**SCIENCE FAIR NOTES**

1. Choose a *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*.

* Something that you’re interested in
* Something you can investigate yourself
* Something that can be worded as a question so you can answer it by experimenting

(“How does \_\_\_ affect \_\_\_”)

* Something with results that can be *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* (timed, weighed, etc.)

**2. LOGBOOK:** Do NOT write your name anywhere on your logbook. Just put a sticky note on the front with your name on it.

Explain the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* of your experiment.

* What do you want to find out?
* Why did you choose this experiment?
* What is to be achieved from this experiment?

**3. LOGBOOK: Background information (*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*)**

* Decide what types of information you will need.
* Write your research in your logbook.

For every source, write a citation and the facts from that source. You may use [www.easybib.com](http://www.easybib.com) to write your *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*, or use the format on the sheet you are given.

**4. LOGBOOK: Write an experimental plan.**

* Give step-by-step directions for your experiment.
* List the materials needed for the experiment.
* Set up the experiment to test the effects of changing one factor, also called a *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*.
* List your variables:
  + *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* variable (also called the independent variable: this is the factor that is changed
  + *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* variable (also called the dependent variable): this is what happens as a result of changing the manipulated variable
  + *\_\_\_\_\_\_\_\_\_\_\_* variables (also called the constants): these are the factors that will remain the same in the experiment so that you will have a fair test and the experiment will be valid.
  + Remember: DRY MIX!

**5. LOGBOOK: Write your hypothesis.**

* Based on what you already know and your research, write a *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* ( a prediction, or educated guess, of what you think will happen)
* “I hypothesize that \_\_\_\_\_\_ will cause \_\_\_\_ because \_\_\_\_\_\_.”

**6. LOGBOOK: Conduct the experiment and collect the data.**

* Write neatly in pen. If you make a mistake, draw a single line through it neatly.
* Date everything that you do.
* Repeat each trial at least three times to be sure your results are valid.
* Set up charts or tables for your data before you start the experiment.
* Take or draw pictures as you do your experiment. Do NOT include any faces in your photos.
* Take and record measurements using the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_* system.
* Write down any unexpected difficulties that might affect your results.
* Write down everything you do, everything you observe, every mistake you make, and every change you make.

**7. LOGBOOK: Results**

* Arrange your data in a format (table, chart, graphs) so you can see any patterns or trends.
* Use *\_\_\_\_\_\_\_\_\_\_\_* graphs to compare data and *\_\_\_\_\_\_\_\_\_\_\_* graphs to show results over time.
* Write to describe any relationships or patterns you found in your experiment.
* Compare your results with your research and expected results.
* Discuss successes and failures and possible errors.

**8. LOGBOOK: Conclusion**

* Go back to your original question and hypothesis. What can you infer based on your results?
* Explain how you reached the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*.
* Tell how the data supports or does not *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* your hypothesis.
* Don’t say, “My hypothesis was wrong/right…”
* Do say, “My hypothesis was supported/not supported by my results because…”
* Tell what you could do differently if you repeated the experiment.
* Tell what variations of this experiment you could do.

**9. FORMAL REPORT:** Do NOT write your name anywhere on your formal report. Just put a sticky note on the front with your name on it. You may type this or write it in pen, but it must be neat and with few errors.

* Title page
* Table of contents
* Abstract: 3 paragraphs

1. purpose and hypothesis

2. describe the experiment

3. explain the results and your conclusion

* Purpose
* Hypothesis
* Background information
* Materials, variables, and experimental plan
* Results—written narrative and charts and graphs. You may use You may use <http://www.nces.ed.gov/nceskids/> to make your graphs.
* Conclusion
* Bibliography: write a *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* for every source you used
* Acknowledgements (who helped you and how they helped you)

**10. DISPLAY** Do NOT write your name anywhere on your display.

* Neat and organized
* Display board should include title, purpose, hypothesis, procedure, results, and conclusion
* Logbook and formal report will be placed on the table in front of the display board; nothing else is allowed. Do not bring in parts of the experiment!
* Use *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* and drawings to illustrate your experiment.

**Teacher Key: SCIENCE FAIR NOTES**

1. Choose a *topic*.

* Something that you’re interested in
* Something you can investigate yourself
* Something that can be worded as a question so you can answer it by experimenting

(“How does \_\_\_ affect \_\_\_”)

* Something with results that can be *measured* (timed, weighed, etc.)

**2. LOGBOOK:** Do NOT write your name anywhere on your logbook. Just put a sticky note on the front with your name on it.

Explain the *purpose* of your experiment.

* What do you want to find out?
* Why did you choose this experiment?
* What is to be achieved from this experiment?

**3. LOGBOOK: Background information (*research*)**

* Decide what types of information you will need.
* Write your research in your logbook.

For every source, write a citation and the facts from that source. You may use [www.easybib.com](http://www.easybib.com) to write your *citations*, or use the format on the sheet you are given.

**4. LOGBOOK: Write an experimental plan.**

* Give step-by-step directions for your experiment.
* List the materials needed for the experiment.
* Set up the experiment to test the effects of changing one factor, also called a *variable*.
* List your variables:
  + *Manipulated* variable (also called the independent variable: this is the factor that is changed
  + *Responding* variable (also called the dependent variable): this is what happens as a result of changing the manipulated variable
  + *Controlled* variables (also called the constants): these are the factors that will remain the same in the experiment so that you will have a fair test and the experiment will be valid.
  + Remember: DRY MIX!

**5. LOGBOOK: Write your hypothesis.**

* Based on what you already know and your research, write a *hypothesis* ( a prediction, or educated guess, of what you think will happen)
* “I hypothesize that \_\_\_\_\_\_\_\_\_\_ will cause \_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_.”

**6. LOGBOOK: Conduct the experiment and collect the data.**

* Write neatly in pen. If you make a mistake, draw a single line through it neatly.
* Date everything that you do.
* Repeat each trial at least three times to be sure your results are valid.
* Set up charts or tables for your data before you start the experiment.
* Take or draw pictures as you do your experiment. Do NOT include any faces in your photos.
* Take and record measurements using the *metric* system.
* Write down any unexpected difficulties that might affect your results.
* Write down everything you do, everything you observe, every mistake you make, and every change you make.

**7. LOGBOOK: Results**

* Arrange your data in a format (table, chart, graphs) so you can see any patterns or trends.
* Use *bar* graphs to compare data and *line* graphs to show results over time.
* Write to describe any relationships or patterns you found in your experiment.
* Compare your results with your research and expected results.
* Discuss successes and failures and possible errors.

**8. LOGBOOK: Conclusion**

* Go back to your original question and hypothesis. What can you infer based on your results?
* Explain how you reached the *conclusion*.
* Tell how the data supports or does not *support* your hypothesis.
* Don’t say, “My hypothesis was wrong/right…”
* Do say, “My hypothesis was supported/not supported by my results because…”
* Tell what you could do differently if you repeated the experiment.
* Tell what variations of this experiment you could do.

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* Purpose
* Hypothesis
* Background information
* Materials, variables, and experimental plan
* Results—written narrative and charts and graphs. You may use You may use <http://www.nces.ed.gov/nceskids/> to make your graphs.
* Conclusion
* Bibliography: write a *citation* for every source you used
* Acknowledgements (who helped you and how they helped you)

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* Use *photos* and drawings to illustrate your experiment.