



Cottonwood Creek School
2023 Science Fair Handbook

This handbook is provided to help students and parents understand the rules required for a CCS Science Fair Project. Furthermore, these guidelines will assist students in carrying out a Science Fair Project based on the principles of the scientific method. Please review the Science Fair Information Night Slides (www.cottonwoodpfc.org) for additional resources and information.

2023 CCS Science Fair Timeline --

September 22, 2022: Application Forms for K-3, 4-5 and 6-8 Released online

October 7, 2022: Application Completion Deadline

October 19th– complete ACSEF Project proposal [wizard](#) 6-8 graders and complete ACSEF application – mandatory for competing in ACSEF)

November 10, 2022: (6-8) ACSEF project proposal due for Early Submitters
(please review ACSEF 2023 Handbook)

Week of Nov 7th – Workshop 1: Turn your topic/idea into an exciting Science Experiment or Engineering Project – Presented by the CCS Science Fair Coach

Week of Dec 5th – Workshop 2: Wow the audience by turning dry data into a High Impact Presentation – Presented by Ivy Math and Learning

Week of Jan 16th – Workshop 3: How to impress the Science Fair Judges – Presented by an Experienced Alameda County Science and Engineering Fair Judge

January 18, 2023 -- All participants must complete CCS Submission Confirmation Online Form (emailed by PFC to registered participants immediately after Winter Break)

Wednesday Feb 1, 2023 -- CCS Science Fair Video submissions DUE

Thursday February 2, 2023 -- CCS Science Fair Display Submissions at School

Science Fair: Feb 3, 2023 School Viewing and Judge's Evaluations

Friday Feb 3, 2023 -- Science Fair Public viewing of the projects from 5:30-6:30 pm. Project pick up from 6:30 - 7 pm

Feb 10th Winners and Awards Announced

****In January 2023 additional details for project submissions will be released****

DIVISIONS AND REQUIREMENTS:

- **K-3 students will create and share a science fair display board for their projects and receive an award for participation. Students must work in teams of 2-3 from within their division.**
- **4-5 grade students will create and share a science fair display board for their projects, and create a 3-5 minute video describing their project. They will receive participation awards and be competing to place within their division in teams of 2.**
- **6-8 students' projects will be judged on their science fair display boards, completion of a lab notebook, their 3-5 min video describing their project and a 5-10 minute live zoom session with a CCS Science Fair Judge. They will receive participation awards as well as compete to place within their division either alone or in teams of two. Winners from the CCS Science Fair**

6-8 grade division will be submitted for participation in the Alameda County Science and Engineering Fair representing CCS.

IMPORTANT RULES AND GUIDELINES FOR ALL GRADES

1.1 Students may work on science fair projects alone or with 1 other student that is in the same division for the 6-8 grade division. 4-5 grade students are required to partner with one other student within their division. For K-3 division students can work in groups of 2-3. To work with a partner or as a group each student's parents or guardians must complete the acknowledgement section of the 2023 Science Fair application form available at www.cottonwoodpfc.org. Forms must be completed online no later than the appropriate application deadlines as noted in the Science Fair Timeline.

1.2 The project, including design, experimentation, and presentation must be done by the students. Parents may provide guidance and advice, but projects should reflect the student's ability. Parental guidance is encouraged at the K-5 level; however, the project is not a parent project. All student presentations should reflect the student's ability level as per the division. Science Projects that do not exhibit age level appropriateness will receive a reduced number of points in the age appropriateness category which will affect the projects standing in the fair.

NOTE TO PARENTS: What can you do to help your child with the project?

1. Provide moral support and encouragement, especially when your child is struggling.
2. Help with tasks such as sawing a piece of wood, bending wire, cutting cardboard; and spelling.
3. Help them with ideas on where to find information in the library or online that pertains to the project.
4. Above all, PLEASE DO NOT DO THE PROJECT FOR YOUR CHILD.
Age-appropriateness will be part of the judging criteria.

1.3 Academic honesty: The project must be the students' original work. If they got the idea for the project from a web site, book, etc., they need to state that and provide the reference in the Bibliography.

1.4 Projects must be presented through a science fair display board, video, and live Zoom session with judges as per division requirements.

STUDENT CHECKLIST FOR A GOOD PROJECT PRESENTATION

- ❑ The presentation should describe your project and contain all the sections mentioned in this handbook as per student's division
- ❑ Please make sure the information on your application form is accurate as students will be asked to identify themselves only by their project number in the videos, and slide presentations.
- ❑ Pictures, charts, graphs, or tables that help explain your project should be included in your presentation.
- ❑ 6-8th grade students remember to keep a notebook of your methods and results and/or the process of iteration for your project. While you will not need it for the CCS Science Fair you will need it if you go on to the ACSEF
- ❑ Projects with dangerous materials will be disqualified! (i.e. bacteria, acids, fire) If you are concerned about being disqualified for use of a particular material please contact us at sciencefair@cottonwoodpfc.org

See http://www.sciencebuddies.org/science-fair-projects/project_guide_index.shtml for tips.

Grade-specific rules and information are as follows:

GRADES K, 1, 2, 3

2.1 The project for grades K-3 may be an experiment or report on a science phenomena.

- Experiment should include:
 - Question and Summary: the question that the project aims to answer and a topic summary
 - Materials and Procedure: a list of materials used and steps of the experiment
 - Results and Conclusions: measurements and/or observations of what happened with pictures, including an explanation of why this topic is interesting and/or important
 - Information from at least one source to provide context for your experiment.

- Students demonstrating a scientific phenomena should create an informative display about a science topic.
 - Projects should include a model of the phenomena built by the students.
 - The science fair display board should include a description of the phenomena the students want to represent, the method used to model the phenomena, materials used in the model, observations students made in making and using the mode.

GRADES 4-5

3.1 The project for grades 4-5 must be an experiment to better understand a scientific problem or an engineered solution to a scientific problem.

3.3 STUDENT'S GUIDE TO CHOOSING A PROJECT

- Choose a project that interests you.
- Choose a project with a clearly defined question that can be answered by an experiment or a clearly defined problem with an engineered solution.
- Choose a project with an appropriate difficulty level for your division.

3.3 Each Science Fair Project must include on the display board:

- Abstract: a paragraph explaining the scientific question and the purpose of the experiment as well as a brief summary of the results.
- Experiment Design and Procedure: Directions that enable someone to repeat your experiment by following your design and procedure; a list of steps and materials like a recipe.
- Discussion of Results: Write down your observations and measurements; explain your data and how it is related to the question you set out to answer.
- Conclusion: Explain what your results mean and how they impact the world. This is where you provide context for your project with at least one source.

3.4 A Bibliography is required for every project. If you have done a bibliography in class already, you may use the format that you have used this year in your CCS class.

At a minimum, the bibliography slide of your presentation must include:

- Name of the author or organization that created the text
- Title of the book, website, article, etc.
- URL (web address) if you used a website

GRADES 6-8

4.1 3.1 The project for grades 6-8 must be an experiment to better understand a scientific problem or an engineered solution to a scientific problem.

- Science Project Experiments must be repeatable
- Science Projects that are Models but do not really test anything will be disqualified
- Science Projects that are Engineered solutions should show iterations of improvement on the solution

STUDENT'S GUIDE TO CHOOSING A PROJECT

- Choose a project that interests you.
- Choose a project with a clearly defined, testable question that can be answered by an experiment or clearly defined problem that can be solved by engineering and iterating a solution.
- Choose a project that can be researched in the time available.
- Consider what materials are available when choosing a project.
- Choose a project with an appropriate difficulty level for your division.
- Consider original or novel takes on an experiment.

4.2 Each Science Fair Project must include on the display board:

- Abstract: a paragraph explaining the purpose of the experiment and providing a brief summary of how it was done and what the results were.
- Question: The goal of the project should be to answer your scientific question. Write that question clearly on your project board. A typical format for the question is "What is the effect of ____ on ____?"
- Hypothesis: This is not the same as a guess about the outcome. The hypothesis explains what you are testing. The hypothesis is different from the question because it includes what you will measure. Example: "_____ will increase when ____ decreases." You are NOT trying to prove that your hypothesis is true. If you find that the result is different from your hypothesis, that is still a good result! You will discuss why you think that result happened and what the result means in your Conclusion, just as you would if your hypothesis were correct.
- Materials List: a complete list of all the materials you used for the experiment.
- Experiment Procedure: a detailed list of steps like a recipe. Someone should hypothetically be able to repeat your experiment by following your procedure steps.
- Photo/Drawing of Experiment: Show the audience how you set up your experiment. This may involve one drawing or several if there were changes or different setups for different steps.

- Data/Results of Testing Rounds: Write your observations and the data you measured. Most projects will include measurements, and if yours does then you must use metric units: meters (centimeters, millimeters, etc.) for length, height, or distance, grams (kilograms, milligrams) for weight or mass, degrees Celsius for temperature. There are a few cases where observations would be qualitative, for example, a color change, but you must use numbers whenever possible. If it is possible for you to collect numerical data, display them in one or more graphs and/or data table - choose the method that will be easiest for the audience to read and understand. You may make graphs by hand or use Excel/Google Sheets/etc. as long as you do it by yourselves. Adults may not make your graphs for you but they may help show you how to use the software.
- Conclusion: Explain what your results mean. This is where you provide context for your project with at least one source.

4.3 Bibliography. Projects should include a bibliography in the presentations. Each project should utilize at least 2 sources credited in the bibliography to give the project context and help students understand the real-world impact of their projects.

Website source guidelines are as follows:

- These domains are allowed: .com, .gov, .edu
- These sources are allowed: major newspapers/networks, National Geographic, NewsELA.com, ScienceNewsForStudents.com.
- These sites are NOT allowed: Yahoo Answers, Quora, Wikipedia, Reddit, Chegg, YouTube, blogs, any other site where users post the content.

4.4 A note about engineering projects

If you would like to design and build or make something, that can work for this project format if you focus on the testing/prototyping aspect of engineering. Your question could be about what is the best way to build this item and you would test different methods. You would describe the criteria you use to determine what “best” means for this item and your data collection would come from your testing. Your question CANNOT simply be “can I build a ___ out of ___?” You must include testing and relevant observations and data that you measured.

2023 CCS Science Fair FAQs

- 1) What is the difference between the requirements for K-3 and 4-8 grade?
 - a) K-3 graders are encouraged to explore their scientific curiosity and engage with scientific methods if possible. Demonstrations of interesting scientific phenomena are encouraged as well as building simple pulleys or circuits.
 - b) 4-8 graders are required to conduct either a scientific experiment or engineer a solution to a problem and iterate the solution. Demonstration or building a model or project is not enough. Students will be judged on the rigor of their experimental data or analysis of the iteration of their project.
 - c) Most importantly projects while rigorous should remain age appropriate and benefit from adult supervision but not be dependent upon adult help.

- 2) Can we have more than two students do a science fair project together?
 - a) 4-8 projects can be done alone or with a partner. We are looking for a substantial contribution to scientific research or design of an engineering solution to the problem. To stay in accordance with the ACSEF we will limit groups to 2.
 - b) For K-3 students, their projects can be done as individuals or in groups up to 3.

- 3) How do I enroll my student in the Science Fair Mentorship Program?
 - a) 6-8 grade students who expressed an interest at Fall checkin had an opportunity to sign up for the ACSEF Mentorship Program called MORE STEM. For further details on the ACSEF Science Fair Mentorship Program please contact sciencefair@cottonwoodpfc.org.

 - b) If you would now like to be paired up with a local HS student who has had science fair experience and success please note this on your application and we will do our best to either get you paired through the ACSEF MORE STEM mentorship program or through our CCS PFC Mentorship program. This will be an opportunity for students to make sure they are developing their projects with a rigorous scientific method or engineering standard.

- 4) Will I get a confirmation for applying to the science fair?
 - a) Students and families will not receive confirmation emails till after October 19th. Please keep a record of your application in a timely manner and we will honor that if there is any concern.

- 5) Which contact information and which emails should I include in my science fair application?
 - a) Please provide the student's name, grade, teacher/science teacher, a DUSD email and a nonDUSD email address that we can send Science Fair communication to. PFC cannot directly send emails to DUSD email addresses as

such your nonDUSD email will be our primary point of contact. Please be sure to enter it carefully and completely.

- 6) What should I do if I missed the information night for Science Fair or any of the Science Fair Project Success presentations?
 - a) All handbooks, presentations, and applications will be made available on the PFC website for your convenience.