



## HOW TO PREPARE FOR JUDGING

Dear Students,

We would like to offer you guidelines to design, conduct, and present your projects to align with the evaluation criteria the judges will use at the Greater Austin Regional Science & Engineering Fair. Each of the sections below lists the maximum points a judge may award for that area. Please be aware that judges *do not* use these scores to select winners. However, they will use the points they awarded as a guide during their discussion with other judges.

### 1) Question/Problem/Goal – What will you do and why?

Judges will want to know what goal you had in mind when you decided on your project.

- How did you come up with your idea?
- What do you expect to achieve?
- How will this benefit society or the understanding of science?
- Can your idea be tested?
- What is your hypothesis - what do you think the outcome of your experiment will be?

Maximum Points: 10

### 2) Design and Methodology – What is Your Plan?

Judges will want to know how you tested your hypothesis, collected, and analyzed your data.

- What method will you use to test your hypothesis?
- If you are conducting a science experiment, be sure to define your constant and your variables. How many variables will you have and how many trials will you run with each of them? (Three trials are considered the minimum for a valid experiment; however, consider doing more - the more data you have, the more solid your results.)
- If you are working with human subjects, what criteria are you using to select your participants and why did you select them?
- If you are working in Life Sciences, you should have a control with each trial to make sure the test is functioning properly. What is that control?
- If it is an engineering project, how many prototypes will you build?
- Are you testing different materials or different techniques?
- Do you have a constant against which to measure your tests or designs? Again, you should have a minimum of three variables/tests/techniques, but more can be better if each is thoroughly tested.
- How will you collect your data and how will you evaluate it?

Maximum Points: 15

### 3) Execution – Details of how you will test your idea/design your prototype

Judges will evaluate how well you execute your plan, how many trials you ran, or what apparatus you built, how much data you collected and whether someone could reproduce your results, using your methodology and your materials.

- Did you take all types of variables into account?
  - Depending on your project, that might include weather, time of day, variations on materials, number/age/ability of participants, etc.
- Analyzing quantitative data is very important. If you are in High School, the use of statistics is beneficial. Talk to your math teacher about learning how to interpret your data and how to present it.

Maximum Points: 20

### 4) Creativity

Judges will want to know how you approach a problem. Almost every topic a middle or high school student can select will have been studied before.

- How well have you researched what others have already done in your chosen subject?
- Do you agree or disagree with those scientists' findings?
- How does your approach differ from what has been done before?
- Have you thought of a more elegant or simpler way of doing an experiment?
- Are you using different materials or techniques? What aspect of your project is novel?
- If you are working with a mentor or in a lab, be sure to keep good records of which portions of the study or experiment you have completed on your own versus what the mentor or lab director has done. Your work will only count if you can clearly identify what you have done by yourself; you cannot take credit for someone else's effort.

Maximum Points: 20

*Please note:*

*Key points of Sections 1-4 should be summarized in your abstract. Judges will receive your abstract prior to the judging day and will use it to prepare questions they want to ask you. Ask someone to read your abstract before the submission deadline; consider asking your Language Arts teacher for help.*

### 5) Presentation

#### A) Display Board

Judges expect your board to be well organized so that they or someone else can read it without you being present and understand your problem statement, your hypothesis, your process, and your conclusion.

- Did you use graphics to represent your data or photos of your process, and are both clearly labeled?
- It is important not to try to fit too much information on the board – judges do not want to squint to read small print.

- The layout should follow the logical flow of your experiment/design, so judges can see the progression of your work.
- The board should only contain an overview, which is legible and informative.
- You should keep a detailed record of your processes and findings in your lab book which should be displayed. Many judges preview projects the night before judging and they will look for those lab books.

Maximum Points: 10

## B) Interview

Judges will have read your abstract but they will want to hear a summary from you before they begin asking questions.

- Be prepared to present a 1-2 minute opening statement:
  - 1) what you did
  - 2) why it was important to do
  - 3) how you did it and
  - 4) what you found out

**Example 1:** I wanted to build a water filtration system that runs on solar power because many people in Puerto Rico are still not connected to the electrical grid but need clean water to drink. I built a water filter using commonly available materials powered by solar power using commonly available materials for only \$5.00 that produces 1 liter of drinking water per hour.

**Example 2:** I wanted to find the best fertilizer for tomatoes because my family grows them every year, but everyone has a different opinion on what we should feed them. I grew 15 plants in groups of three. Two groups were given commercially available fertilizers, two groups home-made ones - one a recipe I found on the internet, another one my grandmother told me about - and the test group had none. The tomatoes with one of the home-made fertilizers did as well as the top commercially available product, but cost a third of the price.

Judges only have about 10 minutes for each interview. If your initial statement is too long, they will cut you off to ask the questions which they have prepared after reading your abstract.

- Be ready to answer background questions on your methodology, on your statistics, on what did and did not work, who helped you and how, on the research you have done and on what you might do in the future were you to continue with this project.
- If you do not know the answer to a question, just say so. Do not make up answers.
- After you answer a question, feel free to continue with more information from your rehearsed presentation until you are asked the next question.
- Be sure to look at the judges when you talk and make eye contact. You can check your board for a quick reference, but then turn back around and face the judge.
- Practice giving your speech and answering questions at home and at school with people who are not familiar with your project.
- At the end, thank the judge for his or her interest.

Maximum Points: 25

## **Additional Interview Tips for Teams Only**

Judges will expect each team member to participate in the interview and know the basics of the project, even if everyone has different responsibilities.

- Every team member needs to be able to answer the what/why/how/what-we found-out questions.
- If one team member does all the talking, judges will pointedly ask the other members questions to ensure that each member contributed to the project.
- Practice giving your speech as a team and decide who will present which portion.

### **Other suggestions:**

Dress so judges respect you as a professional. They want to know that you are serious about being there and presenting your ideas to them.

Wear comfortable shoes – you will be standing on hard concrete floors for several hours. Also, bring a book or a game to keep yourself occupied while you wait for judges.

Finally, judges volunteer their time because they are interested in the work young scientists do; they want to hear your thoughts and encourage you to continue your work. *So, relax and enjoy the process!*