

How to Write a Lab Report

Name _____

8th Grade Science... Lab reports should include the following:



- 1) **Title of your lab** – The title should be written as a specific question you are trying to answer through your experiment.
Example: Which paper towel absorbs more liquid: Brawny or Bounty?



- 2) **Purpose** – The reason you want to conduct this investigation, what you hope to find out.
Example: The purpose of this experiment is to find out whether Brawny or Bounty is a more effective paper towel.

- 3) **Hypothesis** – What you think the answer to your question will be and WHY. Your reason WHY should be based on some prior knowledge you have on the topic.
Example: I think Brawny will absorb more water because the advertisements say it will, and when we buy Brawny paper towels at home, they seem to last longer.

- 4) **Experiment** – It is important that you think through how you will set up your experiment before you begin testing. The more thought you put into your experiment, the more meaningful your results will be. Your “Experiment” section, should have the following parts:

Materials – list everything you will need to conduct the experiment. Include amounts.
(Example: 50 mL water)

Independent Variable – A variable is something that differs in the experiment. A good experiment should be set up to have ONE independent variable. This is the variable that the scientist decides to test. Example: In our experiment, “Which paper towel absorbs more liquid: Brawny or Bounty?” the independent variable is the brand of paper towel because that is what the experimenter decided to test. This variable is **independent** of the results.

Dependent Variable – The dependent variable **DEPENDS** on the experiment. It is basically the difference you expect in your results. Example: In our experiment, “Which paper towel absorbs more liquid: Brawny or Bounty?”, the dependent variable is the amount of water absorbed because you are expecting the amount of water absorbed to be different *depending* on the brand of paper towel.



Constants – What parts of your procedure do you need to make sure stay the same each time you test? (Example: the amount of liquid poured on each paper towel, the size of each paper towel, the technique for pouring the water all must be controlled.)

Control – When possible, it is good to have a standard for comparison in your experiment. This is a control. It is easiest to think of controls when thinking of testing new medicines. There is always a “control” group who receives a fake pill that has nothing it called a “placebo”. The effects on this group are compared to the group that is really taking the medicine. A generic paper towel could serve as the control in our example.

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Procedure – A step-by-step set of directions for how you will go about conducting your experiment.

- Example: 1) Measure 25 mL of water into two graduated cylinders.
2) Cut a 10cm x 10cm square of each brand of paper towel.
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- 5) **Observations:** You will need to collect qualitative and quantitative data during your testing.

Qualitative data can be recorded like a journal entry. It is what you see, smell, and hear during the experiment. It is a great place to record any errors in your experiment or possible unusual things you notice that could affect your results.

Quantitative data is numbered data. You should always set up a data chart using Microsoft Excel before you begin your experiment so you have a place to record your numbered data while you test. After testing is complete, you can graph the data in your chart.

Outliers – When doing experiments, procedures will always go wrong and mistakes will be made due to human error. That's why when collecting data, you should repeat your experiment several times to collect multiple sets of data. These repeats of the experiment are called **test trials**. Collecting several test trials of data will allow you to look for patterns and identify which data is consistent and reliable and which data should be thrown out due to human error. Numbers that don't fit with the rest of the data and should be thrown out are called **outliers**.

Conclusion: Your conclusion should analyze your data. You should be able to restate specific numbers and observations from your data to help you reach an answer to your question. After analyzing your data, it may be possible that you cannot reach a conclusion. It is also okay to say that more testing needs to be done and why. It could be that you discovered that another method of testing should be conducted or that more data should be collected. Often one experiment only helps a scientist form a new hypothesis for the next experiment. So in other words, it is okay for your conclusion to be more of a discussion of your data than a firm answer to your question.

