



due 4/16

**SCIENCE
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Conclusions

Key Info

Your **conclusions** summarize how your results support or contradict your original hypothesis:

Related Links

- [Sample Conclusions](#)

- Summarize your science fair project results in a few sentences and use this summary to support your conclusion. Include key facts from your background research to help explain your results as needed.
- State whether your results support or contradict your hypothesis. (Engineering & programming projects should state whether they met their design criteria.)
- If appropriate, state the relationship between the independent and dependent variable.
- Summarize and evaluate your experimental procedure, making comments about its success and effectiveness.
- Suggest changes in the experimental procedure (or design) and/or possibilities for further study.

Overview

Your conclusions will summarize whether or not your science fair project results support or contradict your original hypothesis. If you are doing an Engineering or Computer Science programming project, then you should state whether or not you met your design criteria. You may want to include key facts from your background research to help explain your results. Do your results suggest a relationship between the independent and dependent variable?

If Your Results Show that Your Hypothesis is False

If the results of your science experiment did not support your hypothesis, don't change or manipulate your results to fit your original hypothesis, simply explain why things did not go as expected. Professional scientists commonly find that results do not support their hypothesis, and they use those unexpected results as the first step in constructing a new hypothesis. If you think you need additional experimentation, describe what you think should happen next.

Scientific research is an ongoing process, and by discovering that your hypothesis is not true, you have already made huge advances in your learning that will lead you to ask more questions that lead to new experiments. Science fair judges do not care about whether you prove or disprove your hypothesis; they care how much you learned.

Sample

Here are sample [conclusions](#).

Conclusions Checklist

What Makes for Good Conclusions?	For Good Conclusions, You Should Answer "Yes" to Every Question
Do you summarize your results and use it to support the findings?	Yes / No
Do your conclusions state that you proved or disproved your hypothesis? (Engineering & programming projects should state whether they met their design criteria.)	Yes / No
If appropriate, do you state the relationship between the independent and dependent variable?	Yes / No
Do you summarize and evaluate your experimental procedure, making comments about its success and effectiveness?	Yes / No
Do you suggest changes in the experimental procedure and/or possibilities for further study?	Yes / No

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Sample Conclusions

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Results

According to my experiments, the Energizer maintained its voltage (dependent variable) for approximately a 3% longer period of time (independent variable) than Duracell in a low current drain device. For a medium drain device, the Energizer maintained its voltage for approximately 10% longer than Duracell. For a high drain device, the Energizer maintained its voltage for approximately 29% longer than Duracell. Basically, the Energizer performs with increasing superiority, the higher the current drain of the device.

The heavy-duty non-alkaline batteries do not maintain their voltage as long as either alkaline battery at any level of current drain.

Conclusions

My hypothesis was that Energizer would last the longest in all of the devices tested. My results do support my hypothesis.

I think the tests I did went smoothly and I had no problems, except for the fact that the batteries recover some of their voltage if they are not running in something. Therefore, I had to take the measurements quickly.

An interesting future study might involve testing the batteries at different temperatures to simulate actual usage in very cold or very hot conditions.

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Name _____

Discussion of Results

Directions: This worksheet will help you write a ROUGH DRAFT of your Discussion of Results.

The discussion of results is where you explain what the results of your experiment mean. It explains what happened, what that means in relation to your hypothesis, and also explains why the results occurred. It does the following things:

- Restates the hypothesis
- Describes the results that were expected and what they would have shown
- Describes the results that were collected and what they do show
- Describes possible sources of error and effects on data
- Indicates how the experiment could be changed to improve the procedures and reduce experimental error.

The discussion is two paragraphs long.

- The first paragraph is where you explain what you were testing and the results.
- The second paragraph is where you explain possible sources of error and explain how you could possibly change the procedures.

Writing:

1st Paragraph:

- Restate the problem
- Restate the hypothesis
- Explain what your data should look like if the hypothesis is correct
- Explain the data that you collected, including listing the mean (average).
- Explain why the results occurred.

The problem being studied in this experiment was _____

It was proposed that if (*hypothesis*) _____

If the hypothesis is correct, the results should (*say what the results should look like*) _____

The data showed that _____

This was measured and calculated by (*explain the methods briefly*) _____

These results are believed to have occurred because (*cite research*) _____

2nd Paragraph:

- State the possible sources of error (at least 3)
- Explain how you could avoid these errors in the future

Although the experiment was controlled, there were still some possible sources of error. Sources of error in this experiment include (*what could have changed your data?*) _____

These errors could be avoided in the future by (*How can you improve your procedure so that you don't make the same mistakes?*) _____

2nd Paragraph:

- Restates the hypothesis
- Says if the hypothesis was proven or null; explains how you know
- Lists what you learned
- Discusses what future research or experiments could be done on this topic

The hypothesis (*restate the hypothesis here*), _____

_____, was (*null or proven*) _____.

You're your hypothesis was null then rewrite the hypothesis and state here why it was null and how you know it was null. If the hypothesis is proven then explain how you know that (tie the results to the hypothesis).

The experiment was/was not valid because _____

The experiment was/was not reliable because _____

The experiment proved that (*state what you learned*) _____

Future experiments that would be extension of this experiment include (*at least two*) _____

Similar experiments did/did not have the same results. For example, _____
