

WHICH IS BETTER?

SUMMARY OF TASK

Your job is testing products for Consumer Reports magazine. Your task is to test competing products for a common variable and determine which, if either, is a better product. You need to design and conduct a scientific experiment that includes all steps of the scientific method. Then you will prepare a written research report in which you will include a detailed summary of your findings using the scientific method and explain if any of your hypothesis was supported or not supported. Next you will orally present your findings to the Consumer Report Board of Officials (class).

(The Consumer Report format is to simplify this process for kids. If a student wishes to propose a more challenging research idea, they may do so. Please make sure it is a testable question and can be completed by the class deadlines.)

TARGETED UNDERSTANDINGS/CONTENT STANDARDS

- Apply the scientific design process to develop and implement solutions to problems or challenges.
- Propose, implement, and document a scientific design process used to solve a problem or challenge.

STUDENT PRODUCTS / PERFORMANCES

- Implementation Worksheet (proof of work completed)
(60 points)
- Written Report
(100 points)
- Oral presentation
(50 points)

CRITERIA FOR EVALUATION OF EACH PRODUCT OR PERFORMANCE
ARE DETAILED IN THE FOLLOWING PAGES

Science Experiment Papers

(should have these 7 separate sections)

Title

Research Question or Problem Statement (15 pts)

This question should ask how your manipulated variable affects your responding variable. (e.g. "What is the affect of ____ on ____?")

Gather Information (10 pts)

Make interesting observations about your experimental materials and ideas. Study what is already known about your research question (internet or library). This allows you to make an educated guess for your hypothesis.

Hypothesis (15 pts)

Educated guess at research question, and why you think so. If..., Then.... I predict this BECAUSE...

Materials / Procedure (15 pts)

The procedure consists of specific, numbered instructions that should include:

- All the directions someone should follow to run your experiment
- All measurements you'll make, data you will record and number of trials
- All the variables you need to control,
- What you'll do with all your data so that you can answer the original research question.

Data / Analysis Section (30 pts)

All Tables and Graphs must have a title, labels and units on all rows and columns. Any calculations must be described and demonstrated. (Explain your math and show examples)

Conclusions (20 pts)

- 1) Summarize the results of your experiment. Explain the full range of your tested variable and quote your numeric data.
- 2) Does this support or not support your hypothesis? Explain.
- 3) Explain what these results mean about y our topic (an inference).
- 4) List at least two sources of measurement error in your experiment, or two ways measurements could have been made more accurately.

TIMELINE & IMPLEMENTATION WORKSHEET

WHAT DO I DO AND WHEN DO I NEED TO HAVE IT DONE?

(See the web description of how to write each section of a science research paper)

1. Research Proposal Question DUE: Tuesday, 10/28/08 (5 points) DONE: _____

2. Gather information Complete on: Thursday, 10/30/08 (5 points) DONE: _____

3. Logical Hypothesis DUE: Friday 10/31/0811 (10 points) DONE: _____

4. Plan/Procedure Prepare Friday, DUE: Monday, 11/3/08 (10 points) PLAN/PROCEDURE DONE: _____

5. Data Tables/Graphs Prepare Monday, DUE: 11/4/08 (5 points) DATA TABLES/GRAPHS DONE: _____

||||||| The first 5 steps must be completed before testing Day!! |||||||

6. TESTING DAY Will be Tues / Wednesday, 11/4 and 11/5/08 DONE: _____
Students will run their tests in class on this day. All data collected from testing must be recorded in an organized fashion, including Titles, Labels, and units. (5 points)

Thursday in Computer Lab. Friday is half day – we'll take a test

7. Analyzes data/draws conclusions DUE: Friday, 11/7/08 (10 points) ANALYSIS, INFERENCES / CONCLUSION & RECOMMENDATIONS DONE: _____

8. Plan presentation/Type report Monday - Wednesday in computer labs DUE: Thursday, November 13th DONE: _____

These class periods students will be given access to the computer lab to type their written report. It is NOT a requirement to have the report typed. Any students needing time to finish written report or work on presentation may do so at this time. (5 points)

9. Presentations DUE; Thursday-Monday, Nov 11th / 12th / 15th DONE: _____
Power Point Presentations should include pictures, drawings, or samples of tests. Presentations will be given in class, no longer than 10 minutes each. (5 points)

PRESENTATION/ORAL REPORT GUIDELINES

Prepare as a PowerPoint Presentation with these 9 slides:

INTRODUCTION: (10 points)

1. Introduce yourselves.
2. Tell what products you chose to test and why. Clearly state your problem you investigated, including your manipulated and responding variables.

BODY: (25 points)

3. The main observations you made that led you to your hypothesis.
4. What was your hypothesis? It must give a possible answer to your problem and state why.
5. Clearly and completely state the procedures used to test your hypothesis. It may be helpful to demonstrate if possible. Clearly describe what you did, what you recorded, and what variables you controlled.
6. What were your results/conclusions? Use data tables and graphs if helpful.
7. Summarize your inferences about your conclusions.

CONCLUSION: (15 points)

8. Tell of any difficulties or struggles you had in testing your product. What would you change if you did it again to improve reliability of your results?
9. In closing, remind us of your tested problem and how you answer it. Clearly state any recommendations you make.

(Include sketches and /or images with each slide, or at least most of your slides. Extra Credit for citing other research found on the internet that is related to your experiments. These sources should either 'agree with' or 'not agree with' or 'explain' your findings.)

October 26, 2008

Dear Parents/Guardians,

This letter is to inform you of a major project we're restarting in science. It involves using the scientific processes to solve problems. Students will be synthesizing all the science process skills they have learned and will be learning over the next 3 weeks. Students will be testing any products of their choice that are found in a home (such as cleaners, paper towels, toilet paper, pens, batteries, or any other testable products they can think of). They will need to bring these items from home if they are not available at school. Most students will be working with a partner so they can share the cost, if any, for these products. **My hope is that they will choose something that your family already has at home.** If you have any questions or concerns about obtaining these household products please call or email me. I can be reached at school (ccunningham@osd.wednet.edu or 596-7600).

Students received a packet today outlining the project, guidelines and due dates. It is easy for students to fall behind when working on a long project. I will initial each item in the student packet as students complete them. If you would like to keep track of your student's progress just check this sheet!

I appreciate having your GREAT kids in my class and thank you in advance for your help with this project!

Sincerely,

Chris Cunningham

I have read this letter with my child _____

Parent/Guardian Signature

Date