

Grade 8 Science

Unit 1: Introduction and Safety

The Scientific Method

Last class we looked at an example of an experiment worksheet. Today we will discuss a task that has you, in a group of 3, producing a worksheet for an experiment of your choice. Let's quickly review the components of a proper experiment:



- Purpose
- Hypothesis
- Equipment
- Procedure
- Safety Precautions
- Independent Variable
- Dependent Variable
- Constant Conditions
- Control
- Observations
- Data
- Discussion
- Sources of Error
- Conclusion

The Scientific Method

Your task is to complete each of the following steps:

- Get in a group of 3 students (make good choices)
- Choose an experiment (real or fictional)
- Complete the "Components of our Experiment" planning sheet
- Develop a digital worksheet for your experiment (drive)
- Print a copy of your completed worksheet
- Complete the worksheet with mock information (i.e., fill it in as if you were a student doing the experiment)
- Share your digital worksheet with me
- Submit your completed worksheet and planning sheet

COMPONENTS OF OUR EXPERIMENT

Name: _____

Experiment: _____

Question: _____

Hypothesis: _____

Materials: _____

Procedure: _____

Results: _____

Conclusion: _____

The Scientific Method

Let's have a look at an example. You will note that this example uses a "fictitious" experiment.

Completed
Planning Sheet

COMPONENTS OF OUR EXPERIMENT

Name: _____

Experiment: _____

Question: _____

Hypothesis: _____

Materials: _____

Procedure: _____

Results: _____

Conclusion: _____

Blank
Experiment Sheet

HOW TO MAKE A DIAGRAM

Name: _____

Experiment: _____

Question: _____

Hypothesis: _____

Materials: _____

Procedure: _____

Results: _____

Conclusion: _____

Completed
Experiment Sheet

HOW TO MAKE A DIAGRAM

Name: _____

Experiment: _____

Question: _____

Hypothesis: _____

Materials: _____

Procedure: _____

Results: _____

Conclusion: _____

The Scientific Method

Here is the rubric that will be used to grade this assignment. The mark will be a group mark, and individual grades assigned will be adjusted based on participation in the task.

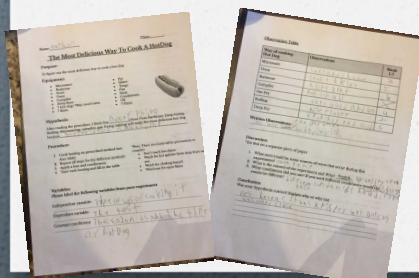
Name: _____
Date: _____

Criteria	Level			
	1	2	3	4
Communicate the concept of the experiment (purpose, hypothesis, etc.)	The main concept of the lab is communicated, the student could have some level of understanding of the experiment.	The concept of the lab is communicated, the student could understand the general idea of the experiment.	The concept of the lab is clearly communicated, the student could understand the purpose of the experiment.	The concept of the lab is clearly communicated in detail, the student could fully understand the purpose of the experiment.
Include necessary information to perform the experiment (procedure, equipment, etc.)	Instructions are presented in some fashion, the student could need significant additional input to perform the experiment.	Instructions are included, lacking some clarity, the student could need additional input to perform the experiment.	Instructions are clearly laid out, the student could need minimal additional input to perform the experiment.	Instructions are clearly and concisely written, the student would be able to perform the experiment with no additional input.
Show an understanding of key features of an experiment (variables, controls, etc.)	Most components of the scientific method are present with some accuracy.	Most components of the scientific method are present, but are accurately implemented.	All components of the scientific method are present, and are accurately implemented.	All components of the scientific method are accurately implemented.
Include grade appropriate scientific information (observations, discussion, etc.)	Information presents or prompts near grade level scientific information, but is lacking in detail.	Information presents or prompts near grade level scientific information with some detail.	Information presents or prompts grade level scientific information with appropriate detail.	Information presents or prompts significantly detailed scientific information, requiring higher level thinking.
Present material in an aesthetic manner (formatting, spacing, etc.)	Document shows signs of consistency in formatting, and evidence of some consideration towards aesthetics.	Document is somewhat uniform and some formatting has been effectively pleasing.	Document is mostly uniformly formatted and is aesthetically pleasing in presentation.	Document is uniformly formatted and implemented in a professional manner.

☐ Headings are uniform (date, title, etc.) and stand out appropriately
☐ Alignment is consistent (font, bullet, numbering)
☐ Document spacing is consistent, space on page is used appropriately
☐ Bullets and numbering used properly
☐ Images included with equipment (clearly single image, placed in an organized manner)
☐ Input lines, for student, are uniform (length, spacing)
☐ Details are used well (coloring and coloring to increase aesthetics)
☐ Document has been proof read to avoid spelling/typo errors
☐ Planning sheet included

Overall Thoughts: _____

Just How Fun Can This Be?



If your experiment is designed well enough, it may just get some special treatment ;)

Experiment developed by EG, JH, and IR, thanks girls!

The Scientific Method

You may use the remaining class time to begin your work. Following that you will have two more in-class work periods to complete this task.

When you have your group, please write you class number and all three names on a post-it note and bring it to me.



You may continue to work on this outside of class. When you arrive next class, you may begin working right away.

Attachments

- 1-2 Bouncing a Ball Experiment Sheet.pdf
- 1-3 Components of our Experiment.pdf
- 1-3 Example Worksheet Blank.pdf
- 1-3 Example Worksheet Completed.pdf
- 1-3 Design an Experiment Rubric.pdf
- 1-3 Components of our Experiment Example.pdf