Santa Cruz COUNTY Science Fair

Judges' Guide

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Santa Cruz County Science Fair

The 2012 Santa Cruz County Science Fair is scheduled for March 10 at the Santa Cruz County Fairgrounds with an Awards Ceremony on March 20, 2012 at the Santa Cruz Civic Auditorium. The Science Fair is sponsored by Seagate Technology and administered by the Santa Cruz County Office of Education.

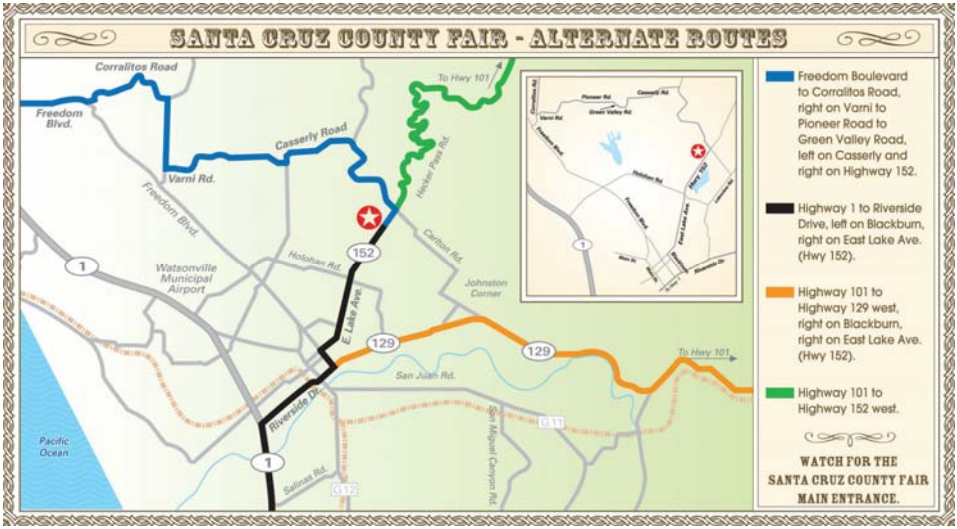
Of the 10,000 students who compete in school science fairs in Santa Cruz County each year, about 500 compete at the Santa Cruz County Science Fair. The students participate in 4 divisions—Primary (K–3), Elementary (4–5), Juniors (6–8), and Seniors (9–12)—in 16 subjects.

First place award winners are automatically entered into the Science Fair Projects of the Year competition. Several special and recognition awards include monetary gifts from the awarding organization.

Entrants or their teachers may receive prestigious awards from the California State Science Fair Team, the International Science and Engineering Fair (ISEF) Team, the Broadcom MASTERS competition, or the Santa Cruz Science Fair Teachers of the Year. The teacher competition is limited to Santa Cruz County science teachers nominated by a student entered in the Santa Cruz Science Fair.

- The 2012 Santa Cruz County Science Fair takes place at the Santa Cruz County Fairgrounds, 2601 East Lake Avenue, Watsonville, CA 95076.
- The official meeting room for judges is in the Fine Arts Building.
- Judges are provided with continental breakfast, lunch and afternoon snacks.
- Easy to use Judging Forms and Master Report Forms are provided, along with clipboards and pencils or pens.
- The judging auditorium has a concrete floor. Be sure to wear comfortable shoes. If you have trouble standing for an extended period of time, you may want to bring a stool or chair.
- The judging auditorium is unheated. Be sure to dress in layers.

Map to Santa Cruz County Fairgrounds



Map of the Fairgrounds

Greetings from the County Science Fair Coordinator

Thank you for generously volunteering your time and energy to the Santa Cruz County Science Fair. Without you, this excellent event simply would not be. Your experience, wisdom and judgment all help provide the Fair with professional, efficient judging; crucial support for the aspirations of talented young people; and role models for these budding scientists. Your conversations with entrants will demonstrate your confidence in their futures as scientists, while your understanding of scientific inquiry and engineering design ensure the overall success of the Santa Cruz County Science Fair.

Personally, this is such a rewarding event because these are the best, the brightest, and the most enthusiastic students; and because I have the opportunity to work with professionals like you. I sincerely hope you will find this to be a red banner day.

On behalf of the Santa Cruz County Science Fair, I thank you for agreeing to serve as a judge. For the many returning judges who have been with the Fair over the years, I give my deepest thanks for your continued support. For first time judges, congratulations on being selected into this prestigious group of scientists and professionals. I hope that you enjoy your interactions with the students and your fellow judges.

I would appreciate and strongly encourage all of your comments and suggestions regarding the Santa Cruz County Science Fair.

Sincerely,

Adam Wade

Santa Cruz County Science Fair Coordinator

Schedule

Friday, March 9th: Registration and Student Check In

6:00 pm — **Preview Evening (Optional)**
Judges are encouraged to preview student projects between 6:00 and 9:00 pm to familiarize themselves with the students' work and the layout of the exhibit floor.

Saturday, March 10th: Registration and Student Check In

8:00 am — **Registration Opens**
All judges check in at the Fine Arts Building.

8:15 am — **Continental Breakfast**
Meet with the Science Fair Coordinator
All judges are required to be present to receive instructions and meet in category/division groups. Judges should plan a schedule for the day and may preview projects.

9:15 am — **Judging and Interviews (Primary/Elementary)**
Primary and Elementary Division students report to their projects in the Harvest Building.

10:30 am — **Primary/Elementary students dismissed**

11:00 am — **Judging and Interviews (Junior/Senior)**
Junior and Senior Division students report to their projects in the Harvest Building.

12:30 pm — **Junior/Senior students dismissed**

12:30 pm — **Lunch in the Fine Arts Building**

1:30 pm — **Final Judging in the Fine Arts Building**
Judges complete final deliberations and assign placement for category awards.

2:00 pm — **Category Judging Closed**
Judges complete category judging by 2:00 PM; submit the **Master Report Form** and **Judging Forms**; complete **Project Evaluation Forms** and attach them to projects. Judges sign out at the Coordinator's Help Desk.

2:00 – 4:00 pm — **Judging Projects of the Year**

5:00 pm — **Judging Closed**

5:00 – 7:00 pm — **Exhibit Open to the Public**

Goals of the Science Fair

- To motivate and stimulate the interests of all students in the fields of science, mathematics, and engineering.
- To recognize outstanding effort and scientific achievement.
- To provide an extraordinary educational experience for students.
- To make all students aware of opportunities in science and encourage equity in participation.
- To involve the corporate community in recognizing outstanding students of science and technology.
- To acknowledge outstanding effort and achievement by teachers in promoting student participation and interest in science.
- To create a state and international awareness of the outstanding achievements of Santa Cruz County students.

The Judging Process

More than one hundred judges volunteer to evaluate student projects. The majority of judges are scientists and engineers from academia and industry throughout the Bay Area. In addition, a team of judges will evaluate projects for special awards and Projects of the Year. These judges may be employees of the awarding organization or Category Judges serving extra duty.

Registration Opens

Students begin registering and assembling project displays at 8:00 a.m. Judges are welcome to view projects at this time.

Judges Check In

Judges register before 8:15 a.m. at the Registration Desk and then report to the Fine Arts building for the judges' meeting. The Science Fair Coordinator will greet the judges at this time and review judging procedures.

Judging Team Meetings

Judging teams meet to discuss judging strategies and coordinate interview schedules. Each judging team has a chairperson who will call the group together as needed, clarify roles and responsibilities and notify the Science Fair Coordinator of any changes.

Judges Preview

Judging teams report to the Harvest Building to preview projects. Floorplans color-coded by judging category and division will be available to help you find projects. If students fail to show for registration, their table tent cards will hold that empty space unless the Science Fair Coordinator, Adam Wade, moves another project into that place. If you are unable to find a project, please check with him.

Lunch

Lunch will be served at 12:30 pm in the Fine Arts building, but judges may continue to review projects during this time.

Final Deliberations

Judges begin final deliberations immediately following the close of their scheduled interview session. Please keep judging communications confidential and secure, especially in the presence of students. DO NOT share judging information with students, parents, teachers, or community members.

Judging teams must meet to deliberate the final awards list, come to consensus on the top 4 winners and rank them. Ties are possible, but not encouraged. If no project within a category is deserving of a 1st place, then no awards will go to 2nd–4th places. In this case, however, some projects could be identified as a "Project of Merit."

Enter the 1st, 2nd, 3rd, 4th place winners and any Projects of Merit on the **Master Report Form**. All judges in each judging team must sign the **Master Report Form**, which will be presented to the Science Fair Coordinator's Desk in the Fine Arts Building.

Projects of the Year Judging

Immediately following panel decisions, three committees (one for each division, except Primary) will review all first place projects and determine these awards. A special panel will choose the California State Science Fair team, the International Science and Engineering Fair (ISEF) team, and the Broadcom MASTERS team. Identifying which projects will continue to broader competitions is even more important than ranking within categories and divisions—all judges should attempt to identify junior and senior projects suitable for going forward.

Guidelines For Judging

The purpose of the Santa Cruz County Science Fair is to stimulate an active interest in science and engineering in students and to provide an educational experience through exposure to expert judges. The following guidelines are intended to promote these goals. Panel Chairs and judges must make every effort to adhere to these guidelines to ensure that each student is treated equally and fairly.

Every student should be interviewed by at least two different judges

Ideally, this ensures that each project is seen by a sufficient number of judges to ascertain its potential for winning. Moreover, as each judge interviews more students, he/she will be more able to accurately determine the quality of projects in the category. This is also the student's opportunity to meet with and learn from professional scientists and engineers. The interview can (and ideally should) be an educational experience for the students. They will benefit from comments from several sources, regardless of the caliber of the project. Multiple interviews multiply and diversify the experiences of both students and judges.

Students should be interviewed by one judge at a time

Even one judge can be intimidating for some students and for this reason one-on-one interviewing is preferred. Occasionally, a Panel Chair may opt for pairing an inexperienced judge with an experienced one for a short time, numbers of judges and projects permitting. However, there should never be more than two judges interviewing a student at the same time. The second judge should observe only. Occasionally, some projects become crowded with judges observing. In this case, only one judge should be asking the student questions.

Every interview should last between five and fifteen minutes

Ideally, each interview should last about ten minutes. However, logistically this is not always possible in each category. An interview of less than five minutes cannot satisfactorily determine the extent of a student's knowledge of his/her project, while interviews of longer than fifteen minutes can slow the judging process and result in some students not seeing judges and vice

versa. Timing is often dictated by the number of projects and number of judges

Judges who determine ranking should interview every potentially winning project

Every judge should interview each finalist in order to come to a decision, and winners should be chosen by consensus of all panel members.. In categories/divisions with more than about seven projects, there may not be enough time for every judge to interview every entrant. One solution is to review abstracts and preview projects on Friday evening and then, on that basis, to split the projects into two groups: The projects most likely to rank, or the "ranking" group, and all the rest, called the "interview" group because projects are interviewed but not necessarily ranked. These latter projects deserve as much interview time as possible.

As insurance against overlooking a deserving project, judges interviewing projects in the interview group should inform ranking judges ranking of any outstanding projects in their group. And ranking judges should then interview those students. The largest groups of projects typically occur in the Junior Division, for which we have 90 minutes to interview (11:00–12:30). Although the number of projects in the "interview" group is limited only by the number of judges available, the number in the "ranking" group is limited to approximately six or seven projects. With six projects, each judge in the "ranking" group could spend 10 minutes interviewing and 2 minutes writing notes on each project, leaving 18 minutes to walk between projects and to interview a standout from the "interview" group.

Every student should be treated with respect

This should be self-evident, but is sometimes forgotten. While these students are young and inexperienced, they are aspiring scientists. They and their projects should be treated with due consideration, even if the science is flawed. Each judge should introduce him/herself, be polite, and make every effort to put the student at ease.

Every interview should have educational value

The interview should provide some educational benefit to the student, particularly those who are not serious contenders for a prize. This is an opportunity to educate the student as to how a scientist thinks, and how to identify important questions. Your interview could set the student on the track to a better project for next year.

Confidentiality

In fairness to the participants, it is absolutely necessary to maintain the confidentiality of the results of the judging process. Judges are not to disclose in any way the results of the judging process to anyone other than their panel members, the Science Fair Coordinator, or other Science Fair officials. Winners will be announced only during the awards ceremony.

Conflict of interest

A potential for conflict of interest arises when a judge is personally acquainted with a student that he/she will be judging. This acquaintance can be the result of a biological relationship (i.e., a family member), mentoring, teaching, etc. It is the responsibility of the individual judge to notify the Science Fair Coordinator of any possible conflict of interest at the earliest possible time (ideally on the Judge Application Form), so that the judge can be reassigned to a different category that would eliminate the conflict.

The judge-student relationship

Not infrequently, a judge is especially impressed with a student or project and would like to offer help or advice, or even offer the student a job. There are acceptable methods for establishing contact with a student: fill out a Supplemental Comments form. Turn it in to the Science Fair Coordinator, and it will be forwarded to the student. If direct contact between a student and judge after the Science Fair would result in further benefit to the student after the Fair, such contact will be facilitated by the Santa Cruz County Science Fair, but only with the approval of the student's parents or guardians.

Comments of a personal nature, by a judge to any participant, are unacceptable. Such behavior is sufficient grounds for barring that judge from future Science Fairs. Judges must adhere to the highest standards of professionalism in all cases. Judges may not ask students for their phone numbers or initiate or propose any form of future contact directly.

It is important to remember that students participating in the Santa Cruz County Science Fair are of elementary school, junior high school, and high school age. They are not adults. The relationship of student to judge is that of a minor to an adult in a position of authority. It is the responsibility of all judges to ensure that all interactions between themselves and the students are in the best interests of the students.

Judging Criteria

Judging at the Santa Cruz County Science Fair

Examine the quality of the student's work and how well he/she understands the project and area of study. The physical display is secondary to the student's knowledge of the subject. Look for evidence of laboratory, field or theoretical work, not just library research or gadgetry.

Judges should keep in mind that competing in the Science Fair is not only a competition, but also an educational and motivating experience for the students. For most students, the high point of the Fair is the series of interviews with interested judges.

Students may have worked on a research project for more than one year. However, for the purpose of judging, ONLY research conducted within the current year is to be evaluated. Although previous work is important, it should not unduly influence the judging of this year's project.

As a general rule, judges represent professional authority to students. For this reason, judges should use an encouraging tone when asking questions, offering suggestions, or giving constructive criticism. Judges should not criticize, treat lightly, or display boredom toward projects they personally consider unimportant. Always give credit to the finalist for completing a challenging task and/or for their success in previous competitions.

Compare projects only with those competing at this fair and not with projects seen in other competitions or scholastic events. Also, please be discreet when discussing winners or making critical comments in elevators, restaurants or other areas where students or others might overhear. Results are confidential until announced at the awards ceremony.

Determining the Winners

It is important to maintain a balance in evaluating the project and the student's accomplishments. The students should not be given more credit than they deserve because of their age, nor by the same token, should they be judged harshly because they are not graduate students or professionals.

Projects that are mentored should include a statement from the mentor indicating what work they performed—whether it was providing some of the results on which the student built, operating lab equipment, helping to analyze the data, etc. Mentored projects are important for some scientific explorations and should be encouraged. Comparing the scientific

understanding gained by a student in a mentored project against that in an unmentored project is a challenge for which we offer no strict guidelines. We rely heavily on the skill of the judges.

There are no regulations for choosing the winners, and each panel will have its own method. Several different techniques have been used, no one better than another in the general case, and all are acceptable to the Science Fair. We rely on the intelligence and experience of the expert judges in each panel as led by their Chairs, to discuss the relative merits of the various projects and determine in their own way, ideally by consensus, the four best projects. Judging sheets offer weighted categories. Some judges will assign points within these guidelines. Other judges prefer notes within these categories, leading to an overall sense of how each project compares with others.

Judging groups will receive a sheet of paper for each project in their category. At the top will be the project number, name, student name, category, and division. Just below will be the abstract. Some groups array these sheets on their judging table in the Fine Arts Building, which is a secure area, to reflect the ranking of projects. Physically moving these tokens around on the table can be useful, as they can show potential ties or be annotated by judges.

As an aside, while a photograph of the project would enhance these sheets, logistics makes this difficult. Sheets must be printed before projects begin to arrive Friday, and some projects arrive Saturday morning, just before judging begins. A future consideration would be to solicit photographs from school coordinators of Science Fair, well in advance of the county competition.

The only written records required from each judge are the **Judging Form** and **Master Report Form**. Each Chair will be given a **Master Report Form**. Give a short reason for the selection of the 1st Place award. This form must be submitted by 4:00 pm.

High marks go to

- genuine scientific breakthroughs.
- discovering knowledge not readily available to the student.
- correctly interpreting data.
- a clever experimental apparatus.
- repetitions to verify experimental results.
- predicting and/or reducing experimental results with analytical techniques.
- experiments applicable to the "real world."

- ability to clearly portray and explain the project and its results.

Low Marks Go To

- ignoring readily available information (e.g. not doing basic library research).
- an apparatus (e.g. model) not useful for experimentation and data collection.
- improperly using jargon, not understanding terminology, or not knowing how equipment or instrumentation works.
- presenting results that were not derived from experimentation (e.g. literature search).

Team Projects vs. Individual Projects

Judging the Science

It is important that judges keep in mind that all projects, regardless of the number of participants, are to be evaluated primarily on the quality of the personal contribution of the student to the science in evidence. In order for the judge to be able to evaluate the level of science of a team project, it is essential that all students in the team participate in the interview (unless otherwise acknowledged). All students on the team should have general and specific knowledge of the project. The judge has the freedom to ask a question of anyone in the group. However, the judge should be aware that the group has equal freedom to choose a spokesperson and may refer a particular question to a specialist.

Judging the Effort

It is fair to expect more from a team project than from an individual project. Team projects have greater resources (the number of minds working together) and therefore a greater capacity for research and data collection; more time, effort, and thought spent on the project; and more detailed analysis than a student working alone.

Each team member should have made a significant contribution to the overall project. But interviews should also reveal evidence of collaboration and synergy among team members, since one of the primary goals of team projects is to encourage team work and good project management. The judge should try to ascertain how fully the resources of the group have been exploited. Finally, please do not discount the work of any student on a team

project (or one working in a research lab for that matter) on the grounds of a perceived "unfair advantage."

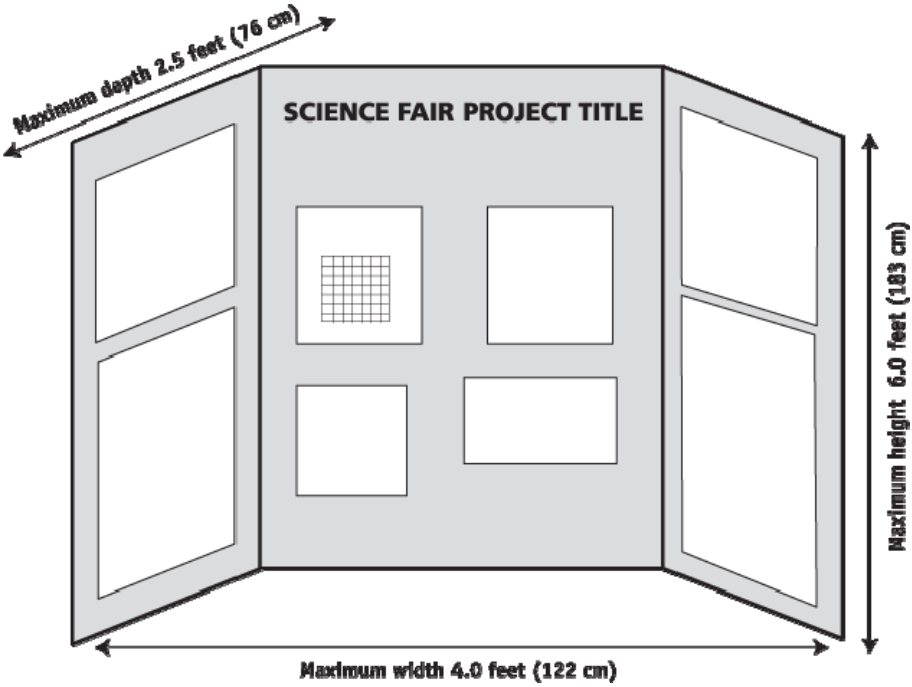
Project Display Requirements

Display Size Limitations

Judges should be aware of the following display requirements in the Official Student Application Packet. These specific requirements are included here because they are enforceable only during the judging period. Violations should be reported to the Fair Coordinator. It is up to each judging panel to decide the importance of any violations they may observe.

Display Size Limitations

Maximum width	4.0 feet (122 cm)
Maximum depth	2.5 feet (76 cm)
Maximum height	6.0 feet (183 cm)



How To Be A Good Science Fair Judge

Being a judge for the Santa Cruz County Science Fair is challenging, but it's worth the effort. You are making a memorable impact on the lives of talented young people. For some students, you are the first professional they have ever met who does a science or engineering job for a living. Part of your job at the Science Fair is to be an ambassador for your profession. Students' perceptions of you could influence their career choices. It is a good idea when you approach a student to introduce yourself and describe your background.

As a judge, it is most important for you to show the students that you are both fair and knowledgeable. Your fairness is indicated by a few simple actions:

- You spend about the same amount of time with each student.
- You listen to the student's explanation of the project.
- The questions you ask are intended to find out more about the project and how it was done—*not* to embarrass or intimidate the student.

This sounds simple, but can be challenging to implement. Your best tool in judging is your ability to ask questions. Be sensitive to what the student knows. You can always ask questions that the student can answer, and keep a conversation going for ten minutes.

Although you may be ranking a student's project, your relationship is not adversarial. You share curiosity about what the student discovered and about the meaning of results. In a sense, you are explorers sharing with each other.

During your panel's meetings, please inform your fellow judges of those students to whom you have provided analysis or information during your interview. This is in fairness to other students who are being judged in your category and who may not have received the benefit of your knowledge.

Since you are a judge, most students instinctively think of you as an intimidating figure. The more you can dispel this image, the more likely you are to help the student be less nervous and get a better discussion. Again, simple things can make a difference:

- Make eye contact with the student.
- Be sure to use a compliment whenever a student shows a good idea or demonstrates anything you can compliment.

- Use a tone of voice that indicates interest or inquisitiveness, not skepticism or contempt.

When you return to your judging panel and deliberate on the projects, you can use a few simple criteria for selecting the winners:

- The quality of the student's work is what matters, not the amount of work.
- Team projects are judged like other projects—it is the quality of the work that matters.
- A less sophisticated project that the student understands gets higher marks than a more sophisticated project that is not understood.
- Access to sophisticated lab equipment and endorsements from professionals do not guarantee a high quality project. Did the student really understand what was going on?
- It is okay if the student ended up disproving the objective or hypothesis of the experiment.

Although the most obvious reason for you being a judge at the Science Fair is to assist in the selection of the projects that get prizes, the effective judge knows that the interview is an important experience in the life of every participant.

Please do your best to make sure that all of the participants remember the Science Fair as a positive experience.

Projects with different levels of sophistication

One of the most difficult judging tasks is comparing projects carried out in university or industrial laboratories under professional guidance with projects done at home with no professional help. Judges should not be in the position of arguing that a particular student would have done much better if they had had access to state of the art equipment or, likewise, that a student would have done a worse project with less equipment and resources.

Among students with access to professional laboratories, the facilities have enabled the efforts of some students and masked a lack of effort by others. Both types of students should be judged on their **personal scientific accomplishment,** their perceptions and insights, and their success in exploiting available resources.

Students who work entirely on their own may appear to be at a disadvantage when judged solely on the basis of the project's title and display. If their accomplishments are, in fact, superior to others, the interview is where the

playing field is leveled. It is important to identify how the student made a difference in the direction of the project.

Regardless of where the science project is conducted, good scientific principles and engineering practices must be evident. The student's level of scientific understanding should be consistent with the project's level of technical sophistication and complexity. Judges should apply this standard in evaluating the student's project.

What to expect from the students

The projects represent **a wide range** of student abilities and sophistication. The quality of the science fair reports and project displays should be judged together with the student interview. Each project should be judged against others in the category, not against projects from other years or in other categories.

To have reached the Santa Cruz County Science Fair each student must have a project that was judged and chosen to represent their school. Some students will be comparable to good graduate students while others will be obviously outclassed. Whatever the quality, the students have justifiable pride in their accomplishments.

Judges should expect students to be able to define the scientific or engineering terms and clearly and accurately describe any methodology or equipment used during the course of the project. In addition, the student should be able to explain the thought processes and steps taken at each stage. The depth of these descriptions and explanations should be commensurate with the age of the students and the level of sophistication of the project.

Here are some questions all students should be able to answer, including variations:

- How did you come up with the idea for this project?
- What did you learn from your background search?
- How long did it take you to build the apparatus?
- How did you build the apparatus?
- How much time did it take to run the experiments (grow the plants, collect data)?
- How many times did you run the experiment with each configuration?
- How many experimental runs does each data point on the chart represent?

- Did you take all data (run the experiment) under the same conditions?
- How does your apparatus (equipment, instrument) work?
- What do you mean by (terminology or jargon used by the student)?
- Do you think there is an application in industry for this knowledge (technique)?
- Were there any books that helped you do your analysis (building your apparatus)?
- When did you start this project? How much of the work did you do this year?
- What is the next experiment to do in continuing this study?
- Are there any areas that we have not covered which you feel are important?
- Do you have any questions for me?

(Note: These are only suggestions to keep the dialogue going. You may find other questions to be more useful in specific interviews.)

One type of question to avoid is "Why didn't you do...?" Probing questions are useful to stimulate the thought processes of the student. A solution to or extension of the work presented may be obvious to you with all of your years of experience, but the student may not understand why you are asking such a question. If you ask a question of this type, be sure to imply the correct intent as in, "Could you have done...?" or "What do you think would have happened if you had done...?" When phrased this way, the question is an invitation for the student to think about the experiment in a different way and can turn the question into a positive experience.

Scoring System

The following scoring system is a guideline. Some judges find points by section to be most effective in ranking projects. Other judges take notes of strengths and weaknesses within each category, which they use in the ranking discussion with other judges (e.g. hypothesis just a guess, good library research, insufficient replicates, used scatter diagram appropriately, couldn't answer questions, understood underlying principles). Some judges write during interviews, while others take a few minutes between interviews. Some build up category scores to a total score, while others get a holistic sense of the project's merit and then allocate scores to categories, or even dispense with this allocation and just note the overall rank.

Different approaches work well for different judges. Judges are not required to use any particular approach. Judges ranking projects should use whatever method supports a fair, constructive, and efficient discussion with other judges to arrive at a ranking. Whatever approach is used, please consider the following rubric, keeping the elements in mind when judging projects.

I. Creative Ability – 30 points

1. Does the project show creative ability and originality in the questions asked?
    a. Approach to solving the problem, analysis and interpretation of data.
    b. Use of equipment and construction or design of new equipment.
2. Creative research should support an investigation and help answer a question in an original way.
3. A creative contribution promotes an efficient and reliable method for solving a problem. When evaluating projects, it is important to distinguish between gadgetry and ingenuity.

II. Scientific Thought or Engineering Goals – 30 points

Scientific Thought

1. Is the problem stated clearly and unambiguously?

2. Was the problem sufficiently limited to allow a plausible approach? Good scientists can identify questions that can be answered. Was there a procedural plan for obtaining a solution?
3. If controls were necessary, did the student recognize their need and were they correctly used?
4. Did the data support the conclusions?
5. Does the finalist or team understand the data's limitations?
6. Does the finalist or team understand how the project relates to other research?
7. Can the finalist or team speculate usefully about what further research is warranted?
8. Did the finalist or team cite scientific literature, or only popular literature (local newspapers, Reader's Digest).

Engineering Goals

1. Does the project have a clear objective?
2. Is the objective relevant to the potential user's needs?
3. Is the solution workable, acceptable to the potential user, and economically feasible?
4. Could the solution be utilized successfully in the design or construction of an end product?
5. Is the solution a significant improvement over previous alternatives?
6. Has the solution been tested for performance under the conditions of use?

III. Thoroughness – 15 points

1. Was the project completed according to the original plan?
2. How completely was the problem covered?
3. Are the conclusions based on a single experiment or replication?
4. How complete are the project notes?
5. Is the finalist or team aware of other approaches or theories?
6. How much time did the finalist or team spend on the project?
7. Is the finalist or team familiar with the scientific literature in the studied field?

IV. Skill – 15 points

1. Did the finalist or team have the required laboratory, computation, observational, and design skills to obtain supporting data?
2. Where was the project performed? (home, school laboratory, university laboratory) Did the student or team receive assistance from parents, teachers, scientists, or engineers?
3. Was the project completed under adult supervision or did the finalist or team work largely alone?
4. Where did the equipment come from? Was it built independently by the finalist or team? Was it obtained on loan? Was it part of a laboratory where the finalist or team worked?

V. Clarity – 10 points

1. How clearly does the finalist discuss the project and explain the purpose, procedure, and conclusions?
2. Does the written material reflect the finalist's understanding of the research?
3. Are the important phases of the project presented in an orderly manner?
4. How clearly are the data presented?
5. How clearly are the results presented?
6. How well does the project display explain the project?
7. Was the presentation done in a forthright manner, without tricks or gadgets?
8. Is it clear what work was performed by the finalist or team and what was contributed by a mentor or others?

VI. Teamwork

(Apply to team projects only—points may be added or subtracted from Thoroughness, Skill, or Clarity as judges deem appropriate.)

1. Are the tasks and contributions of each team member clearly defined?
2. Was each team member fully involved with the project, and is each member familiar with all aspects?
3. Does the final work reflect the coordinated efforts of all team members?

Projects of the Year

Projects of the Year are prestigious awards that go to the "Best of the Best" of the Santa Cruz County Science Fair. From among the place winners in each category, six awards are given: two for Elementary Division, two for Junior Division, and three for Senior Division.

Every category should nominate at least one project and send a representative judge to advocate for the project. Each Category Chair will select their panel's representative, typically a judge who interviewed the student or team, feels strongly enough about the project to advocate for it effectively, and can stay later into the afternoon. If no qualified member of the panel is identified, the Category Chair will serve as the default panel representative.

A 2-hour period is allocated for the determination of the Projects of the Year. During this time, one representative judge from each category presents a short synopsis (three minutes or less) of the winning project from their category. The time limit will be strictly enforced. There are no additional student interviews. This process is followed by discussion and the selection of the winners. The judging of Projects of the Year is closed to students and the public.

Responsibilities of Projects-of-the-Year Chair

- Ensure that all panel representatives are present and ready to judge at 2:00 p.m.
- Provide each member with a copy of the Projects of the Year Judging Form. Strictly limit the presentation of the synopsis of each Category Winner to three (3) minutes.
- Expedite the judging process so that judging is concluded by 4:00 p.m., though be ready to extend this to 5:00 p.m. if necessary.
- Allow time for each representative to repeat the synopsis of the Category Winner immediately after all Category Winners have been viewed.
- The Chair should refer representatives to the Projects of the Year Judging Guidelines presented in this Judges Guide.
- Allow each representative three (3) votes in the first round of voting for the Projects of the Year and one (1) vote in subsequent rounds of voting.
- Ensure that each member signs the Projects-of-the-Year Judging Form.

Responsibilities of Projects-of-the-Year Judges

- Agree to participate until 5:00 pm on the day of the Science Fair.
- Agree to serve as an advocate for the first place award project from their panel.
- Share any shortcomings identified for their panel's winner.
- Provide a one- to three-minute synopsis of the project to the other Projects-of-the-Year Judges.
- Quickly judge all of the category winners across all disciplines to determine the Projects of the Year in their division.

Projects-of-the-Year Judging Guidelines

These projects are judged across all disciplines within each division. Judges must determine which projects are superior in original thought, scientific impact, societal impact, and practical application.

- At this level of competition, students should have an understanding of problem solving and the scientific method; this understanding should be clearly evident in the project.
- Students should demonstrate that they understand the difference between dependent and independent variables, the importance of replicating experiments, and the importance of modifying their experimental design to account for knowledge gained from replication.
- Judges are encouraged to keep notes while judging the Projects of the Year.

Judges should keep in mind that projects in the Elementary and Junior Divisions usually will not have as much breadth, depth, or detail as projects in the Senior Division.

Categories

1. Behavioral and Social Sciences
2. Biochemistry and Molecular Biology
3. Botany
4. Chemistry
5. Cognitive Science
6. Earth Science
7. Electronics and Electromagnetics
8. Energy and Power
9. Engineering
10. Environmental Science
11. Mathematics and Software
12. Medicine & Health Sciences
13. Microbiology
14. Physics & Astronomy
15. Product Science
16. Zoology

Some categories are combined under a single judging chair and team:

1. Behavioral and Social Sciences / Cognitive Science
2. Biochemistry and Molecular Biology / Medicine & Health Sciences
3. Botany
4. Chemistry
5. Earth Science
6. Electronics and Electromagnetics / Energy and Power / Mathematics and Software
7. Engineering / Product Science
8. Environmental Science
9. Microbiology
10. Physics & Astronomy
11. Zoology

Seagate

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