Student Science Fair Project Schedule

Assignment	To Do or Read Readings are in the Project Guide at www.sciencebuddies.org	Hand In	Due Date
Ask a Question. Part I: Find a project idea.	• Complete the Topic Selection Wizard (www.sciencebuddies.org). • Read "The Scientific Method." • Browse links under Science Fair tab at fawscience.weebly.com	*Nothing to hand in. This step must be completed to hand in the next part…*	ASAP
Part II: Do project proposal.	• Read "Your Question."	Do the **Science Project Proposal Worksheet**.	1/14/16 (Thursday)
Do Background Research Part I: Collect information.	• Read "Background Research Plan." • Read "Finding Information." • Read "Bibliography." • Read "MLA Format Examples"	Complete the **Background Research Plan Worksheet** and start to gather sources.	1/22/16 (Friday)
Part II: Write your research paper.	• Read "Research Paper."	1. Write your research paper. 2. Complete the **Research Paper Checklist**.	2/11/16 (Thursday)
Test Your Question by Doing an Experiment Part I: Designing your experiment.	• Read "Experimental Procedure." • Read "Materials List." • Read "Variables for Beginners" (5th grade) or "Variables" (6th, 7th, & 8th grades)	1. Write a materials list, including measurements. 2. Write experimental procedure steps. 3. Complete the **Question & Variables Worksheet**	2/17/16 (Wednesday)
Part II: Do your experiment! Science is FUN!	• Read "Laboratory Notebook." • Read "Conducting an Experiment." • Repeat your experiment at least three times.	1. Write one paragraph describing your observations. 2. Bring in the data that you collected in a data table.	3/10/16 (Thursday)
Analyze Your Data	• Read "Data Analysis & Graphs."	• Make at least one graph.	3/14/16 (Friday)
Draw a Conclusion	• Read "Conclusions."	• Write your conclusion. Use the **Conclusion Planning Sheet** to help you!	3/17/16 (Thursday)
Putting it all Together: Communicate your results! You've completed the experiment, share what you learned!			
Abstract Report	Read "Abstract."	Write your abstract. Use the **Abstract Planning Sheet** to help you!	3/21/16 (Monday)
Display Board	Read "Display Board."	Create and assemble your display board. Do not wait for the last minute!	4/5/16 (Tuesday)
Class Presentation	No reading assignment.	Write note cards to guide your presentation. Bring your display board, lab notebook, and any other display items to school! Class presentations will occur Tues., Wed, and Thurs.	4/5/16 (Tuesday)
Science Fair	No reading assignment.	Be ready to share your projects Thursday evening for parents and Friday morning for grandparents and students!	4/7/16 (Thursday)

All Assignments can be completed earlier! The due dates are the last possible acceptance dates in order to keep your project on track. Anything turned in past the due date will not receive full credit on that portion.

Note: Bold=a worksheet that your teacher will provide to you.

modified from the original found at www.sciencebuddies.org *(Teacher's Guide to Science Projects: Appendix Page A-2)*

Name _____ Date Due _____

Science Fair Project Proposal Worksheet

List up to three possible Science Fair topics you may wish to explore.

1. _____

2. _____

3. _____

Topic Checklist…Things to Think About for Each of Your Topics…

- ☐ Purpose: Why is my topic important? Does it solve a real-world problem or address an issue that others will care about?
- ☐ Originality: How is my project original? Find out if an experiment like yours has been done before. If so, how can you make yours unique or improve upon what has already been done?
- ☐ Materials: Do I really have all the materials that I'll need? If you're planning to count bacteria or separate germs, then you'll need a microscope that's a lot more powerful than any we have here at school. Where will you find an electron microscope?
- ☐ Time: Do I really have enough time to complete this project? If you're working with plants, then you will probably need to start right away. If you are growing plants or measuring the "life" of something, will you run out of time?
- ☐ Testability: Can my topic be turned into a testable question? A Science Fair Project is not a research report where you can find all the answers by reading. A Science Fair Project is not a demonstration, which shows people how something works, like a model of a volcano. A Science Fair Project is an experiment that asks "What is the effect of _____ on _____?" or "How does _____ affect _____?"

After assessing each topic idea with the checklist, decide which topic will make the best science fair project for you. Which topic did you choose? _____

_____

NOW…finish your proposal by writing your PURPOSE and getting your parent's signature.

Purpose (This will be part of your finished board! You may need to revise it along the way.)
Explanation: Why is this experiment important? Why should your audience care about your research? Try to make a real-world connection or solve a real-world problem.
Example: Gardeners and farmers help us by growing food. It is important for them to know which soil is best for growing their crops.
Your turn:
Write down why you think your topic is important in the space below.

_____

_____

_____

Parent signature of approval and support of this project: _____

Teacher signature of acceptance of this proposal: _____

Name _____ Date Due _____

Background Research Plan Worksheet

Explanation:
Scientists need to know enough about the topic in order to successfully design a science experiment. Read about your subject by using books, online library databases, and websites. Find out if an experiment like yours has been done before. If so, how can you make yours unique or improve upon what has been done before? Take notes and write a brief summary or bulleted list. Record where you found your research in a bibliography or works cited page. A list of titles/authors or URLs (web addresses) is acceptable, but MLA format is preferred because that is what real scientists use when publishing their results.

Plan: What is the purpose of your experiment? (see your proposal form!)

_____

_____

_____

Now, think about your experiment. What are some **keywords** you can use to help you find information about your topic? List as many as you can.

Use your keywords to help you write some questions that you hope your research will help you answer. Remember the 5 Ws… **WHO, WHAT, WHEN, WHERE, WHY, & HOW.**
Guiding Questions (Write as many as you can):

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Formulas/Equations: If there are any formulas or equations that apply to your project, list them here. You will need to explain them in your research paper.

Now you are ready to research to find answers to your questions! Use the internet or library resources to help you. DO NOT COPY WORD FOR WORD ANYTHING THAT YOU FIND…THIS IS PLAIGARIZING! Instead take good notes so you can write your paper in your own words. Also be sure to document your sources so you can write your bibliography or works cited page. You must have at least 3 sources!

Sources:

1. _____

2. _____

3. _____

4. _____

5. _____

Required research paper length…

- 5th grade: 1.5-2 pages, plus works cited & title page
- 6th grade: 2-3 pages, plus works cited & title page
- 8th grade: 3-4 pages, plus woks cited & title page

General Research Paper Guidelines

- Type your paper on a computer and print it out on standard, white 8.5 x 11-inch paper.
- Double-space the text of your paper, and use a legible font (e.g. Times New Roman). The font size should be 12 pt.
- Leave only one space after periods or other punctuation marks.
- Set the margins of your document to 1 inch on all sides.
- Indent the first line of paragraphs one half-inch from the left margin.

Name _____ Date Due _____

Testable Question & Variables Worksheet

Explanation: Testable questions are like the problem statement, but in the form of a question. A good testable question will guide your experiment and is necessary for a science fair project. Students often get confused about the difference between a research question, a demonstration question, and a testable question, but they are quite different.

- ☐ Research Questions are broad questions about topics. An example of a research question is "How do plants grow?" A student can answer this question by reading books and websites and reporting on what they have found. This is not a science fair experiment.
- ☐ Demonstration Questions ask questions about how something works. An example of a demonstration question is "How is compost made?" A student can answer this question by reading or by giving an actual demonstration of how compost is made. This is not a science fair experiment.
- ✓ Testable Questions lend themselves to experimentation. They help establish variables, which the experimenter either changes or keeps constant during the course of the experiment to see what happens. This is the type of question you need for the science fair.

Example:

Testable Question	What is tested or changed by the scientist? (Independent Variable)	What will stay the same? (Control Variable)	What is measured? (Dependent Variable)
Which soil is best for starting bean seeds inside during winter?	Soil	Water, Sunlight, Pot Size, Time	Plant Growth

Your turn:

Testable Question	What is tested or changed by the scientist? There can be ONLY 1! (Independent Variable)	What will stay the same? There will be many. (Control Variables)	What is measured? There is only 1 thing the scientist measures. (Dependent Variable)

Name _____ Date Due _____

Conclusion Planning Worksheet

Explanation:
What did you find out? Were there any potential sources of error or things that might have influenced the results? What are your suggestions for future research based on what you learned?

Example:
The results did not support the idea that BrandX® would grow the best plants. Instead, the compost grew the tallest, greenest plants. This may have happened because the compost was all-natural. A source of error might have been the arrangement of the plastic cups in the tray; the cups around the edges tended to dry out faster than those on the inside of the tray. Because compost grew the best plants, a future study might be which type of compost is best.

Your Turn:

What did you find out?

_____

_____

_____

_____

Were there any errors? Why?

_____

_____

_____

_____

What are your ideas for future research?

_____

_____

_____

_____

This is just a planning sheet!

- **Combine these points into 1 paragraph.**
- **Make sure the final product is typed and double-spaced (Times New Roman, 12) and turned in by the due date.**
- **Print another copy for your display board. You may adjust the font for that one so it is easily read from about 5 feet away. It does not need to be Times New Roman, but must not be cutesy. Save the colors and fun fonts for the headings, not for presenting actual information.**

Name: _____ In a Nutshell: Science Fair Abstract Planning Sheet

This is a paragraph (**7-10 sentences long**) that will grab the reader's attention. **This is NOT a full report about EVERYTHING that happened in your project, just a summary of the whole thing. Your abstract should include 1-2 sentences summarizing each of the topics listed below.**

1. Question: Write your question again.

_____

_____

_____

2. Introduction: Motivate the reader to be interested in your project. Tell them why you did this project (what was its purpose), and what importance does your project have to them or society.

_____

_____

_____

_____

_____

_____

3. Procedures: How did you do this experiment? Do **not** go into full detail; just tell what is important for readers to know about what you did and how you did it.

_____

_____

_____

_____

_____

_____

4. Results: What did you find out? Be specific with your results, use real data and numbers and do not use vague terms like most, some, a few, and a lot.

_____

_____

_____

5. Conclusions: Was your project successful and did everything go according to plan? What would you have changed or would you do everything the same?

_____

_____

_____

_____

_____

_____

This is just a planning sheet!

- **Combine these 5 points into 1 paragraph.**
- **Make sure the final product is typed and double-spaced (Times New Roman, 12) and turned in by the due date.**
- **Print another copy for your display board. You may adjust the font for that one so it is easily read from about 5 feet away. It does not need to be Times New Roman, but must not be cutesy. Save the colors and fun fonts for the headings, not for presenting actual information.**

Science Fair Presentation Display Board

Abstract

Question

Purpose

Background Research Paper

TITLE… catchy & colorful

picture

picture

picture

Materials

Procedures

picture

picture

picture

Variables

Data Table(s)

Graph(s)

Results/Observation Paragraph

Conclusion

Acknowlegement(s) OPTIONAL!

Name _____ Experiment Title_____ Grade _____

Scientific Fair Project Checklist…must be completed & returned when board is turned in!

Section 1: TITLE

_____ The title is in clear lettering and centered on the poster board.
_____ The title is catchy and will attract people to my presentation.

Section 2: ABSTRACT (My project in a nutshell!)

_____ 7-10 sentences about my experiment, including brief procedures, observations and conclusion.
_____ Proper grammar, spelling, and punctuation rules are followed.

Section 3: QUESTION

_____ **One sentence that is the question that formed the basis of your project.**

Section 4: PURPOSE

_____ **One to two sentences on the display board explain what I studied and why I picked that topic.**
_____ Overall, the section follows proper grammar, spelling, and punctuation, including using complete sentences.

Section 5: MATERIALS & PROCEDURE

_____ All materials are listed clearly, including amounts/measurements.
_____ Each step in the procedure is clearly explained, and steps are listed sequentially. Steps many be numbered, but it is not required.

Section 6: VARIABLES

_____ The independent, dependent, and control variables are identified.

Section 7: DATA & GRAPHS

_____ **A data table displays the raw data collected. (a chart)**
_____ The data table includes proper titles and units for measurements. (Ex/ inches, feet, pounds, etc.)
_____ **At least one graph displays the data visually and includes a key/legend and title.**

Section 8: RESULTS

_____ A paragraph explaining my observations and results. Do <u>not</u> make a conclusion here!
_____ Proper grammar, spelling and punctuation rules are followed.

Section 9: CONCLUSION

_____ **I explain my results and describe WHY I may have gotten the results I did.**
_____ **Identify at least one new question my experiment generated for further study.**
_____ Overall, the section follows proper grammar, spelling, and punctuation.

Section 10: SELF EVALUATION

_____ I have checked to ensure that all information is presented in complete sentences and clear paragraphs with proper grammar, spelling, and punctuation.
_____ I have check-marked each requirement that I have completed in my display.

Section 11: APPEARANCE

_____ **My display board shows clear organization and structure.**
_____ **My display board shows creativity and effort.**
_____ **My display board uses color to highlight important elements and attract attention to my project.**
_____ My components fill my display board – there are not many large empty spaces.
_____ All writing on my display board is typed so that it can be easily read. It is written in a normal font (nothing cutesy!), and is large enough for passers-by to read. Text is to be in black only. Headings may be in color.
_____ *(optional)* I may have included pictures. (Not a requirement, but it would be nice!)