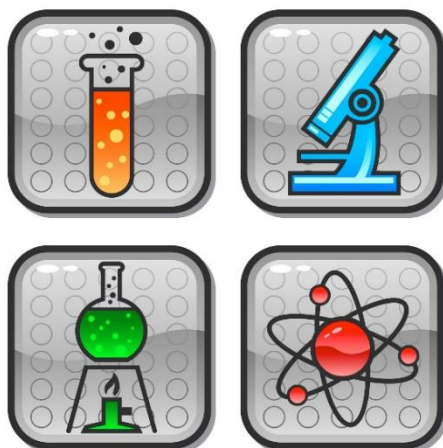


Patrick Elementary School



Science & Engineering Fair Guide

2017-2018

Information for all K-5 Students

You can find more information and access helpful links by visiting the following website.

<http://patricksciencefair.weebly.com>



Table of Contents

<i>Master Timeline and Due Dates</i>	<i>Page 2</i>
<i>Judging Rubric</i>	<i>Page 3</i>
<i>Sample Science Fair Project Ideas</i>	<i>Page 4</i>
<i>Display Board Guide</i>	<i>Page 5</i>
<i>Student and Parent Contract (due Wed., Nov. 29)</i>	<i>Page 6</i>

Suggested Timeline

Think! What am I interested in? (November 13-November 17)

- **Choose a topic and develop a testable question.** (Students wanting to remain eligible to compete for a county science fair spot cannot use animals as test subjects. Per county guidelines, vertebrates/humans cannot be used as test subjects.)

Turn in your Science Fair Contract to your teacher by Wednesday, November 29.

Plan! What do I need? How will I carry out my project? (November 27- 29)

- **Research your topic.** Write a paragraph or two that summarizes background information about your topic.
- **Gather materials.** Keep it simple and affordable!
- **Make a hypothesis.** (What do you think will happen?)
- **Decide on what steps you will take to carry out your project.**

Test! (Months of November and December)

- **Carry out your experiment.** Remember to write down your procedure step by step.
- **Logbook or Folder:** Keep a record of what you do, when you do things, and what is happening.
 - Take pictures of your process to show how you carried out your tests.
- When appropriate, remember to do more than one trial to be accurate.
- **Collect data.** (You may record observations, numbers in a data table, or both.)

Communicate! (December)

- **Create a graph or table to share your results.**
- **Write your conclusions.** What did you learn? How might you continue your experiment in the future?

Create! (December or January 4-9)

- **Create a display board to share your experiment with others.**
 - Make it eye catching and organized.

Bring your board to school on or before Wednesday, January 10, 2018.

*** The PES Showcase will be an in-school event held on Wednesday, January 17, 2018.**

Judging Rubric



* Science Fair projects will be judged by a team of teachers and community volunteers using the rubric outlined below.

	No evidence	Evident but incomplete	Evident & complete	Superior example
1. Presented a testable question or engineering challenge that could be answered with an experiment or engineering solution.	0	1	2	3
2. Proposed a hypothesis that gives a testable answer to the question or an engineering solution that can be tested.	0	1	2	3
3. Science Project - Correctly identified one independent/ manipulated variable and one dependent/ responding variable. Engineering Project – Identified appropriate constraints and goals to design and test a solution for.	0	1	2	3
4. Evidence of grade-level appropriate background research.	0	1	2	3
5. Procedures are described in sufficient detail to allow replication by another person.	0	1	2	3
6. Evidence of a thorough experimentation with proper controls (science) or multiple prototypes (engineering). (i.e. photos, diagrams, data tables)	0	1	2	3
7. Observations recorded in a log book during the experiment.	0	1	2	3
8. Appropriate tools/equipment were used to collect data.	0	1	2	3
9. Data presented is relevant to the question or challenge.	0	1	2	3
10. Data is displayed in an age-appropriate table and graph.	0	1	2	3
11. The data was used to answer the question, address a real challenge, or to evaluate the hypothesis.	0	1	2	3
12. The conclusion was supported with evidence. (No penalty for inconclusive data)	0	1	2	3
13. The project is presented in a manner that makes the purpose, procedure, and results clear.	0	1	2	3
14. Included age-appropriate visual components to provide a detailed description of the project	0	1	2	3
15. Student displayed creativity in the question, approach, technique, and/or the explanation.	0	1	2	3
Total Score: _____/45				

Additional Comments:

Sample Science Fair Project Ideas

** This is only a short list of possible ideas to get you started. Feel free to be creative and come up with your own, original topics. (Students wanting to remain eligible to compete for a county science fair spot cannot use animals as test subjects. Per county guidelines, vertebrates/humans cannot be used as test subjects.)*

<i>Science Fair Project</i>	<i>NOT a Science Fair Project</i>
 How does soil type affect plant growth?	 While making a volcano or creating a model of the solar system can be fun <i>activities</i>, they are not appropriate for the science fair. <u>You must have a testable question so that you can gather data.</u> (A science fair project is not a research report or poster.)

Examples of Testable Questions

- What metals are the best conductors of heat?
- What material makes the best insulator for an ice cube?
- Do bean plants grow best in direct sunlight, indirect sunlight, or shade?
- How does temperature affect plant growth?
- How does soil type affect plant growth?
- How does the color of light affect plant growth?
- Do earthworms prefer a dark or light environment?
- How does the shape of a parachute affect its flight time?
- How does wing shape affect how far a paper airplane flies?
- How does the length of a xylophone key affect pitch?
- Which type of citrus fruit uses chemical energy to produce the most power?

When you decide on a testable question, you should be able to fill out the table below.

	Testable Question	What is changed?	What stays the same?	What data will I collect?
Example	What material makes the best insulator for an ice cube?	Different materials for containers – Styrofoam, plastic, wood, etc.	Amount of ice Beginning temperature	Time for ice to completely melt.

Additional Resources

Your project does not need to come from this list but you can find some helpful suggestions from the following:

- Science Buddies <http://www.sciencebuddies.org/mentoring/science-fairs.shtml>
- All Science Fair Projects <http://www.all-science-fair-projects.com>
- Access Excellence <http://www.accessexcellence.org/RC/scifair.html>
- Science Fair Central <http://school.discoveryeducation.com/sciencefaircentral>
- Super Science Fair Ideas from PBS Kids <http://pbskids.org/dragonflytv/scifair/index.html>
- Education.com Science Fair Projects <http://www.education.com/science-fair/>
- Experimental Science Projects <http://www.miniscience.com/SciProjIntro.asp>
- The IPL's Science Fair Project Resource Guide <http://www.ipl.org/div/projectguide/>
- Successful Science Fair Projects <http://faculty.washington.edu/chudler/fair.html>

Display Board Example

Problem/Question – State your problem in the form of a testable question.	TITLE Make someone want to know more about the project. (Attention grabber!)	Data/Results <ul style="list-style-type: none">• Observations• Data Tables• Graphs
Background Research – Summarize background information about your problem.	Materials - List the materials that you used.	Picture
Hypothesis – Make an educated guess/prediction.	Procedure – Explain your process step by step. Someone reading this should be able to do your experiment just as you did.	Picture
		Picture
		Conclusion <ul style="list-style-type: none">• What did you learn?• Was your hypothesis correct? It is okay if it was not correct. Explain what <i>really</i> happened.• How would you continue studying your problem in the future?

Display Board Guidelines

- You should bring your display board to school on or before the due date, Wednesday, January 10, 2018.
- Review the judging rubric when creating your display.
- Include titles to divide your board into the parts listed above.
Printable display board templates are included on Ms. Askew's website if needed. However, students can create their own.
- **Photos** – Photos of student faces may not be shown on the display board. This is a county science fair guideline. (A simple remedy is to place dot stickers over faces.)
- Write your full name, grade, and homeroom teacher's name on the back flap of your board. *Student names should not be included on the front.*

Patrick Elementary School Science Fair Contract 2017-2018

K-5 Participation Form

** Please return this form to your teacher on or before Wednesday, November 29.*

Student Name _____

Teacher _____ **Grade Level** _____

Topic _____

Testable Question _____

	Testable Question	What is changed?	What stays the same?	What data will I collect?
Example	What material makes the best insulator for an ice cube?	Different materials for containers - Styrofoam, plastic, wood, etc.	Amount of ice Beginning temperature	Time for ice to completely melt.
My Project Idea				

Please sign the contract below.

We have reviewed the information included in the Science Fair Guide. We understand that all Science Fair projects are due on Wednesday, January 10, 2018.

Parent Name (print) _____

Parent Signature _____

Student Name (print) _____

Student Signature _____