



San Antonio STEM Fair:

Getting Started Guide

Table of Contents

Topic	Page
Welcome Letter	3
How to Get Help	4
Types of Projects	5
Planning Your Project	7
What Do I Do Once I Have A Question?	10
Timeline to Complete Your Project	11
Regional Fair Information	13

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Dear Young Scientists and Families,

Your child has chosen to do the optional STEM Fair project! This should be a fun learning opportunity for your child. This guide is intended to help your child in the coming weeks. Please remember:

- STEM Fair projects are **optional** for all students
- Only projects by 4th and 5th graders using the scientific method or engineering process are eligible for the Central NM STEM Research Challenge (Regional Science Fair) - science demonstration projects and those completed by students in grades K-3 are not eligible.
 - More information about participating in the Regional Fair is found later on in this packet
- As a parent, your job is only to assist - purchase the materials, remind your student about the due dates, etc. This is an opportunity for your child to think and act like a scientist or engineer. They get to create and discover their very own science or engineering project!
- Please allow your child plenty of time to make mistakes. They might even need to start the experiment again, change something in the experiment or try many prototypes. Remember, real scientists and engineers constantly refine their studies and start over again.

Thank you for your continued support!

SASM STEM Fair Committee

How to Get Help

Are you stuck? Do you have a question? We are here to help! Scientists and engineers need help too! We do not want this to be too hard or too easy. We want your project to be fun! . If you are not having fun, it's time to get help. Here's what you can do:

1. Read the Getting Started Guide
2. Read the Science Project, Science Demonstration or Engineering Project Guide. Pick the one that matches the type of project you are doing. These guides are found on the school website.
3. Ask your grown-ups a question. Remember, your grown up shouldn't do your project for you! However, they can answer questions, tell you where to find more information, buy supplies for you, and make sure you're doing science safely.
4. Attend a help session - dates to be announced.
5. Email the SASM STEM Fair Committee. We are here to help! Reach out to us via our email, sasmsciencefair@gmail.com.

Types of Projects

At SASM, we accept three types of projects: Science Demonstrations, Science Projects, and Engineering Projects. Below are the differences between the three! You can also watch this video to see a comparison of Science Projects and Engineering Projects: “[Which should I choose?](https://youtu.be/ulV031bnmFA?list=TLGGvCVkZFsNqfExMzA4MjAyNA)” (<https://youtu.be/ulV031bnmFA?list=TLGGvCVkZFsNqfExMzA4MjAyNA>)

**Note that Science Demonstration projects are not eligible for the Central NM STEM Research Challenge*

Science Demonstrations: This type of project shows how something works in the world. These projects do not change one thing to see how it changes the results. They do not design something to solve a problem. They DO ask and answer a question. Science Demonstration Projects include demonstrations, models, collections, and explanations of inventions.

Examples of Science Demonstration Projects:

- “How a Starfish Moves Model”
- “My Bug Collection”
- “Volcano Model”
- “The Solar System”
- “Lemon Battery”

Science Projects: This type of project answers a question by changing one thing in a process and seeing how it changes the results. It tests a guess, or hypothesis, using the scientific method, which is a series of steps all scientists take to test their guesses. You can tell you have a science project if you are measuring a variable, the change from changing one thing. Science Projects may be experiments, correlation, or observations. Here is a little more about those types of Science Projects:

- Experiments: These kinds of projects try to find a cause and effect relationship. They have dependent variables and independent variables. The dependent variables are being measured. The independent variables are being changed. The independent variable is the only thing changing while everything else is kept the same. In the video “Which should I chose?,” the scientist tested the question “Which food will attract the most birds to my yard?” The dependent variable was the number of birds visiting each food and the independent variable was the type of food.
- Correlation: These kinds of projects involve establishing a relationship between two variables. These projects have variables that predict an outcome. Examples include “How does temperature affect the amount of food eaten by my dogs?” or “Does the amount of sleep a person gets impact their reaction time?”
- Observations: These kinds of projects involve observing a natural event or phenomenon to answer a question. These projects identify important variables to observe and use a systematic way to do observations. Examples include: “How

kind are people at the grocery store?” or “What is the survival rate of seeds harvested from my salad tomato?”

Engineering Projects: This type of project solves a problem in the real world. The project will involve asking a question, imagining a solution, planning a solution that meets your design requirements, creating prototypes, and improving those prototypes. In the “Which Should I Choose” video linked above, the Engineering Project example was “I need a Bird Feeder to Attract More Birds to My Yard.” Other examples of Engineering Projects are: “Design a hoverboard to help me go get the mail” or “Build a door handle adaptor that helps people open doors more easily.” Computer science projects fall into the Engineering Project category too! In these projects, your prototypes are the computer program or code that you write and you’ll use the engineering process to improve your program.

Planning your Project

How Do I Get Started?

You might be asking, “How Do I Get Started?” This is often the hardest part of a STEM Fair Project! Asking a great question is the first thing you need to do. You might already have a question in mind, but if not, start by thinking of general topics you are interested in, like animals or plants, chemistry, robotics, or engineering. Then you can use the resources below to help you decide on a question.

We’ve also included a template on the next page that you can use to get started! After you have a topic of interest, follow the prompts to help you figure out your scientific or engineering question.

- [Science Buddies](https://www.sciencebuddies.org/) (https://www.sciencebuddies.org/)
- [Science Fair Project Ideas](https://www.education.com/science-fair/) (https://www.education.com/science-fair/)
- [Science Fair Adventure](http://www.sciencefairadventure.com/) (http://www.sciencefairadventure.com/)
- [All Science Fair Projects](https://www.all-science-fair-projects.com/) (https://www.all-science-fair-projects.com/)
- [Science Kids](https://www.sciencekids.co.nz/projects.html) (https://www.sciencekids.co.nz/projects.html)
- [Science Made Simple](https://www.sciencemadesimple.com/projects.html) (https://www.sciencemadesimple.com/projects.html)
- [Intel ISEF](https://www.societyforscience.org/isef/) (https://www.societyforscience.org/isef/)
- [UNM STEM-H Learning Lab](https://hsc.unm.edu/stem-h/programs/learning-lab/) (https://hsc.unm.edu/stem-h/programs/learning-lab/)
-offers an online “Student Researcher Training Modules” to help with everything from writing a great abstract to creating a digital slide presentation to how to analyze your data.

Coming up with a good question...

Now that you have picked out a topic that you like and that you are interested in, it's time to write a question or identify the problem of your topic. To give you an idea of what we mean you can start off by filling in the question blanks:

"What Is The Effect" Question:

What is the effect of _____ on _____?

*Examples:

sunlight	the growth of plants
eye color	pupil dilation
brands of soda	a piece of meat
temperature	the size of a balloon
oil	a ramp

"How Does It Affect" Question:

How does the _____ affect _____?

*Examples:

color of light	the growth of plants
humidity	the growth of fungi
color of a material	its absorption of heat

"Which/What and Verb" Question:

Which/what _____ (verb) _____?

*Examples

paper towel	is most absorbent
foods	do meal worms prefer
detergent	makes the most bubbles
paper towel	is strongest

Engineering or Technology Question:

What interests me _____ (noun) _____?

* Example:

How can I make it work (faster or better, at a lower cost or in a new way)

What Do I Do Once I Have a Question?

Once you've decided on your STEM Fair question, you need to figure out if your project is a Science Project or an Engineering Project. You can read the guides on the school website, the descriptions in this "Getting Started Guide" or watch the video "[Which should I chose?](#)"

After you have your question and know what type of project you are going to do, you need to submit your topic to the SASM STEM Fair Committee. Use this link in the provided email to submit your information on our Google Form. Follow the schedule in this packet to help keep yourself on schedule and have a successful STEM Fair project!

Timeline for STEM Fair Independent Projects:

This is a suggested timeline to help you pace yourself in completing your STEM Fair project. All project ideas **MUST** be submitted to the SASM STEM Fair Committee (using the Google Form) by October 18th. This is to ensure projects that require prior approval by the Central NM Regional STEM Research Challenge have time to submit the necessary paperwork.

Science Projects

Project Part	"Due" Date
<u>Question</u> : Decide on your science question	September 13 - Submit your project idea to the SASM STEM Fair Committee (suggested timeline). *MUST BE SUBMITTED BY October 18!
<u>Background Research</u> : Research your topic! What have others done related to this topic? Edit your question if you need to.	September 27
<u>Hypothesis</u> : Write your hypothesis. Be sure to include background research to support your prediction.	October 4
<u>Conduct your Experiment</u> : Remember, you should do multiple trials for a science experiment! Collect your data.	October 25
<u>Improve</u> : Identify challenges with your plan, go back and edit your plan if needed. Collect additional data.	November 8
<u>Conclusion & Next Steps</u> : Review your data. Was your hypothesis correct? Why or why not? What would you test next?	November 26
<u>STEM Fair Presentation</u> : Create your STEM Fair Board and practice your verbal presentation you will make to the judges	December 12 - Drop off your presentation to be judged on December 11, time TBA

Engineering & Computer Science Projects

This is a suggested timeline to help you pace yourself in completing your STEM Fair project. All project ideas MUST be submitted to the SASM STEM Fair Committee (using the Google Form) by October 18th. This is to ensure projects that require prior approval by the Central NM Regional STEM Research Challenge have time to submit the necessary paperwork.

Project Part	“Due” Date
<u>Question</u> : Decide on your engineering question	September 13 - Submit your project idea to the SASM STEM Fair Committee (suggested timeline). *MUST BE SUBMITTED BY October 18!
<u>Background Research</u> : Research your topic! What have others done related to this topic? Edit your question if you need to.	September 27
<u>Design Criteria and Constraints</u> : Decide what your design requirements will be. How will you know if your prototypes are successful?	October 4
<u>Build your Prototype</u> : Remember, you should do multiple prototypes for an engineering project! Collect your data and/or make observations following your design requirements.	October 25
<u>Improve</u> : Identify challenges with your plan, go back and edit your plan if needed. Collect additional data or observations.	November 8
<u>Conclusion & Next Steps</u> : Make your final prototype and observations about that prototype. Draw conclusions about how it works or could still be improved. What would you do in the future?	November 26
<u>STEM Fair Presentation</u> : Create your STEM Fair Board and practice your verbal presentation you will make to the judges	December 12 - Drop off your presentation to be judged on December 11, time TBA

Regional Science Fair Information

Students who complete Science Projects or Engineering Projects and who are in the 4th or 5th grade are eligible to be judged to attend the Central NM Regional STEM Research Challenge. This regional science fair happens March 19-21 & 23, 2025 at EXPO New Mexico. Students with great science ideas like you from all over central New Mexico get to see each others' ideas and be judged on their projects. It is a fun event and several SASM students have attended each year and even won prizes!

In order to be selected by SASM and eligible to attend the Central NM STEM Research Challenge, you MUST:

- Currently be in 4th or 5th grade
- Complete a SASM STEM Fair entry form ON TIME
- Complete necessary paperwork and receive approval from the Central New Mexico Scientific Review Committee BEFORE starting your project - this is for projects that involve human subjects, vertebrate animals or other safety risks. The SASM STEM Fair Committee will communicate with you and work with you to help you complete forms if needed.

If you'd like more information about the Central NM Regional Science Challenge, you can find it on the [UNM website](https://hsc.unm.edu/stem-h/programs/challenge/) (<https://hsc.unm.edu/stem-h/programs/challenge/>).