



Enzymes

Laboratory Investigation Student Materials

Student Name: _____ **Date:** _____

Enzymes

Introduction:

Your Connecticut company is in the business of making and selling apple juice. To make apple juice an enzyme (a protein which helps make a chemical reaction occur faster) is added to applesauce. You will test which type of enzyme; pectinase or cellulase, will produce the most apple juice for the least amount of money. The following is a list of the enzymes along with their prices:

Pectinase: \$ 50 per liter
Cellulase: \$100 per liter

Your Task

You and your lab partner will design and conduct an experiment to determine **which enzyme or combination of the two enzymes maximizes juice production**. Once you complete the laboratory investigation, you will determine which enzyme will be the most cost effective (least expensive) to use in juice production.

Question to be tested _____

Research pectinase and cellulase on the internet and/or your books or periodicals. Copy your sources and then highlight the most important information. Discuss your findings with your partner and form a reasonable hypothesis. Explain why you choose your hypothesis based on your research.

My hypothesis is _____

Cite two of your sources below and the most important facts from these sources.

1. _____

Fact _____

2. _____
 Fact _____

Use an experimental design sheet to **draw your experiment**. Within the boxes, show the sequence (order) of your steps. **Label** all materials and describe all actions. **Use units** for all measurements. **Identify** the independent and dependent variables.

Describe the procedure. Be as specific as possible – someone may want you to repeat your experiment. Write additional steps, if necessary, on the back of this page.

1. _____
2. _____
3. _____
4. _____
5. _____

Identify independent and dependent variables.

Independent variable: _____

Dependent variable: _____

Data from your experiment. Fill out the table below.

Type of enzyme added to the apple sauce

# of trials			
Average			

Graph: On a separate piece of graph paper show the average amount of apple juice generated during each experiment.

Discuss your data with your lab partner. Answer your question to be tested using your data. Determine your confidence in your answer by discussing the possible errors in the experiment. Be specific and thoughtful in your answer.

Next steps:

How could you have improved your experiment?

What are two more questions about this experiment that you still have?
