



**Science Fair Information**

Dear parents/guardians,

All Richmond County third-fifth graders are required to submit a Science Fair Project. Belair K-8 Fair will be held on **November 16, 2023**. **Projects will not be accepted for judging after the morning of November 16, 2023.**

Your child will need a composition journal to be used as a log book, a 3-prong folder or clear folder for the typed formal report, and finally, a backboard for the display of their project. The following packet of information attached to this letter is provided to assist you in helping your child with their Science Fair project. Inside, you will find information on selecting a topic, research questions, how to do research, forming hypotheses, and directions on testing those hypotheses. You will see details on how to collect data and the proper way to set up a display board. I have also included a page with websites of science project ideas that are helpful in getting you started. Please be sure that your project is an experiment and not a model (no volcanoes, etc.) and there should be no photos showing any body part, including hands, on your display board. Take pictures of the actual experiment only. **Per Richmond County, please do not do any experiments on vertebrate animals or humans (this includes taste tests) or anything about growing mold.**

 All information gathered should be written in their composition journal (log book). That is where I will look for all assignments from the checkpoints listed on the back of this letter. This packet and/or any of the sheets inside do not need to be returned to me; it was created to help guide you in the right direction. Be sure to hold onto this packet and keep it in a safe place, as no replacement packets will be given out due to the budget (copies, paper…). If lost, feel free to use the Internet as another resource or guide.

I have also attached list of due dates. On those dates, I will check your child’s work on only the assignments listed for that particular date. Each due date will count as a grade and then will be averaged to calculate as a quiz grade. The final completed project will count as **two test grades in Science**, so be sure all the needed components are there. Please ensure that your little scientist is turning in their information by the required due dates listed below! Please allow your child to assume as much responsibility as possible for the project. They will need your assistance, but I do not want you to do it for them. For example, when your child writes the report to accompany the project, you should proofread the written report, make suggestions, and help in typing the report.

If you have any questions, do not hesitate to call.

**Science Fair Due Date Checklist**

**Scientist’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class\_\_\_\_\_\_\_\_\_\_\_Proj. #\_\_\_\_\_\_\_**

**Title of Project\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Due Date | Assignment | Correct | Needs Improvement | Areas in need of improvement |
|  |
| September 27, 2023 | Title and Purpose  |  |  |  |
| September 27, 2023 | Research and Bibliography |  |  |  |
| October 6, 2023 | Hypothesis, Variables, Materials, Procedure(This is only an outline) |  |  |  |
| October 6 – November 1, 2023 | Science Experiment Work Period |  |  |  |
| November 10, 2023 | Data, Analysis, Conclusion, Extension Statement |  |  |  |
| November 16, 2023 | Abstract and Formal Reports |  |  |  |
| November 16, 2023 | Display Boards |  |  |  |
| November 17, 2023 | Judging begins that Morning.  |  |  |  |

**Total Score (average of all due dates): \_\_\_\_\_\_\_\_\_\_**

100 - Turned in on time ☺

80 - Not turned in by due date, but is in composition journal for the next due date

75 - Turned in, but is very late

0 - Never Completed ☹

Schedule of Assignments

|  |  |
| --- | --- |
| September 27, 2023 | **Title and Purpose:**This needs to be a rough draft. The title can change as you work through your project with the teacher’s permission.**Research and Bibliography:**You must have a minimum of 3 sources. |
| October 6, 2023 | **Hypothesis, Variables, Materials, Procedure:**This is an outline of your science fair. What you will do, what materials you need to complete your experiment, what things will be changed, and what you think will happen. |
| October 6 – November 1, 2023 | **Science Experiment Work Period:**The student should be conducting their actual experiment. |
| November 10, 2023 | **Data, Analysis, Conclusion, Extension Statement:**You will need to complete all your data at home. Your teacher will help you with the rest on a science fair workday. |
| November 16, 2023 | **Abstract and Formal Reports:**The abstract is a summary of the entire project. This is your last step before you bring in your project to the school. |
| November 16, 2023 | **Display Boards:**This will be done at home and brought into school. **Do not wait till the very last day to do your Display Boards, work on them as you are doing your project.**  |
| November 17, 2023 | Judging begins |

Science Project Ideas

The following websites are beneficial in finding Science Fair project ideas.

<http://scienceprojects.com>

<http://rosearts.org/naples/ideas.htm>

<http://tetrimore.com>

<http://www.all-science-fair-projects.com>

<http://www.factmonster.com>

This is the best site to use:

<http://www.sciencebuddies.org>

**Teacher Checklist for Science Fair Entry**

Teachers,

Please use this checklist for each project you plan to enter in the school Science Fair. This will save us a ton of time when we are setting up the projects. Please turn these sheets into me when you bring the projects that morning. This way, I will not have to chase down student names, etc. Only projects that have all the necessary parts by the morning of September 27, 2023, will be accepted. You should only enter the best of the best.

**Student Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class\_\_\_\_\_\_\_\_\_\_\_ Proj. #\_\_\_\_\_**

**Title of Project** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please make sure the project has the following:

**No** name on **any** part of project \_\_\_\_\_\_\_

Project number (example: Mayson1) written on the left flap of board \_\_\_\_\_\_

Complete Log Book \_\_\_\_\_\_\_\_

Complete Formal Report \_\_\_\_\_\_\_\_\_

Abstract (Keep separate from Formal Report) \_\_\_\_\_\_\_\_

Science Buddies Proposal Form \_\_\_\_\_\_\_

Display Board (regular size tri-fold board only) \_\_\_\_\_\_\_

Pictures on display board **DO NOT** show any body parts, including hands \_\_\_\_\_\_

Display Board does not contain staples or tape \_\_\_\_\_\_\_

Display Board is neat, pleasing to the eye, and well put together \_\_\_\_\_\_\_

Project is an experiment and **NOT** a model (example: volcano, solar system) \_\_\_\_\_\_

**\*The only four things that will be brought to the Fair are the Log Book, Formal Report, Abstract, and Display Board. Nothing else may be displayed.**

**1. Purpose – Ask a Testable Question**

**A Testable Question has 2 Parts:**

**Part 1:**  The part that is being tested. It is called the independent variable. This is the manipulated variable or the one that changes.

**Part 2:** The part that is being observed or measured. It is the dependent variable or the responding (measured) variable.

The question describes the relationship between the two parts:

***How does the (independent variable) affect the (dependent variable)?***

**Example: How does the temperature affect the rate of seed germination?**

***What is the effect of the independent variable on the dependent variable?***

**Example: What is the temperature's effect on the seed germination rate?**

**You MUST be able to measure your dependent variable.**

**2. Conduct Your Research and Create a Bibliography**

**\*This information DOES NOT go on your display board.**

**Once you have chosen your topic, it is important to research the written materials on your subject. By finding out as much information about the subject, you will gain a better understanding of your problem. \*Follow these guidelines for conducting your research.**

1. Read books and articles on your subject. Ensure this information is up to date (not older than 5 – 10 years).

2. You must use at least three resources. Cite your work above your notes.

3. In your logbook, you will include only your notes from your sources. The use will use these notes to write the research paper in your formal report after you complete the entire experiment.

***Bibliography***

**Make a list of all the books, magazines, internet articles, interviews, or other sources used. \*Write your bibliography using the following format:**

**Books:**

Author’s last name, first name. *Book title.* City of publication: Publishing Company, publication date.

**Example:**

Allen, Thomas B. *Vanishing Wildlife of North America.* Washington, D.C.: National

Geographic Society, 1974.

**Internet:**

Author’s last name, and first name (if available). “Title of work within a project or database.” *Title of site, project, or database.* Editor (if available). Electronic publication information (Date of publication or the latest update and name of any sponsoring institution or organization).

Date of access and <full URL>.

Note: If you can’t find some of this information, cite what you can.

**Example:**

Devitt, Terry. “Lightning injures four at a music festival.” *The Why? Files.* 2 Aug. 2001. 23 Jan. 2002.

<http://whyfiles.org/137/lightning/index.html>

**Encyclopedia and Dictionary**

Author’s last name, first name. “Title of Article.” *Title of Encyclopedia.* Date.

**Examples:**

Pettingill, Olin Sewall, Jr. “Falcon and Falconry.” World Book Encyclopedia. 1980.

“Azimuthal Equidistant Projection.” Merriam-Webster’s Collegiate Dictionary. 10th ed. 1993.

**\*See me for help if you use any other type of source.**

**3. Construct a Hypothesis**

**A Hypothesis includes a prediction about what you believe, based on your research, will happen when your investigation is completed.**

**Follow these steps to complete a hypothesis:**

* **List observations or gained research knowledge you have about the variables.**
* **Write an *if…..then* statement describing the effect of changing one variable on another variable. (This is a cause/effect relationship).**

**Example:**

**If (what will be changed with the independent variable), then (what will happen because of the change – dependent variable) because (use your observations or gained research knowledge to explain your belief).**

*Suppose seeds are exposed to freezing temperatures for a short period of time. In that case, the germination rate will increase because research indicates that certain seeds will germinate more quickly if they are put in a freezer before planting.*

**Identify the Variables**

**Create a list of each type of variable. Remember, the independent variable is the one that changes. The dependent variable is the response you are looking to get. The control variable is the one that remains the same.**

**Example:**

Control Variable: number of beans per bag, time stored, amount of water and sunlight while germinating

Independent Variable: temperature of storage

Dependent Variable: number of seeds germinating

**Materials** 

**Make a list of all materials that you use.**

**Example:**

16.7cm x 15.1cm Zip-Loc bags

60 uncooked butterbeans
(3) 27.9cm x 26.4cm paper towels
Permanent Marker
De-chlorinated tap water
Approximately 70 degrees Fahrenheit room
Approximately 38 degrees Fahrenheit refrigerator
Approximately 0 degrees Fahrenheit

**Procedure** 

**Write a set of directions for completing your experiment. Remember to write complete sentences and use punctuation.**

**Example:**

1. Label the plastic bags as follows: Room temperature (control) bean, 50 degrees F. (refrigerator) bean, 30 degrees F. (freezer) bean.

2. Fold paper towels to fit in bags. Place in bags.

3. Place 20 beans in each bag.

4. Put each bag in the proper place as said on the bag label.

5. Leave undisturbed for five days.

6. After the five days, remove the bags. Wet the paper towel with 15mL of dechlorinated tap water but leave the towel and seeds in the bag. The towel should be moist but not soaking.

7. Place bags in a warm, sunny spot.

8. Check every day for ten days for germination. Keep towels moist.

9. Record your findings. Repeat as necessary.

**4. Collect Data** 

**You will need to construct a table to collect your data. A table contains rows and columns.**

* Give your data table a title. The title should include your independent variable (the one that changes) and the dependent variable (the responding) and be at the top of your table. **For example *Germination Rate of Butterbean Seeds vs. Temperature***
* Make a row for each independent variable you are testing.
* Make a column for each dependent variable you are measuring.
* Include unit names for each measurement.
* If applicable, add an “Average” column or a “Total” column.

**Example:**

***Germination Rate of Butterbean Seeds vs. Temperature***

|  |  |  |  |
| --- | --- | --- | --- |
| **Days** | **Control – Room Temperature** | **Freezer** | **Refrigerator** |
| **1** | 0 | 0 | 0 |
| **2** | 2  | 0 | 1 |
| **3** | 6 | 2 | 4 |
| **4** |  |  |  |
| **5** |  |  |  |
| **6** |  |  |  |
| **7** |  |  |  |
| **8** |  |  |  |
| **9** |  |  |  |
| **10** |  |  |  |

**\*Keep recording daily for ten days.**

**Analysis** 

**Create a graph of your recorded information. You may use a bar graph or a line graph. If you are showing information that happens over a period of time, a line graph is preferred.**

**Example:**

**You would need to conduct at least three trials. If you have the same results after the three trials, you can draw a conclusion.**

**Conclusion** 

**A Scientific Conclusion has these parts in order:**

* **State the prediction.**
* **Include evidence from your data collection. Only include some of your data. Include a high and low, if possible – include averages or appropriate central measures.**
* **Include a statement that analyzes the data.**
* **Include a statement that tells if the prediction was correct or incorrect. Use the sentence starter: My prediction was….(correct or incorrect).**

**Example:**

The results of my experiment show that my hypothesis was incorrect. The seeds in the freezer germinated the fewest, while the ones at room temperature germinated the most significant amount of seeds.

**Extension Statement**

**In this section, you will tell what you would do differently next time to see if you get the same results.**

**Example:**

Further testing must be done to determine which temperature induces the highest germination rate. If I were to perform this experiment again, I would use a different type of bean to see if my results would be the same.

**Abstract**

**The Abstract is a summary of the entire project. It should be typed in three paragraphs using the same font and type size as your Formal Report. Do not punch holes in the Abstract. It is a sheet that you will turn in separately from the Formal Report. You can write the Abstract in your notebook. It should be at most 250 words. Please make sure to do a word count to make sure that you stay within this number.**

**Paragraph #1: Purpose of the experiment and the Hypothesis**

**Paragraph #2: The procedure is written in paragraph form**

**Paragraph #3: Results and Conclusion**

**Example:**

 This project aims to determine if the temperature will affect the germination rate of butterbean seeds. It is hypothesized that freezing the seeds for some time will cause them to produce more seeds quicker.

 A set number of butterbean seeds were placed in plastic bags marked “room temperature,” “freezer,” and “refrigerator.” The bags were placed in the respective areas and left undisturbed for five days. They were all then moistened and placed in a warm, sunny location, where they were observed for ten days.

 The results showed that the coldest temperature harmed the germination rate of the seeds; therefore, my hypothesis was incorrect. To improve this study, I would try different types of seeds to see if my results could be confirmed.

**Display Board**

**Do and Don’ts:**

* Do use computer-generated graphs and charts.
* Make the display colorful, but limit the number of colors you use.
* Type information for the board.
* Do use headers in the correct order.
* Use rubber cement to ensure that everything is securely attached to the board. Elmer’s Glue causes everything to wrinkle.
* Do space out everything evenly.
* Do use photographs of the procedure, but ensure that no body parts, including hands, are shown.
* Do use a catchy title. It should **NOT** be the question that is your purpose statement.
* Don’t leave large empty spaces on the board.
* Don’t use tape or staples on the board.
* Don’t handwrite information on the board, including headers.
* Don’t make spelling errors.
* Don’t print in color except for headers if you wish. Colored type makes the information very difficult to read.



**You should have the following on your board only: Title, Purpose (this is your question), Hypothesis, Materials, Procedure, Results, Conclusion, and any photographs, charts, and graphs.**