



# PS 11 Science Fair



*This packet provides details on milestones/schedules and project details for 5<sup>th</sup> grade Science Fair participants.*

**5<sup>th</sup> Grade Science Fair**  
**May 14, 2018 at 6:15PM - 7:30PM**

5<sup>th</sup> Grade Science Fair Contact: Mrs. Jessica Griffith

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<b>Schedule</b>	<b>5<sup>TH</sup> Grade Science Fair Milestones*</b>
<i>Week of Jan. 29, 2018</i>	<b>Ideas:</b> 1 sheet of paper per group with 2-3 ideas that the group is interested in exploring.
<i>Week of Feb. 5, 2018</i>	<b>Teacher will provide feedback and next steps to the groups based on their ideas.</b>
<i>March 2, 2018</i>	<b>Project Proposals:</b> Project proposals will be completed in class. In order to successfully complete a proposal, students will need to be able to write about their question, hypothesis, and their proposed procedure.
<i>Week of March 16, 2018</i>	<b>Teacher will provide feedback and next steps to the groups based on their proposals.</b>
<i>May 1, 2018</i>	<b>Experiments Completed:</b> All experiments and lab work is completed. Data is collected and students are ready to start working on their conclusion and project boards.
<i>May 7, 2018</i>	<b>Projects Due</b> All project Boards must be completed by this time. See Sample Project Board for a description of what is required.
<i>May 14, 2018</i>	<b>Science Fair</b>

**\*These are tentative dates for milestones and are subject to change. Students will be working in class on their projects and families will receive regular updates.**

## SCIENCE FAIR PROJECT IDEAS (sample questions to investigate)

- Which paper has the fastest capillary action?
- How do different surfaces affect friction?
- How does adding coils of wire to an electromagnet increase its strength?
- What factors affect seed germination?
- How does the pH of soil affect the rate of seed germinations?
- What packing material is the best to use when boxing an item to be shipped?
- Which type of soil can hold the most water?
- In what conditions do salt crystals grow best?
- What material is the best insulator for keeping your drink cold?
- What product is the best cleaning agent for stain removal?
- What variables affect plant growth?
- How can the strengths of magnets be compared?
- What causes static electricity?
- How can the densities of different liquids/matter be compared?
- How do simple machines work?
- Do antibacterial soaps really work?
- What is the best way to prevent an egg from breaking when dropped from 2-3 meters?
- How do hand lenses work?

## **Architecture of a Great Science Fair Project**

Follow the **scientific method** when writing your Science Fair Project. This method includes:

### **Title**

- 1.) Abstract:** Brief summary of your project (5 to 10 sentences).
- 2.) Question:** Write a question related to a topic that you selected to learn about and explore (e.g. how does soil types affect plant growth?)
1. **3.) Hypothesis:** Write what you think might be the **answer** to your question and **why** (provide a reason for your answer). “I think \_\_\_\_\_ will be the outcome of my experiment because \_\_\_\_\_” (e.g. I think plants will grow best in dark soils because this type of soil is rich in minerals that are necessary for the growth of the plants.)
- 4.) Procedure:**
  - a. List of Materials
  - b. Step-by-Step Directions
    - i. What did you do? How did you do it?
    - ii. Follow the rules of science safety.
    - iii. Number the steps, like a “How to ...”
- 5.) Results:** Write your results. Use logs, charts, graphs, diagrams, pictures. Be clear. Always give facts about the observations, not opinions.
- 6.) Conclusion:** What you learned; how or what you would do differently and why. Think about your hypothesis as you think about writing it. Give examples.

## Project Planning Sheet

This sheet will be completed by students in class and will be used to pace their projects. It will also be used to set goals and make notes for next steps.

Date	Classwork Goal	Outcome	Notes

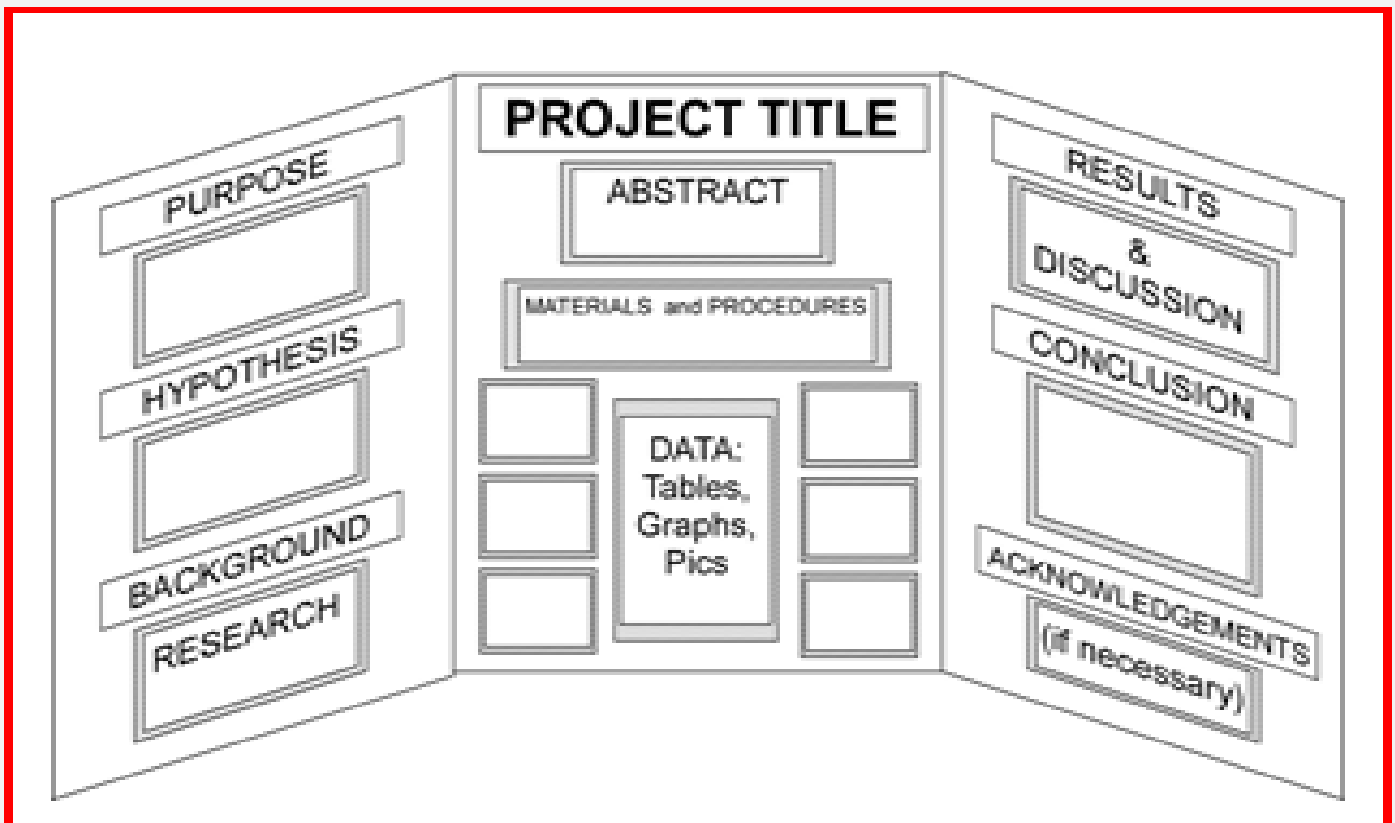
**\*Each project will look slightly different based on topic. (i.e. observing mold growth over time vs. experimenting with how acidic fruits work as electrical chargers)**

**Sample Project Planning Sheet: This is an EXAMPLE of how students will pace their projects and set goals for class time.**

<b>Date</b>	<b>Classwork Goal</b>	<b>Outcome</b>	<b>Notes</b>
3/5/18	Make recommended revisions to proposal	We finished and handed it in.	
3/6/18	1.) Make a list of all of needed materials 2.) Assign roles and responsibilities 3.) Start to do some research about what exactly acids and bases are used for	Finished list Everyone knows what they need to bring in Some research done	Need to find out where to get pH strips
3/12/18	RUN OUR EXPERIMENT!!!!	Started our experiment. Realized that we were missing some steps in our procedure. Need to fix it.	Fix the first 3 steps of procedure. Need to be more clear.
3/13/18	Fix procedure. Run experiment again.	Finished fixing our procedure. Didn't get to finish the experiment. Need to start from beginning next class to get reliable data	
3/19	RUN EXPERIMENT!!!	YES!! We ran the experiment	

## SAMPLE DISPLAY BOARD

- Name of Scientists (place student names on the back of the display board)
- Project Title
- Statement of the Problem or Purpose: What does the team want to find out?
- Hypothesis: The hypothesis tells us what scientists think will happen and why in the experiment (the prediction and the reason)
  - o For example, “if \_\_\_\_\_ changes, then \_\_\_\_\_ will be the result.”
  - o Or maybe it’s just something the scientists want to find out: “How will changing \_\_\_\_\_ affect \_\_\_\_\_?”
  - o Because: If the team is making a prediction, what is the reasoning behind the prediction?
- Procedure (crucial): What are the steps your team will take to test the hypothesis? List each step. These are the steps that you will display on your table at the Science Fair.
- Result: What actually happened?



## RESOURCES

### Internet Resources:

Discovery Education, Science Fair Central

<https://school.discoveryeducation.com/sciencefaircentral/>

Kids' Science Challenge, How to do a Science Fair Project:

[http://www.kidsciencechallenge.com/year-four/teachers\\_projects.php](http://www.kidsciencechallenge.com/year-four/teachers_projects.php)

PBS Dragonfly TV, Science Fair

<http://pbskids.org/dragonflytv/scifair/>

Internet Public Library for Kids, Science Fair:

<http://www.ipl.org/div/projectguide/>

Science Buddies

[http://www.sciencebuddies.org/science-fair-projects/project\\_guide\\_index.shtml](http://www.sciencebuddies.org/science-fair-projects/project_guide_index.shtml)

Science Fair Project Ideas – Education.com

[www.education.com/science-fair](http://www.education.com/science-fair)

Hundreds of Science Fair Projects for Students

[www.all-science-fair-projects.com](http://www.all-science-fair-projects.com)

Science Fair Projects, Ideas, and Experiments

[www.sciencefairadventure.com](http://www.sciencefairadventure.com)

## **FAQ**

### **Is this project mandatory?**

Yes, the Science Fair is mandatory for all 5<sup>th</sup> grade students. The project is a major component of Science grades.

### **Will my child be graded on this project?**

Yes, all projects will be graded.

### **How will my child be graded?**

Projects will be graded based on the rubric included in this packet. Participation and scientific behavior will also be considered when grading projects.

### **Can my child work on their project at home?**

Support from families is always welcome when it comes to Science Fair projects. We encourage families to ask students about their procedures, how they are measuring their results, what conclusions they are drawing, etc. Some projects may need to be worked on at home due to the physical constraints of the science lab. Families should not, however, be writing sections of the reports or providing students with answers to their questions.

### **How are the projects judged?**

Projects are judged by outside scientists based on rubric grades and student interviews. More information about judging will be provided closer to the Science Fair.

### **How will my child get the resources that she needs?**

Students are responsible for providing the materials that they will need for their projects. Please keep this in mind when selecting your topic. There is a limited amount of supplies available in the lab for student use, including measuring equipment, containers, water, etc. If students are having a hard time acquiring the materials that they need, they must speak to Mrs. Griffith as soon as possible.



## Science Fair Paper Rubric 2018

	4	3	2	1
Question	<ul style="list-style-type: none"> <li>*The question is creative, answerable, and relates to a scientific concept.</li> <li>*There is a testable variable.</li> </ul>	<ul style="list-style-type: none"> <li>*The question is answerable.</li> <li>*There is a testable variable</li> </ul>	<ul style="list-style-type: none"> <li>*The question and/or variable is partially developed. The connection between the two may be unclear.</li> </ul>	<ul style="list-style-type: none"> <li>*There is no real question and/or variable. It is unclear what is being tested by experiment. Instead of having a testable question, it is more a "maker project"</li> </ul>
Hypothesis	<ul style="list-style-type: none"> <li>*The hypothesis is fully developed with scientific thinking.</li> <li>*The hypothesis incorporates scientific principles in the explanation.</li> </ul>	<ul style="list-style-type: none"> <li>*The hypothesis is fully developed with scientific thinking</li> </ul>	<ul style="list-style-type: none"> <li>*The hypothesis is partially developed, though some of the thinking might be vague or unclear</li> </ul>	<ul style="list-style-type: none"> <li>*The hypothesis does not include thinking or there are major scientific flaws in the thinking</li> </ul>
Procedure	<ul style="list-style-type: none"> <li>*The procedure is a clear set of steps that can easily be replicated by others. *Diagrams/illustrations are included when necessary.</li> <li>*The procedure includes precise measurements</li> <li>*The procedure is written in the student's own words.</li> </ul>	<ul style="list-style-type: none"> <li>*The procedure is a clear set of steps that can be replicated by others.</li> <li>*The procedure includes mostly precise measurements.</li> <li>*The procedure is written in the student's own words</li> </ul>	<ul style="list-style-type: none"> <li>*The procedure is mostly complete, though steps may be missing or unclear.</li> <li>*There is a lack of clear measurements</li> <li>*Parts of the procedure are not in the student's own words</li> </ul>	<ul style="list-style-type: none"> <li>*The procedure is not written in the student's own words or</li> <li>*The procedure is very unclear and unable to be followed by others.</li> </ul>
Results/Data	<ul style="list-style-type: none"> <li>*Results are complete and are clear and organized. They are presented in more than one way (table and graph, table and diagram... that are well labeled)</li> <li>* Analysis shows an understanding of experimental objective</li> <li>* Experiment is repeated multiple times/multiple samples observed &amp; numerical results averaged in analysis.</li> <li>* Metric units used for numerical measurements</li> </ul>	<ul style="list-style-type: none"> <li>*Results are complete and clearly organized and labeled.</li> <li>* Experiment is repeated multiple times/multiple samples observed</li> <li>*Some thoughtful analysis/relating to original hypothesis</li> </ul>	<ul style="list-style-type: none"> <li>*Results are partially complete or confusing to understand</li> </ul>	<ul style="list-style-type: none"> <li>*Most of the results are missing. Results cannot be understood.</li> </ul>
Conclusion	<ul style="list-style-type: none"> <li>*The conclusion is fully developed (by including applications to real life) and clearly addresses the original question/hypothesis.</li> <li>*Students discuss what they learned, changed in process &amp; next steps for their research and/or new questions.</li> <li>*Conclusion addresses possible problems with procedure and other interpretations of results/data when applicable.</li> </ul>	<ul style="list-style-type: none"> <li>*The conclusion is developed (with applications to real life) and addresses the question/hypothesis.</li> <li>*There is some discussion of next steps.</li> </ul>	<ul style="list-style-type: none"> <li>*The conclusion is partially developed/weakly related to question/hypothesis</li> <li>*Next steps or connections to real life may be very weak or missing</li> </ul>	<ul style="list-style-type: none"> <li>*There is no conclusion present.</li> </ul>
Editing/Format	<ul style="list-style-type: none"> <li>*The paper is free from mistakes in spelling and grammar.</li> <li>*There is an effort to present information clearly and/or creatively.</li> </ul>	<ul style="list-style-type: none"> <li>*The paper is mostly free from mistakes in spelling and grammar</li> </ul>	<ul style="list-style-type: none"> <li>*There are several spelling mistakes and grammatical errors that interfere with meaning</li> </ul>	<ul style="list-style-type: none"> <li>*Many spelling and grammatical mistakes render the paper very hard to understand.</li> </ul>