

Name and number	January 26
Science Fair	background research word count—
Title	

SUBMISSION GUIDELINES FOR PUBLISHING SCIENCE FAIR WRITTEN WORK

Open a *single* Word document for your Science Fair project. That one document will contain every part of your project except the bibliography. Save the file *often* to more than one location.

1. Go to “file/page set-up.” Set one-inch margins all around (left, right, top, and bottom).
2. Under “format/paragraph/indents and spacing,” set the general alignment to left alignment, and use “0 pt.” before and after paragraphs.
3. Use “control A” and then “control 2” to set the whole document to *double-space*. Do *not* skip any additional lines anywhere at all!
4. Use Times New Roman 12 for *everything*, including all titles.
5. Following the model at the top of this page, write a heading on the first page of your document. Do *not* put a heading on any other page of the whole project.
6. Put the title for your project, centered and bold, under the heading. (Never use quotation marks and never underline any title when it is at the top of a page.) Do make your project’s title creative! No boring titles, please. ☺
7. Each part of the project will start on a new page and have a title of its own. Using “control enter” to start a new page, make a new page for the question, a new page for the hypothesis, and so on. Do not change the wording of the section titles. Put each at the top of the appropriate page, centered and bold.
8. Go to “view/header and footer.” In the header at the top of the page, type your name and number on the left side. Tab over to the right and click on the “page number” icon. The computer will automatically add the correct page number to every page. (See examples on the following pages.)
9. Eliminate the header from the first page. (After all, that page already has a full heading.) Go to “view/header and footer.” Click on the “page layout” icon. Click in the box for “different first page.” Now there will be a header on every page except the first one.
10. When you have finished writing your background research, question, and hypothesis, go to “tools” and do a spell check and grammar check. When you have made everything as perfect as you can make it, tell the computer to do a word count. Put the number of words in the heading on the first page.

BACKGROUND RESEARCH AND BIBLIOGRAPHY

You need to find at least ten current resources by January 10.

- You can use up to five books. Two of those five books may be encyclopedias. Encyclopedias may be printed books or on a CD or on the internet (but *not* Wikipedia). Remember to use the encyclopedia format for all encyclopedia bibliography entries, whether they are books, CDs, or whatever.
- You can use up to five articles. They can be newspaper, magazine, or internet articles. For each article you use, you must fill out an article analysis form.
- You can use up to two interviews with experts. The people you interview must be paid to do work in the field you are asking about. Interviews count double for resources!

Take notes *without copying*. Read a section, close the book (or magazine or window), and write down the information you think is most important. Use your own words. Double-check for accuracy before you go on to read and take notes on the next section.

By January 19 you should be done taking notes. Your article analyses and final-draft bibliography are due.

1. Start a new Word document for the bibliography. This is the *only* part of your science fair project that is set to *single-space*!
2. On the top line of the page write **Bibliography** centered in bold.
3. Skip a line under the title.
4. Put your name and number on the left of the header.
5. Leave the page number blank on the right of the header.
6. Put all your entries in alphabetical order.
7. Do *not* number entries.
8. Do *not* indent any part of the entries.
9. Double-space between entries. That means you will have to skip a line between entries.
10. Hand in your bibliography two ways. You need to turn in a paper copy to the science folder, but you also need to turn in your bibliography electronically. Save your final draft bibliography into the bibliography folder in "classes/Kragen." Use your number and first name as the name of the file (call it "03 Max" or "25 Maddy").

For each entry follow the format directions you are given *exactly*. You will not earn any points on your bibliography entries until they are done according to the directions. Once I have corrected your bibliography, you may fix all your errors and turn it in again to improve your score. You **MUST** attached the original corrected version to the fixed version.

Part one of your science fair project is due January 26. Organize your information and write an original background research paper as well as the question and hypothesis for your investigation.

Your total word count for this part of your project must be no less than 500 and no more than 750 words. Your paper will be a big part of your writing grade in addition to being part of the science fair grade.

DAILY LOG

You need to be keeping a daily log of your science fair project. Include journal entries that reveal your thinking. Include all your rough draft work and photocopied resource material.

QUESTION AND HYPOTHESIS

Along with the background research report, both the question and hypothesis are due January 26.

1. After you finish writing your background research paper, hit “control/enter” to go to the next page. At the top of that page type **Question**, centered in bold. Underneath write your investigational question in *regular paragraph format*—indented and *not* centered.
2. Write your question in a *single sentence*.
3. Your question must identify the variable being changed
4. and ask how the changed variable will affect the outcome (the measured results).
5. Hit “control/enter” to go to the next page. At the top of that page type **Hypothesis**, centered in bold. Underneath write your hypothesis in *regular paragraph format*—indented and *not* centered.
6. Write your hypothesis in a *single sentence*.
7. From what you have learned in your research, make your best guess about what the results of your investigation will be. Make sure your hypothesis actually answers the question you asked!
8. Your hypothesis must include your prediction of how the changed variable will affect the outcome (the measured results), including what conditions will be observed (the changes you will look for)
9. and how changes will be measured (time, distance, height, weight, temperature).
10. It must tell *why* you believe your prediction will be correct. A good pattern to follow is “If . . . then . . . because”

The Washington state science curriculum uses multiple terms to talk about types of variables in a scientific investigation. (They consistently use the word *investigation* instead of the word *experiment*).

changed variable = manipulated variable = the one thing you will change

controlled variables = all the other things you are going to keep the same

outcome = measured results = measured variable = responding variable = what happens because you changed the manipulated variable

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Science Fair Grade, Part One

Follow submission guidelines 10 points possible _____

Resources—books/encyclopedia 5 points possible _____

Resources—articles 5 points possible _____

Resources—interviews (bonus) 4 points possible _____

Background research report (500-750 words) 100 points possible _____

Follow general directions for making a bibliography 10 points possible _____

Format each bibliographic entry correctly 10 points possible _____

Question/hypothesis 10 points possible _____

150 total points possible _____

percent score for part one _____

All of part two of your science fair project is due March 2.

DAILY LOG

You need to continue keeping a daily log of your science fair project. Include journal entries that reveal your thinking. Include all your rough draft work. Be sure to include the rough draft of your data table.

MATERIALS AND PROCEDURE

1. Open up your science fair document. Go to the end of part one at the bottom of the hypothesis page. Hit “control/enter” to go to the next page. At the top of that new page type **Materials**, centered in bold. (Notice that the header shows the correct page number.)
2. Underneath write your detailed and specific list of everything you need in order to do your investigation. Include the size, kind, and/or characteristics of each item. Give exact amounts.
3. Include all the measuring devices you will use.
4. Include commonly available things, like water.
5. You must include a data table in your material list. It’s a good idea to include a blank data table as a sample. Go to “table” to make your data table.
6. When you finish listing all your materials and equipment, hit “control/enter” to go to the next page. At the top of that page type **Procedure**, centered in bold.
7. Underneath write your complete directions for how to do your investigation. Your directions should be a “recipe” that anyone else could read and follow to do the same investigation. Be really specific about what you are going to measure (say you will measure “height,” for example, instead of “size”). You are allowed to use pictures and diagrams to help make your procedure clear. In fact, I *encourage* pictures and diagrams!
8. You must make sure your changed variable is clearly identified, and you must make sure your controlled variables are obvious.
9. Include the fact that you will record your observations in your data table as you do your investigation.
10. Explain exactly how you will do three to five repetitions of your investigation. If you want steps to be repeated, you must tell exactly which steps: “Repeat steps 2 through 18 four times for a total of five repetitions of the investigation.”

CONDUCT A SAFE INVESTIGATION

You need to do your investigation and record your observations.

1. In general, you need to follow your procedure the way you planned to do it. However, if you encounter problems, you are allowed to make adjustments in your procedure and start over. Make sure you change the directions in your final draft of your procedure. And make sure you record the problems and what you did to fix them in your daily log.
2. You must record your observations in real time in your rough draft data table.
3. Your units of measure in your data table need to be obvious.

You need to put your observations into final draft form on the computer.

4. When you finish writing your procedure, hit “control/enter” to go to the next page. At the top of that page type **Data**, centered in bold.
5. Your final draft entries in the data sheet must show:
 - the date and/or time of each entry
 - accurate* records of investigational results
 - your measurements and observations given in number form (wherever possible)
 - three to five repetitions of the investigation

Using Excel, create at least two graphs to show the results from your data table.

6. You need one or more graphs showing individual results for the three to five repetitions
7. You need one graph showing the averages of the results.
8. Your final draft graphs must show:
 - title for each graph
 - x-axis and y-axis labels
9. Your units of measure in your graphs need to be obvious.
10. All your data in your table and in your graphs must be clear—easy to read and understand.

To keep your page numbering correct, you can include your final draft data table in your Word document, and import your final graphs from Excel into your Word document.

SUMMARY OF INVESTIGATION

Write your final draft summary of your investigation.

1. After your data table and graphs, hit “control/enter” to go to the next page. At the top of that page type **Summary of Investigation**, centered in bold.
2. Underneath write three well-developed and well-organized paragraphs summarizing the results of your investigation.
3. In the first paragraph describe your plan.
4. Explain why you selected that plan.
5. Mention the materials you used.
6. Describe the safety procedures you followed.
7. In the second paragraph explain your observations, data, and results. Tell what happened during the course of your investigation. Clearly and simply explain what you observed.
8. Explain what your graphics mean.
9. Tell about any problems you had and identify any sources of error.
10. Tell how you could improve your investigation.

CONCLUSION

Write your final draft conclusion.

1. When you finish writing your summary, hit “control/enter” to go to the next page. At the top of that page type **Conclusion**, centered in bold.
2. Underneath write one well-developed and well-organized paragraph summarizing the conclusions you can draw from your data. Start by answering your original question.
3. State whether or not your hypothesis was correct.
3. Explain *why* your hypothesis was correct or incorrect.
4. You must cite your lowest supporting data using the numeric value for the measured variable.
5. You must cite your highest supporting data using the numeric value for the measured variable.
6. You must connect or compare the supporting data to a correct, accurate conclusion.
7. Write a second well-developed and well-organized paragraph summarizing what you learned from doing your investigation.
8. Explain how the things you learned relate to the background research you did.
9. Explain why your investigation is important and how it relates to real life.
10. Make a statement about further questions you have or suggest possible extensions to your investigation.

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Science Fair Grade, Part Two

Follow submission guidelines 10 points possible _____

Materials and procedure 10 points possible _____

Conduct a safe investigation 10 points possible _____

Summarize investigation 10 points possible _____

Conclusion 10 points possible _____

50 total points possible _____

percent score for part two _____

All of part three of your science fair project is due March 15.

DAILY LOG

You need to finish keeping a daily log of your science fair project. Include journal entries that reveal your thinking right up to the day of your presentation. Include all your rough draft work.

Your daily log will go into one folder labeled **Daily Log**.

SCIENTIFIC JOURNAL

All of your final draft work goes into another folder labeled **Scientific Journal**. Do *not* put pages into your journal if I have written corrections on them. Fix them and print out clean copies!

Inside your journal include all your written work and graphics in the following order:

1. title page
2. acknowledgments
3. table of contents with clear and accurate page numbers

4. By the way, do *not* use a header or heading on the title page, acknowledgments, or table of contents.

5. background research paper (say that it starts on page one for the table of contents)
6. question
7. hypothesis
8. materials
9. procedure
10. data
11. graphs
12. summary of investigation
13. conclusion
14. bibliography

15. On the front of your journal, make an attractive cover with the title of your project. Add color and/or pictures.

DISPLAY

Work with your parents to devise a logical and attractive layout that follows the guidelines:

1. sturdy and self-supporting display board
2. within size limits—30” deep by 48” wide by 108” tall
3. attention-getting title
4. all lettering uses an appropriate font that is big enough and easy to read from a distance
5. materials are arranged logically—from left to right or from top to bottom
6. everything looks neat and clean with straight lines and edges—no wrinkles, tears, or smudges
7. the layout and design is attractive and colorful (get your parents to help)
8. include at least one graph
9. include other visuals and/or hands-on materials
10. include the following with labels:
 - question
 - hypothesis
 - materials
 - procedure
 - summary of investigation
 - conclusions

ORAL PRESENTATION

Prepare a short talk to explain your investigation. Like the display and the journal, your talk should tell the story of the investigation, and it should follow the steps of the scientific method. Greet your judge with a smile, introduce yourself clearly with your first and last name, shake hands. While giving your presentation, you should direct the judge’s attention to the display, referring to each section as you explain each step. Be prepared to answer questions from your judge.

Relax and have fun! Now is your chance to share the results of all your hard work.

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Science Fair Grade, Part Three

Daily log 15 points possible _____

Scientific journal 15 points possible _____

Display 20 points possible _____

Presentation to judge 50 points possible _____

100 total points possible _____

percent score for part three _____