Sandtown Middle School Science Fair



 **2020-2021 Project Timeline & Packet**

Completing a science fair project this semester is encouraged for all students. Participation in this project ***DOES NOT*** guarantee that a student’s project will be entered into the Fulton County Science Fair Competition as only 5 projects can be submitted to represent our school. This project will be in motion simultaneously with other classroom activities. Therefore, it is important for students to practice good time management skills and refer often to the schedule of due dates that will be given. Some of the major deadlines are listed below. Other deadlines may be added throughout the process. Selected student projects will be entered into the Sandtown Middle School Science Fair in January and selected winners will be entered into the Fulton County Regional Science Fair in February.

**\*\*\*\*Rules and guidelines for the 2020-2021 Science and Engineering Fair can be found at** the [GSEF website](https://nam03.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.georgiacenter.uga.edu%2Fgsef&data=02%7C01%7Cstackerkd%40fultonschools.org%7C404e395b95d5423fc77e08d86967ec5d%7C0cdcb19881694b70ba9fda7e3ba700c2%7C1%7C0%7C637375242366823741&sdata=Yb2NN607nEwJX0yfwmtxxZVQLiVI6PjcMwd3DqlSePw%3D&reserved=0)

(<https://www.georgiacenter.uga.edu/youth/academic-special-programs/georgia-science-and-engineering-fair>)

**Check off as you complete the task**

|  |  |  |
| --- | --- | --- |
| **Checkmark** | **Due Dates** | **Deliverables** |
|  | **Nov. 11, 2020** | 1. Teachers will discuss and provide students with the access to Science Fair Expectations, Timeline Agreement, Partner Contract, and Science Fair Proposal
2. Teachers will discuss and provide students with the access to [Project Categories](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-project-categories.pdf), [Display & Safety Regulations](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-display-safety-regulations.pdf), & [Judging Criteria](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-judging-criteria-document.pdf)
3. Teachers will discuss and provide students with the access to “How To” Handouts for Logbook Set-up, Research Report, Abstract & Digital Presentation Display Poster
4. Students will begin researching and collecting information for possible topics, record research info in the logbook (composition notebook), and complete all documents mentioned in #1.
 |
|  | **Nov. 13, 2020**  | Students will submit Science Fair Agreement, Partner Contract, & SF ProposalSF Proposal requires parent signature; must be approved for in-depth research to begin; must include:

|  |
| --- |
| Question or Problem being addressed |
| Purpose of the project (the benefit of your project to others or the scientific community) |
| Hypothesis (or engineering goal) A statement of your prediction that answers your question/problem. |
| Variables – Identify Independent, Dependent and Constants  |
| Safety Precautions – What if any are the hazards of your project |
| Materials – what will be required to conduct experiment |
| Procedures and Data analysis (What you will do and how you will analyze your data to answer your question) |

Students will set up Science Fair binder as follows: 1. Abstract
2. Literature Review
3. Research Report (a very formal lab report)
4. GSEF/ISEF Paperwork
5. Teacher Paperwork
6. Appendix
 |
|  | **Nov. 16, 2020**  | Teachers will Return Proposals If approved begin in-depth Research Plan to include Literature Review and Bibliography (five major sources are required. Books, Science journals, articles, internet sites) If not approved, you are to revise and re-submit a new proposal the next day.   \*\*\*\*\*\*\*Transcribe approved proposal into your logbook\*\*\*\*\*\*\*Teachers will discuss and provide access to the following Forms. Forms must have both parent/student signatures and dates. Signature dates must be prior to the date that the experiment actually begins. * [**Form 1: Checklist for Adult Sponsor**](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-01-form-adult.pdf)
* [**Form 1A: Student Checklist**](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-01a-form-student.pdf)
* [**Research Plan/Project Summary Instructions**](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-research-plan-project-summary-instructions.pdf)
* [**Form 1B: Approval Form**](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-01b-form-approval.pdf)
* [**Form 3: Risk Assessment Form**](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-03-form-risk.pdf)
 |
|  | **Nov. 17, 2020** | **GSEF forms due** to Ms. Stacker with parent/student signatures and dates. Signature dates must be prior to the date that the experiment actually begins. **\_\_\_\_\_ Form 1: Checklist for Adult Sponsor**  **\_\_\_\_\_ Form 1A: Student Checklist** **\_\_\_\_\_ Research Plan (typed research plan)** **\_\_\_\_\_ Form 1B: Approval Form**  **\_\_\_\_\_ Form 3: Risk Assessment** |
|  | **Nov. 18-Dec. 10 2020**  | Students will work on Science Fair Research Process:1. Literature Review and Bibliography (five major sources required, Books, Science journals, articles, internet sites)
2. Research (Lab) Report
3. Abstract *(*[*Official GSEF Abstract Form*](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-abstract-form.pdf)*)*
4. Logbook
5. Digital Presentation Power-Point
6. Digital Presentation Display Poster. Max Size 30x48x72 (<https://www.posterpresentations.com/free-poster-templates.html>)

**Note: More Resources**<http://www.sciencebuddies.org/science-fair-projects/project_display_board.shtml#keyinfo>**Note: Research (Lab) Report Order**1. Cover Page & Table of Contents
2. Science Question
3. Purpose
4. Background information
5. Literature Review
6. Hypothesis
7. Variables (IV/DV/Controlled)
8. Materials (metric)
9. Procedures
10. Table of Average Data
11. Graph(s)
12. Data Analysis
13. Conclusion
14. Appendix (with Raw Data)
15. Bibliography
 |
|  | **Dec. 11, 2020** | **Students will submit Final Projects*** Science Fair Binder (Abstract, Literature Review, Research (Lab) Report)
* Logbook
* Digital Presentation Power-Point
* Digital Presentation Display Poster
 |
|  | **January 11, 2021****5:30pm-7:30pm** | **Sandtown Middle School Virtual Science & Engineering Fair (Virtual)** |

**Science Fair District Dates**

|  |  |
| --- | --- |
| **Fulton County Regional Science & Engineering Fair (Virtual) Grades 6-12** | **February 6, 2020** |
| Georgia Science and Engineering Fair (Classic Center. Athens, GA) | **March 25 - 27, 2021** |
| International Science and Engineering Fair (TBD) | **TBD** |

**Science Fair Project Resources**

|  |  |
| --- | --- |
| <http://www.georgiacenter.uga.edu/youth/academic-special-programs/georgia-science-and-engineering-fair> | <http://go.hrw.com/resources/go_sc/hst/HSTGP221.PDF> (if you are a list person or need more structure then this is the resource for you! |
| <http://www.crystal-clear-science-fair-projects.com/> | <http://www.sciencebuddies.org/> |
| <http://www.cpet.ufl.edu/sciproj/sci002.htm> | <http://school.discoveryeducation.com/sciencefaircentral/Getting-Started.html> |
| <https://www.posterpresentations.com/free-poster-templates.html>  | <https://www.makesigns.com/SciPosters_Templates.aspx>  |

KEEP THIS TIMELINE IN YOUR SCIENCE FAIR BINDER under Teacher Paperwork

Category \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_

Subcategory \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_

**Science Project Proposal**

The question that you select for your science fair project is the cornerstone of your work. The research and experiment you will be conducting all revolve around finding an answer to the question you are posing. It is important to select a question that is going to be interesting to work on for at least a month or two and a question that is specific enough to allow you to find the answer with a simple experiment. A scientific question usually starts with: How, What, When, Who, Which, Why, or Where. Here are some characteristics of a good science fair project question:

* The question should be interesting enough to read about, then work on for the next couple months.
* There should be at least 3 sources of written information on the subject. You want to be able to build on the experience of others!

Now, for something like a science fair project, it is important to think ahead. This will save you lots of unhappiness later. Imagine the experiment you might perform to answer your question. How does that possible experiment stack up against these issues?

* The experiment should measure changes to the important factors (variables) using a number that represents a quantity such as a count, percentage, length, width, weight, voltage, velocity, energy, time, etc. Or, just as good might be an experiment that measures a factor (variable) that is simply present or not present. For example, lights ON in one trial, then lights OFF in another trial, or USE fertilizer in one trial, then DON'T USE fertilizer in another trial. If you can't measure the results of your experiment, you're not doing science!
* You must be able to control other factors that might influence your experiment, so that you can do a fair test. A "fair test" occurs when you change only one factor (variable) and keep all other conditions the same.
* Is your experiment safe to perform?
* Do you have all the materials and equipment you need for your science fair project, or will you be able to obtain them quickly and at a very low cost?

Do you have enough time to do your experiment before the science fair? For example, most plants take weeks to grow. If you want to do a project on plants, you need to start very early! For most experiments you will want to allow enough time to do a practice run in order to work out any problems in your procedures

Once Submitted/Returned KEEP THIS IN YOUR SCIENCE FAIR BINDER

 under Teacher Paperwork

Category \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_

Subcategory \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_

**Science Project Proposal**

I propose the following investigation for my SCIENCE FAIR PROJECT…

 Choose the one area in which you are most interested

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Animal Sciences |  |  |  | Material Sciences |
|  | Behavioral & Social Sciences |  | Earth & Environmental Science |  | Mathematics |
|  | Biochemistry |  | Embedded Systems |  | Microbiology |
|  | Biomedical & Health Sciences |  | Energy: Chemical |  | Physics & Astronomy |
|  | Cellular & Molecular Biology |  | Energy: Physical |  | Plant Sciences |
|  | Chemistry |  | Engineering Mechanics |  | Robotics & Intelligent Machines |
|  | Computational Biology & Bioinformatics |  | Environmental Engineering |  | Systems Software |

**PROJECT TITLE** (Make it Eye Catching)**:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**QUESTION** (What I want to find out. Use the terms Effect or Affect):

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**INDEPENDENT VARIABLE** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

It will be measured with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (instrument) (units)

**DEPENDENT VARIABLE** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

It will be measured with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (instrument) (units)

**CONSTANTS**: List the controlled variables and how they will be kept constant.

Describe the control group (if any).

**Safety Precautions**

Category \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_

Subcategory \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_

**Science Project Proposal**

**HYPOTHESIS**: (What I think will be the answer to my question. Create an if, then, because statement)

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**MATERIALS**: (What will I need to complete this experiment? Be specific)

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**PROCEDURES:** Step-By-Step Directions: (Number each step. Be specific)

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**DATA ANALYSIS**

Describe how you will use the data you gather to answer your question and hypothesis.

**This is the investigation I would like to do for my science fair project.**

Student Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent’s Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher’s Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Science Fair Agreement**

**Student Responsibility**

* I have read the above timeline information, dates and requirements.
* I have written them in my agenda.
* I understand that some of these dates are subject to change and that I will be notified of such changes. If I have not been notified, then I am to assume that the due date is correct and I am to abide by that date.
* I understand that all required forms are to be signed and that I am to keep them in a science fair binder. **I must hold on to all original paper work.**
* I understand that I must write an original research report. I understand that I will be evaluated on each of the following:
	+ written research report
	+ oral presentation
	+ logbook record
	+ display board
	+ quality of my research

Student name (print) Student Signature Date

**Parent Responsibility**

* I am aware of the Science Fair project due dates and agree to help keep track of my child’s progress.
* I am aware that this project involves independent research on the part of my child and that he/she is expected to do his/her own work. Assistance is permitted, however, all written work, project design and execution of tasks must be completed by the child.
* I have read the above timeline information, dates and requirements.

Parent name (print) Parent Signature Date

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**Science Fair Partner Contract**

**By signing the following contract I understand that:**

* I must meet all of the deadlines for the science fair checkpoints with my teacher and in my period.
* All work must be turned in with our names, periods and teacher.
* **I understand that I must write my own research paper separate from my partner. We should collaborate, but are still responsible for our own paper.**
* If we have different teachers, all deadlines must be met in my own science class and by that teacher’s deadline to receive credit.
* **I understand that because I am choosing to do a project with another person I am aware that I will be required to take my project further and more in depth to earn the same grade that I would on my own. Team projects must justify two people working together.**
* I understand that this is a three-month project and I will be able to work in a cooperative manner with this person through the entire project.
* Each student will write **their own research paper** using at least 2 **different sources** from their partner.

**Partner One:**

Print Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Science Teacher\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_

Home phone \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ email address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Parent Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Partner Two:**

Print Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Science Teacher\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_

Home phone \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ email address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Parent Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**WHAT SHOULD MY SCIENCE FAIR RESEARCH PAPER INCLUDE?**

1. ***TITLE PAGE (***2 pages)-

 1st page- Title of the Project, Name, School, Teacher’s Name, Course Name

 2nd page- Title of Project

1. ***ABSTRACT***- is a one page concise 200-250 word summary of the project. Click the following link to access the *(*[*Official GSEF Abstract Form*](https://www.georgiacenter.uga.edu/sites/default/files/gsef-2021-abstract-form.pdf)*).* An abstract should be written in past tense, flow logically, & include the following:

TITLE, PROBLEM, PURPOSE, HYPOTHESIS, PROCEDURE (brief summary of what was done), & CONCLUSION (explanation of the results)

III. ***TABLE OF CONTENTS*** – list of the contents in the research paper

IV. ***PROBLEM/PURPOSE/HYPOTHESIS***

V. ***LITERATURE REVIEW***- Background research; minimum of 5 sources should be used

VI  ***EXPERIMENTAL DESIGN (table)***- Includes the IV, DV, Levels of IV, repeated trials and constants

VII. ***MATERIALS/PROCEDURE***- Materials should be listed using bullets; and procedure should be numbered

VIII. ***RESULTS***- all data (tables, charts and graphs); and a written quantitative description of the tables and graphs

 XI. ***CONCLUSION***- Make specific statements concerning whether or not the data supports or fails to support your hypothesis. Explain why or why not your hypothesis was correct. Use supporting details. Also include a paragraph of recommendations for improving or expanding the research, and the importance of your findings.

 X. ***WORK CITED PAGE***- list of all references

 XI. ***ACKOWLEDGEMENTS***- a paragraph thanking those who helped you

 on your project

 XII. ***APPENDIX***- examples of surveys, extra tables or charts that were helpful, any pictures taken, field tests, and permission forms etc.

**WHAT IS A LOGBOOK & HOW DO I SET IT UP?**

A logbook is a diary. It is a dated, written record of how a researcher went about designing a project and then gathering the information to test the hypotheses. It includes everything done, all of the people consulted, their suggestions and ideas, as well as the researcher’s own ideas. It describes how the investigator went about finding answers to questions. It includes procedures, data tables, charts, and diagrams.

* Use a **black ink pen** that has the type of ink that will not smear when wet. Write or print neatly!
* Number each page in the logbook before making any entries. Place numbers at the bottom center of each page. Initial all completed pages to the right of the page numbers
* Reserve the first four numbered pages for table of contents. On page one you should place the following: name, school, school address, year, and title of project. Save pages 2-4 for Table of Contents. Fill in the table of contents as the work progresses
* Date each entry and enter the time. Entries should be made only on the days the work was done.

**HOW DO I SETUP MY DIGITAL DISPLAY BOARD?**

**\*Note:** Access the following websites to select your Display Template (30x48x72)

(<https://www.posterpresentations.com/free-poster-templates.html>)

(<https://www.makesigns.com/SciPosters_Templates.aspx>)

|  |
| --- |
| **PROJECT TITLE**THE EFFECT OF (IV) ON THE (DV)Ex. The effect of the brand of paper towels on its absorbanceSTUDENT NAME SCHOOL NAME TEACHER NAME  |
| **INTRODUCTION**(Background Information)**PROBLEM**(Which Brand of Paper Towel Absorbs the Best?)**PURPOSE**(In this experiment, I intend… or The purpose of this experiment is to….)**HYPOTHESIS**(If…..then…..because) | **MATERIALS**(listed with quantities)**PROCEDURES**(step by step)**RESULTS**(tables, charts and graphs)all must be made on computer**PICTURES**(all must have pictures) | **CONCLUSION**(Restate the project purpose. Explain whether your data supports or rejects your hypothesis. Describe any points of error and how you would improve the experiment in the future.)**ACKNOWLEDGEMENTS**(Give recognition to whom-ever helped you.) |

\***Note:** If selected to participate in the Fulton County Fair, Digital Poster Must Be Printed and mounted on a trip-panel board. Abstract must be staples to the back of the tri-panel board