. | 5 | | |
| Score | Total Points | 104 | | |
| Self-evaluation | If the difference between the student evaluation and the teacher evaluation is less than 5 points, 5 points will be added to the teacher's score when the grade is recorded. | | | |
| Deadline | Reports will be accepted after the beginning of class for 3/4 credit. Papers turned after that time will be mulched for use in the greenhouse and receive ¼ credit. | | | |

ENZYMES AND APPLE JUICE LAB REPORT

Lab Reports should follow the following format.

1. **Introduction:** Include the problem you were asked to test “**Which enzyme or combination of the two enzymes maximizes juice production?**” Next include your specific hypothesis you investigated. Follow that with your prediction. You should include background information for the problem including an explanation the enzymes and their role in apple juice production along with how the problem relates to you, and the world. Conclude this section with a brief summary of your experimental approach to the problem, along with a one sentence summary of your final results.

2. **Methods and materials:** This section tells the reader how and with what “stuff” the experiment was done. You should try to strike a balance between an over-detailed description of the most trivial items and a very sketchy statement that provides insufficient information. The important guideline is that another student of similar training and ability following your description should get the same results. This section should be written as a description of what you did, **not** as a set of numbered instructions. Make sure you alert the reader to any dangerous substances or necessary safety procedures.

3. **Results:** In this section you should **describe** the important qualitative and quantitative observations in your work. You are **not yet** drawing conclusions from your data. Data should be tabulated, graphed and described. One of the common errors in report writing is to say, “The data are plotted in Fig. 1” without saying something like, “As can be seen in the graph, the rate of protein digestion over 5 days was slow for the first three days after which a sharp rise is noted.” Be aware that tables and graphs are not self-explanatory, and must be summarized for the reader. All graphs and tables should be numbered and provided with a title. Any additional information that makes the data more comprehensible should be provided as needed.

Required Diagrams

- A diagram of your beakers (including solutions) with measurements before you began
- A diagram of your beakers (including solutions) with measurements after your lab.

Required Graphs

- A graph of your results compared to the class data

Required Data Tables

- Your group results
- Class results

4. **Discussion and conclusions:** This section serves two functions. First, it provides a place where the data may be fully discussed and interpreted and a final conclusion is made (you answer all the WHYS and HOWS), and second, it allows the author to delve into the realms of speculation. Here one may address questions like “why did something unexpected happen?” or “what would happen if the pectinase solution was of higher concentration” or “why did the expected results not materialize?” In this section the author should suggest improvements in methodology. You should also find and explain at least one major source of experimental error. This could be as simple as “we did not measure accurately because...” To concepts as complicated as denaturing of enzymes at high temperatures or low pH. Make sure you end this section with a final conclusion statement that provides the answer to the problem you stated back in the introduction.

5. **References:** You will need to use sources to provide background information. Cite them.