

Energy in Foods Lab Introduction

Describe the problem you are solving or the question you are attempting to answer as the goal of the experiment. Color code this in red.

- State the problem or question.
- Why is this problem important?

Example : The purpose of this lab is.....

This understanding is important because.....

Key terms: No copied textbook definitions. Use terms correctly as you explain the lab. Color code in yellow.

- Energy, especially chemical energy and where in a compound is stored
- Lipids (fats)
- Carbohydrates (starch and sugar)
- Protein
- Heat
- Energy transfer as compared to energy transformation

Example from the previous lab: Proteins are composed of amino acids.

Background information should provide information to answer the questions below. The reader may not know as much as you do. Explain briefly each concept needed to understand the lab. Color code green.

- Why is energy necessary for living things?
- Include a sketch of the chemical structure of each organic molecule. Circle and label the functional groups.
- What foods contain any of the 4 organic molecules? Refer back to your last lab.
- Describe briefly which foods you will be testing and what you already know about each food, either from your last lab or from your notes.
- Predict which foods you expect to be highest in energy and explain why.
- Describe briefly *how* to determine the amount of energy in samples of these foods. Use a brief description of the procedure, including a sketch of the apparatus. How does this process let you find what you wanted to know?
- Include an explanation of the energy transfer and transformation from food to burning food to water.
- Include any **equations**, with descriptions and an explanation of how you will use the equation.

Example from the previous lab: Living things use protein as building blocks for muscle, enzymes, and chemicals such as insulin. Proteins are chains of amino acids.

What do you expect to observe or measure that will show you have solved the problem or answered your question?

- How will you interpret your data?

Example: Foods will be tested with indicator solutions. A food will turn blue-black when iodine is applied if it contains starch; light purple with Biuret solution if it contains protein, and green, orange, brown when heated with Benedict's solution if it contains sugar.

Write a hypothesis based on your knowledge.

- "A food that contains _____ it will have higher energy because _____ .

Example from the previous lab: Egg white turned purple with Biuret solution, so contains protein.

Safety: just list safety precautions. There is no chemical data table needed. (Why not?)

Materials: List each item that you will use.

Procedure: Use the sketch of the apparatus you put in the introduction to write a list of steps you will take.

Data Table: You will need to record masses and temperature changes for each food item you test. Refer to your equation to choose what information you will need to know.