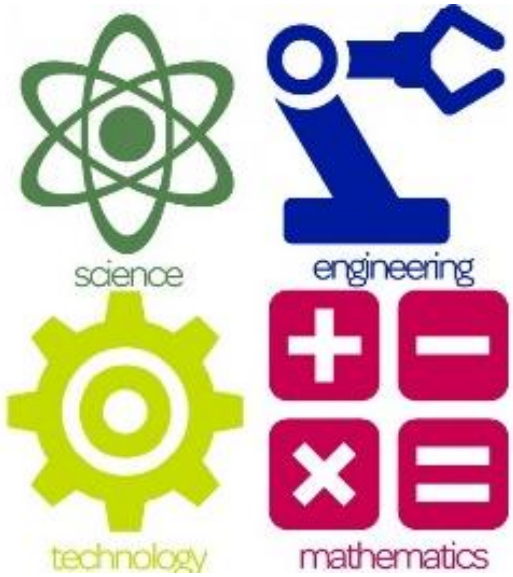
STEM FAIR INFORMATION



Dear Parents,

We are looking forward to another great year of STEM Fair projects! This year, SPARK has decided to make this an *optional* activity for students. However, we are optimistic that almost every student will decide to participate in this exciting opportunity. Our STEM Fair will take place the week of October 23rd – 27th. The five most outstanding projects will be announced at STEM night on Thursday October 26th and will move forward to represent SPARK at the district-wide Elementary STEM Fair in January 2018.

STEM projects will be due on Tuesday October 24, 2017. Information regarding the projects including criteria and guidelines, a possible timeline, and a judging rubric have been provided with this letter. We ask that you read and discuss this information with your child. It is important that students follow all guidelines. STEM projects should show students' interest and workmanship. You are encouraged to support and guide your child through this process, but please allow him/her to complete the project.

The STEM Fair Project Proposal Form is attached and is due on or before Friday September 29, 2017.

If you have any questions or need project materials, please contact your child's Math and Science teacher. We are here to help!

We are excited to see the amazing ideas our students choose to test and design!

Sincerely,

SPARK's 3-5 STEM Teachers

STEM FAIR PROJECT PROPOSAL FORM

DUE BY FRIDAY SEPTEMBER 29th

PLEASE RETURN YOUR FORM TO YOUR MATH AND SCIENCE TEACHER

Each student should complete an individual form even if he or she is planning on working in a group.

Completed projects are due Tuesday October 24, 2017.

GRADE LEVEL _____

HOMEROOM TEACHER _____

*STUDENT NAME _____

NAME OF PARTNERS (IF ANY) _____

**PROJECT TITLE _____

DESCRIPTION _____

_____

_____

_____

_____

If this project uses vertebrates (i.e. dogs) or human subjects (i.e. people) there will be additional safety forms to complete which will be provide by your Science teacher. Make sure that type of information is clear in the paragraph above.

All projects proposals must be signed by a parent or other cooperating adult.

I am going to ensure the safety of my child by providing him or her with support when required.

Student's Signature _____ Date _____

Parent's Signature _____ Date _____

Teacher's Approval of Project ☐ Please Conference with your Teacher about Project ☐

Teacher's Signature _____ Date _____

STEM FAIR PARENT INFORMATION

- STEM Fair projects are **optional**. Participation is highly encouraged. Teachers may award extra credit for students who complete a project that meets the STEM Fair requirements.
- Students may work with **one to two partners** from any 3rd, 4th, or 5th grade class, including siblings.
- Work should be completed at **home**.
- The STEM fair project must use the **Scientific Method** and focus on a **Testable Question**. This is not a research project or an opportunity to build a cool model.
- STEM stands for science, technology, engineering, and mathematics. Projects can fall under any of these academic areas. Students can create a piece of technology, build an engineering project, or do a probability and statistics mathematical project as long as it follows the scientific inquiry method.
- Final projects should be on a tri-fold board.
  http://www.sciencebuddies.org/science-fair-projects/project_display_board.shtml
- STEM Fair projects should represent **student work** with parent support.
- All projects are due **Tuesday, October 24th**.
- Projects are **not graded** by the classroom teachers. Projects are scored on a rubric by objective judges to determine which projects move on to the district level. Rubric scoring is private and not shared.
- Five winners will be selected based on the judging. Winners will be announced at STEM family night. If a project is selected to represent SPARK at the district STEM Fair, additional forms may need to be completed.
- The selected topic should be of great interest to the student; something the student wants to inquire and find an answer to. All projects regardless of the academic STEM area are to follow the scientific method and focus on a testable question.
  1. Ask a question or inquire about a topic of interest.
  2. Do background research.
  3. Construct a hypothesis.
  4. Test the hypothesis by experiment, creation, or inquiry.
  5. Analyze the results and data.
  6. Construct a conclusion.
  7. Communicate your results.

STEM FAIR IDEAS

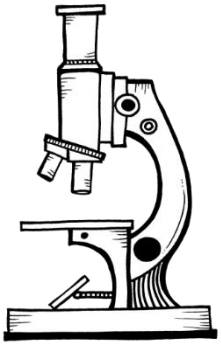
STEM	Information	Example Topics
S **Science**	-Investigate topics related to any field of science using the Scientific Method	-How does the length of a jump rope change your frequency of jumps? -How much water do beans absorb? -How many numbers can one remember?
T **Technology**	-Use the Scientific Method or Engineering Design Process to investigate topics related to technology	-Robots -Coding -How do distractions affect a video game scores?
E **Engineering**	-Use the Engineering Design Process to investigate topics related to engineering	-Does the color of your house affect your energy costs? -Which bridge works best? -Which glue is the strongest?
M **Mathematics**	-Use the Scientific Method or Engineering Design Process to investigate topics related to mathematics.	-What colors are found most frequently in a bag of M & Ms? Skittles? Any candy? -What is the surface area of containers that hold the same volume? -What number occurs most frequently when you role two dice? Three dice?

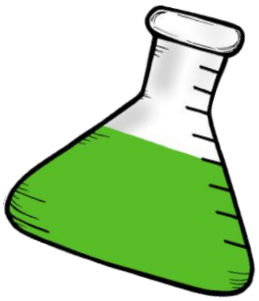
There are many sites on the internet that may help you select a topic. (Always use internet safety practices on the internet. Do not share any personal information.) Here are two places to start looking http://www.all-science-fair-projects.com/ and http://www.sciencebuddies.org/. Be sure to select a project with a testable question. Projects without a testable question will not score well on the judging rubric.

STEM FAIR TIME LINE

Create a timeline so that you can ensure that your project is completed on time.

Tasks	Complete By	Completed
Identify a **Testable Question**.	Prior to September 28th	
Submit the STEM Fair Project Proposal Form.	September 29th	
Research your topic.		
Make your **hypothesis.**		
Gather your **materials.**		
Write your **procedures.**		
Conduct your **experiment/project** and **collect data.**		
Draw **conclusions** and write your **findings** and possible areas for future research.		
Write the **abstract (optional).**		
Create your **display board.**		
Project Due	October 24th	





2017-2018 STEM FAIR JUDGING RUBRIC

This is the actual rubric that judges will be using at the district STEM fair. Not every bullet point will be meaningful for a project at the elementary level. However, this is a useful tool to see what is expected of projects at the highest levels. These guidelines are based on the Intel ISEF criteria. ISEF offers a specific set of criteria that may be applied to projects in engineering, mathematics and computer science. The judging process places a quarter of the emphasis on the student's ability to discuss the project effectively during the interview.

<table>
<tr><th>Science Projects</th><th>Engineering Projects
(may be applied to some projects in mathematics and computer science)</th></tr>
<tr><td>I. Research Question (10 pts.)
Clear and focused purpose
Identifies contribution to field of study
Testable using scientific methods</td><td>I. Research Problem (10 pts.)
Description of a practical need or problem to be solved
Definition of criteria for proposed solution
Explanation of constraints</td></tr>
<tr><td>II. Design and Methodology (15 pts.)
Well-designed plan and data collection methods
Variables and controls defined, appropriate and complete</td><td>II. Design & Methodology (15 pts.)
Exploration of alternatives to answer need or problem
Identification of a solution
Development of a prototype/model</td></tr>
<tr><td>III. Execution: Data Collection, Analysis & Interpretation (20 pts.)
Systematic data collection and analysis
Reproducibility of results
Sufficient data collected to support interpretation and conclusions</td><td>III. Execution: Construction & Testing (20 pts)
Prototype demonstrates intended design
Prototype has been tested in multiple conditions/trials
Prototype demonstrates engineering skill and completeness</td></tr>
<tr><td colspan="2">IV. Creativity (20 pts.)
Project demonstrates significant creativity/originality/inventiveness in one or more of the above criteria</td></tr>
<tr><td colspan="2">V. Presentation (35 pts.)
<u>Poster</u> (10 pts.)
Logical organization of material
Clarity of graphics and legends
Supporting documentation well selected and displayed
<u>Interview</u> (25 pts.)
Clear, concise, thoughtful responses to questions
Understanding of basic science relevant to project
Understanding of interpretation and limitations of results and conclusions
Degree of independence in conducting project
Recognition of potential impact in science, society and/or economics
Quality of ideas for further research
For team projects, contributions to and understanding of project by all members</td></tr>
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