

# Conclusion

## Conclusion

The conclusion is a discussion of what the data, patterns, and relationships mean. The conclusion answers the original question. The conclusion consists of 6 - 7 sections written in complete sentences. When writing the rough draft, each of the steps must be numbered. The final draft is written without numbering.

*The conclusion includes the following:*

1. **Describe the purpose.** What were you trying to find out and why?
2. **Statement of support or non-support of the original hypothesis.** DO NOT state whether your hypothesis was right or wrong. State “The data collected did/did not support the original hypothesis.” Include two or three sentences that **use specific numerical data to give evidence** of the support or lack of support for the hypothesis. Do not discuss individual trials. DATA could include the MEAN, MEDIAN, MODE, or RANGE! Include units when discussing data.
3. **Evaluate the independent variable in terms of the results of the experiment.** Did the independent variable make any difference? Why or why not? **ANSWER YOUR ORIGINAL QUESTION.** What did you learn? {HINT: Look at data analysis step #5}
4. Describe and discuss any **problems and/or solutions that occurred during the experiment.**
5. **Describe and discuss any unusual observations** made during the experiment.
6. **Describe ways that your investigation could be carried further or expanded.** How could you elaborate on this topic? What else could be done? {HINT: Look at limitations from data analysis step #6}
7. Write a **revised hypothesis**, if data did not support your original hypothesis. If you write a revised hypothesis, it does not replace your original hypothesis.

*Key starter sentences are:*

1. “The purpose of this investigation was . . .” “This investigation was important because . . .” [2<sup>nd</sup> sentence pertains to Level2/3]
2. “The data collected [did/did not/partially] support(ed) the original hypothesis.”
  - a. Include two or three sentences that **use specific numerical data to give evidence** of the support or lack of support for the hypothesis.
  - b. USE DATA - mean/median/mode/range. Only use data that helps to answer the original question.
  - c. Include units when discussing data.
3. “The independent variable (\_\_\_\_\_) [did/did not] affect the dependent variable (\_\_\_\_\_).”
  - a. “As the independent variable increased/decreased/changed/etc., the dependent variable increased/decreased/fluctuated/varied/remained constant/etc.”
  - b. “These findings lead me to believe . . .” – What did you learn?
4. “A problem I encountered while doing this investigation was . . .” “I solved this problem by . . .”
  - a. If no problems occurred, then write, “No problems occurred during this investigation.”
5. “During the investigation, I noted an unusual observation.”
  - a. If no unusual observations occurred, then write, “No unusual observations were noted.”
6. “My investigation could be expanded by . . .” or “To further this investigation . . .”
7. “Based on the data collected, my revised hypothesis is . . .”
  - a. NOTE: Written **only** if data did not support original hypothesis.

**Example Conclusion - States of Matter:**

1. The purpose of this investigation was to find out what happens to the temperature of frozen water as it changes from state to state. This investigation was important because as the amount of energy increased, the substance could be seen changing to a different phase showing that energy is needed to change phases of matter.
2. The data collected partially supported the original hypothesis. The temperature of the frozen water did increase as it moved from state to state. The starting temperature was \_\_\_\_\_ ° C and the ending temperature was \_\_\_\_\_ ° C; however, the temperature remained steady at \_\_\_\_\_ ° C for \_\_\_\_\_ minutes and at \_\_\_\_\_ ° C for \_\_\_\_\_ minutes.
3. The independent variable (time) did affect the dependent variable (temperature). As the independent variable increased the dependent variable increased. These findings lead me to believe that in order for a phase change to occur in a substance, energy must be added.
4. During the investigation I noted two unusual observations. The temperature stayed the same at two separate times, and the temperature dropped at \_\_\_\_\_ minutes.
5. No problems occurred during this investigation.
6. My investigation could be expanded by testing different substances other than water to see if the same patterns occur.
7. Based on the data collected, my revised hypothesis is if the frozen water is heated to boiling, then the temperature of the substance will steadily increase until it reaches the next phase (state) change where the temperature will remain the same until enough energy has been added to move to the next phase change.

**Science Fair Rubric Checklist - Conclusion**

<i>Expectations - Conclusion</i>	<i>Points</i>
<ul style="list-style-type: none"><li>▪ Typed/Font 12/Times New Roman/Double-Spaced</li><li>▪ Heading (5 lines) – left of page<ul style="list-style-type: none"><li>○ Title “SF Conclusion”</li></ul></li><li>▪ Five or less spelling/grammatical errors</li><li>▪ No contractions</li><li>▪ Guidelines followed (see conclusion notes):<ul style="list-style-type: none"><li>○ Starter sentences used; Complete sentences</li><li>○ Purpose stated</li><li>○ Relates directly to the support or non-support of hypothesis</li><li>○ Supported by data; Specific data is used to support</li><li>○ Independent variable evaluated; Patterns noted</li><li>○ Problems and solutions described (if applicable)</li><li>○ Unusual observations described (if applicable)</li><li>○ Improvements or expansions of the experiment described</li><li>○ Revised hypothesis written – If - then (if applicable)</li></ul></li><li>▪ Rough drafts (typed with revisions) stapled to back (left corner)</li><li>▪ Rubric stapled on front (left corner)</li><li>▪ Parent signature on typed final draft</li></ul>	<b>30</b>
<b>SCORE</b>	