

# SCIENCE FAIR

## AT THE MAGIC OF SCIENCE FAMILY FESTIVAL

TUNE Center at HCC • 510 Thomas Run Road • Bel Air, MD 21015  
June 10, 2023 • Science Fair: 8am-3pm • Family Festival: 11am-4pm

# SUBMISSION INSTRUCTIONS

*Application Submissions Due May 8, 2023!*

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Please visit  
<https://DiscoveryCenterMd.org/magicofscience/science-fair/>  
or scan our QR code for the very latest information, including submission forms, instructions, how-tos, and more.



**Discovery Center**  
at Water's Edge

Where science, technology, and heritage meet

The Discovery Center at Water's Edge is a 501(c)(3) nonprofit. Combined Federal Campaign Giving CFC #11621

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# Application Instructions

When filling out the application follow the line-by-line instructions below. Enter:

1. Your first and last name.
2. The email at which you wish to receive correspondence regarding this Science Fair.
3. The full name of the middle school at which you are enrolled.\*
4. Your current grade level, i.e., 6, 7, or 8.
5. The full name (first and last) of your middle-school project advisor.\*\*
6. The complete email address of your middle-school project advisor.\*\*
7. Your selection for your project area.
8. The title of your project.
9. The hypothesis of your project.
10. A statement describing what you wish to show or accomplish.
11. The full name of your partner, if you have one. If you do not have a partner skip this step. If you have more than one (maximum number is two!) put the additional name and email information in the comment box below.
12. The full email of your partner. If you do not have a partner skip this step.
13. The full name of your parent or guardian.
14. The complete email of your parent or guardian.
15. The phone (cell preferred) of your parent/guardian.
16. Your parent or guardian's signature should be entered here using a mouse or keypad signature.
17. Any additional comments should be placed here. Also, in this space list a third partner's name and email, if there is one. Note: The maximum number of partners for any project is three.

After completing the application and making sure all information needed is included, have your parent/guardian sign the application using a mouse or keypad (#16 above).

Print the form for your records, if needed. Then submit the form by clicking the Submit button. Upon submission you and your, school advisor, partner(s), and listed parent/guardian will receive notification of the submission.

*\* For Homeschoolers – Enter Homeschool*

*\*\*For Homeschoolers – Please provide information for an adult with an appropriate scientific background that has agreed to review your project for safety and adherence to Science Fair Submission Instructions.*

**Applications due by close of business, May 8, 2023.**

Please direct any questions or concerns to [mosf@DiscoveryCenterMd.org](mailto:mosf@DiscoveryCenterMd.org).

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# Science Project Steps

1. Choose a topic. Be sure it interests you. Don't pick one because you think it will be easy. Talk it over with your parents and teacher. Get your Registration form from the packet on the web and have your parent sign.
2. State your project goal. What is it that you want to discover, develop, create by doing this project?
3. Research your problem. Look at any books/websites that might help you, make observations by simply looking at things, talk to people, and find out as much as possible about your topic. Write down any ideas you have and where you got them. Also, keep note of all information needed for citing your resources.
4. Form a plan of action. What do you think is going to happen or what do you want to engineer? Based on what you know or found out from step #3, what do you think the results of your project will be? After doing the project, it may turn out that your guess was wrong. It is okay if this happens.
5. Plan your project. How will you demonstrate your results? How will you measure the results? Where will you keep your information? Be sure to keep notes and write down everything you do and what happens.
6. Collect all your materials. Find a place to keep things where others won't bother them. Let other family members know what you are doing so they do not throw your materials away by mistake.
7. If you are conducting an experiment. Remember, the more times you do an experiment the more reliable and accurate the results will be. Do each experiment at least seven times to get an 85% assurance that your average of the results for your graph are within one standard deviation. Use something to measure your experiments: a ruler or yardstick if you are measuring distance, a clock to measure time, etc. Check the measurements to be sure you are correct.
8. Record your data/outcomes. As you do your project, you will want to write down what you saw or found out. Organize this information in an orderly manner. Put the date, time, and any other useful information. Write your observations clearly.
9. Draw conclusions. What did you learn from your project? Have you proved or disproved your hypothesis or demonstrated your engineering solution? You made a guess about what you thought would happen. Now tell what really did happen. You don't lose points if your guess turned out to be wrong.
10. Prepare your titles, charts, graphs, drawings, and diagrams. Make them large enough to see, neat, and colorful.
11. Construct your science fair display. Get a trifold cardboard display board so you can show all your work and have your hands free to point to sections when you give your presentation.
12. Prepare and practice your presentation. Be able to tell about what you used what you did in your experiments, and what you found out. Know it well enough that you don't have to read it from the display.
13. Plan a time line so you don't leave everything until the last minute. If you need help, tell your parents and your teacher, the earlier the better.
14. Relax and Enjoy yourself. You will do a GREAT job!

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# Science Fair Rules

1. Number one rule. . . think safety first before you start. Make sure you have recruited your adults to help you.
2. Never eat or drink during a project or experiment and always keep your work area clean.
3. Wear protective goggles when doing any experiment that could lead to eye injury.
4. Do not touch, taste, or inhale chemicals or chemical solutions.
5. Respect all life forms. Animals are not allowed to be used in experiments. Do not perform an experiment that will harm a person.
6. All experiments, science and engineering projects should be supervised by an adult.
7. Always wash your hands after doing the experiment, especially if you have been handling chemicals.
8. Dispose waste properly.
9. Any project that involves animals, drugs, firearms, or explosives are NOT permitted.
10. Any project that breaks district policy, and/or local, state, or federal laws are NOT permitted.
11. Use safety on the Internet! NEVER write to anyone without an adult knowing about it. Be sure to let an adult know about what websites you will be visiting, or have them help you search.
12. If there are dangerous aspects of your experiment, like using a sharp tool or experimenting with electricity, please have an adult help you or have them do the dangerous parts. That's what adults are for so use them correctly. (Besides, it makes them feel important!)

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# Presentation Instructions

Each contestant will be allowed one trifold poster to present their project. The contestant will be allotted one half of an 8x3 ft. table for a presentation area of 4x3 feet. Please confine your poster and demonstration hardware to the provided table space. The poster is required to have the following sections:

1. Title of the project
2. Name of the project partners
3. Contributions of the partners; list the contributions of each participant
4. Goals of the research and design; what did you try to understand or achieve
5. You will list and describe the steps you took to complete the project. Usually this is listed in a numbered sequence. This part shows the stages of the project so that another person can carry out the experiment or build your engineering project.
6. Observations/Results of the research and/or demonstration
7. Conclusions; What you proved or demonstrated. What you learned. What can you do better next time
8. Acknowledgments: who helped you make the project a success such as your parents, teacher, friends, mentors etc.

***Remember the poster and your presentation of the poster is an important part in how you present yourself to the world and the judges. Take some care and time to put it together. A well organized poster also makes it much easier for you to effectively tell your story.***

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# Judging Criteria

## *Project*

- I. Research Question/Problem Statement (15 pts.)
- II. Design and Methodology (25 pts.)
- III. Execution: Data Collection, Analysis, Interpretation, Construction, Testing (25 pts.)
- IV. Creativity (20 pts.)
- V. Board/Poster Presentation (15 pts.)

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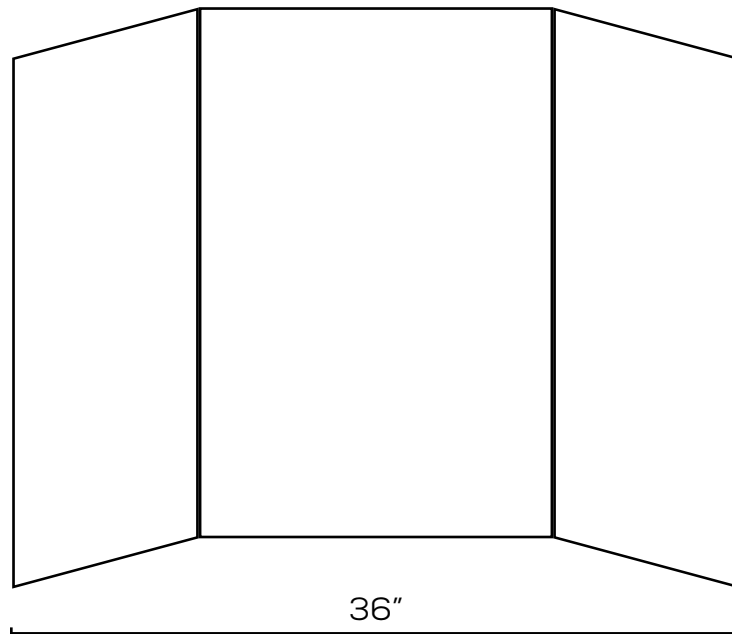
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# Poster Layout

<b>GOALS OF THE PROJECT</b>	<b>TITLE</b> Names of Participants	<b>OBSERVATIONS</b>
<b>CONTRIBUTIONS OF THE PARTNERS</b> If sole participant, state your work contribution. If a partnership, state name of each contributor and their contribution.	<b>RESEARCH PROCEDURE OR DESIGN PLAN</b>	<b>CONCLUSIONS</b>
<b>ACKNOWLEDGMENTS</b>		

*All posters must be self standing and no more than 36" wide/standard trifold.*



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# Reference List

- 1) **The best overall reference on how to enter and win science fairs is this ebook (PDF):** [Student's Guide to Science Fair Projects: Step-by-Step Using the Scientific Method, \\$9.95, instantly downloadable online, https://www.amazon.com/Students-Guide-Science-Projects-Step/dp/B0B32PY1VZ/](https://www.amazon.com/Students-Guide-Science-Projects-Step/dp/B0B32PY1VZ/). This book is a goldmine! The first 50 pages tell you how to choose your project, which you need to do before you can apply for the Magic of Science Fair. The Appendix includes 201 questions to help you find ideas for your science fair project. (Remember, the application deadline is May 8, 2023. Allow at least a week or two before that to come up with the information you must enter on the application: a description of your project, your hypothesis, and the name and email address of your advisor and your project partner, if you have one.) Be sure to follow the instructions on page 7 for the pages you need to print right away: Timeline, Table of Contents, the "Printables" in the Appendix, the Outcomes Checklist, and the Complete Science Fair Project Checklist. The book includes "Best-Kept Secrets of How to Win a Science Fair Contest," starting on page 228. The advantage of the book being a PDF is that it has links you can click that take you to different places in the book or websites the author recommends. If the suggestions for your science fair notebook are too expensive, talk to your advisor about making your own from a spiral notebook with stick-on dividers or a three-ring binder with notebook paper and dividers. The book also includes detailed instructions on how to make a display board. Some of them will be helpful, but follow the guidelines for display boards that we provide on [page 7 of the Magic of Science submission instructions](#).
- 2) **For science fair project ideas, go to Science Buddies:** Use the topic selection wizard to help you figure out what science projects interest you most. You can filter the results by cost, the amount of time you have, your grade level, and area of science. <https://www.sciencebuddies.org/science-fair-projects/science-projects/>. Or browse this list (the projects are the same): <https://www.sciencebuddies.org/science-fair-projects/project-ideas/list>.
- 3) **For more science fair project ideas, search YouTube and Google on the following phrases:** "middle school science fair ideas" and "what are some good science fair projects for [then fill in your choice of middle school, 6th graders, 7th graders, 8th graders]. On YouTube, watch the videos of children presenting their projects at their science fair for project ideas and to see how to talk to the judges.
- 4) **Another source for science fair project ideas:** Science Fair Central, a website created by Home Depot and Discovery Education. On the home page, it lists "Project Ideas," "Project Steps," and "Presentation Tips" in both science and engineering. Science investigates why things work. Engineering shows whether things work and how to make them work better. <https://sciencefaircentral.com/>. We recommend downloading their guides on this page for "Scientific Steps" and "Planning Sheet (Secondary);" <https://sciencefaircentral.com/students/scientific-projects/steps>.
- 5) **For an excellent explanation of the scientific method, go to ScienceBuddies:** "Scientific method" is the term for the steps to take to recognize and define a problem, collect data to study it, and form and test a theory to explain it. You need to understand the scientific method because you must use it to do your project: <https://www.sciencebuddies.org/science-fair-projects/science-fair/steps-of-the-scientific-method>. Here is a YouTube video from ScienceBuddies, which explains the scientific method: [https://youtu.be/Xxm\\_beTs2LU](https://youtu.be/Xxm_beTs2LU).

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# Prize Rules

Prizes for the Magic of Science Fair (MoSF) will be awarded in two categories, **Best in Grade** and **Runner Up**. A **Best in Grade** prize will be awarded to each of the three grade levels (6th, 7th, and 8th), for a total of three prize units, and will have a nominal value of about \$400 per unit. A **Runner Up** prize will also be awarded to each of the three grade-levels, for a total of three prize units, and will have a nominal value of about \$200 per unit. The prizes will be awarded by a combination of winning category (**Best in Grade** or **Runner Up**) and the number of participants in the winning entry project. The total value of the prize unit remains nominally the same for each award category.

Awardees will be able to select prizes based on the number of members in the project team and the level of the winning category. The total value of the winning category prize(s) must have a total nominal value assigned to nominal value of that prize category, e.g., if two team members win the Best in Class, the total prize values must not exceed the nominal value of \$400.

There are three prize tiers, Tier 1, Tier 2, and Tier 3. Tier 1 prizes contain prizes of \$400 nominal value. Any single winner of Best in Grade may select any prize in Tier 1 (or two prizes from Tier 2). Tier 2 prizes contain prizes of \$200 nominal value. Any single winner of Runner Up may select any prize in Tier 2. Tier 3 prizes contain prizes of \$100 nominal value. If multiple members of a team agree, prizes may be selected for their distribution among members, as agreed by team members, **so long as the total nominal value of the prize selection does not exceed the nominal value of the award category**. Any agreement among the winning team meeting this condition is acceptable, e.g., if three members of a Best in Grade winning team want to share a Tier 1 prize, that is acceptable.

These rules are intended to offer participants the greatest latitude in team make-up and team-member choice for the available awards. In case of conflict, these rules may be altered to accommodate unanticipated circumstances. The decision of the Discovery Center at Water's Edge Board regarding these rules is final.

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# Judges Instructions for Issuing Prize Winners' Forms

Once the prizewinners are determined there should be six winning entries, three **Best in Grade** awards and three **Runner Up** awards. If a winning entry has one person and there is no partner, then simply fill out all the winner information on the form except for the prize selection on the appropriate sheet, have Rob Lieb (or another designee) authorize the form, and give it to the winner. They can select the prize they wish and return the form to you, or make a selection at a later time then copy it and email the form (via PDF or JPG file) to [mosf@apgdiscovery.com](mailto:mosf@apgdiscovery.com). The prize will be mailed to their home address indicated on the form.

If there are multiple winners for a category, fill out the appropriate sheet for each of the partners except for the prize selection, have Rob Lieb authorize the sheet, and give one sheet to each winning partner. Each winner can select the prize they wish and return the form to you, or make a selection at a later time and email the form (via PDF or JPG file) to [mosf@apgdiscovery.com](mailto:mosf@apgdiscovery.com). The prize will be mailed to their home address indicated on the form.

If more complicated situations arise, e.g., partners want to share a prize or a **Best in Grade** winner wants two of the Tier 2 prizes, make notes on the reverse side of the MoSF Prize Selection Sheet indicating the situation. However, try to issue only one Prize Selection Sheet to each winner.

Rob Lieb, or designated signatory, will be sure the sheets are properly completed before signing.

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# Hand-Written Application

Please use hand-written application only as a last resort to filling out the online application at [DiscoveryCenterMd.org/magicofscience/science-fair/](http://DiscoveryCenterMd.org/magicofscience/science-fair/)

NAME: \_\_\_\_\_

EMAIL: \_\_\_\_\_

MIDDLE SCHOOL NAME\* AND GRADE: \_\_\_\_\_

MIDDLE SCHOOL ADVISOR NAME\*\*: \_\_\_\_\_

MIDDLE SCHOOL ADVISOR EMAIL\*\*: \_\_\_\_\_

PROJECT SUBMISSION AREA: \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_

PROJECT STATEMENT: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

WHAT YOU HOPE TO DISCOVER OR DEMONSTRATE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PARTNER NAME (IF APPLICABLE): \_\_\_\_\_

PARTNER EMAIL: \_\_\_\_\_

**IMPORTANT:** Partner(s) must also complete and submit application.

## PARENT AND/OR GUARDIAN APPROVAL:

PARENT/GUARDIAN SIGNATURE: \_\_\_\_\_

PARENT/GUARDIAN EMAIL AND PHONE: \_\_\_\_\_

DATE: \_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\* For Homeschoolers – Enter Homeschool

\*\* For Homeschoolers – Please provide information for an adult with an appropriate scientific background that has agreed to review your project for safety and adherence to Science Fair Submission Instructions

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