

Judging Guidelines & Evaluation Criteria

Judging is conducted using a 100-point scale with points assigned to creative ability, scientific thought or engineering goals (II A and B respectively), thoroughness, skill, and clarity. Team projects have a slightly different balance of points for teamwork. Following is a list of questions and criteria that can assist you in interviewing the finalists and aid in your evaluation of the finalists' projects.

I. Creative Ability (Individual – 30 pts.; Team – 25 pts.)

- A. Does the project show creative ability and originality in the questions asked?
 - The approach to solving the problem, the analysis of the data, the interpretation of the data?
 - The use of equipment, the construction or design of new equipment?
- B. Creative research should support an investigation and help answer a question in an original way.
- C. A creative contribution promotes an efficient and reliable method for solving a problem. When evaluating projects, it is important to distinguish between gadgeteering and ingenuity.

II. Scientific Thought (Individual – 30 pts.; Team – 25 pts.)

- A. Is the problem stated clearly and unambiguously?
- B. Was the problem sufficiently limited to allow a plausible approach? Good scientists can identify important problems capable of solutions.
- C. Was there a procedural plan for obtaining a solution?
- D. Are the variables clearly recognized and defined?
- E. If controls were necessary, did the student recognize their need and were they used correctly?
- F. Are there adequate data to support the conclusions?
- G. Does the finalist or team recognize the data's limitations?
- H. Does the finalist or team understand the project's ties to related research?
- I. Does the finalist or team have an idea of what further research is warranted?
- J. Did the finalist or team site scientific literature, or only popular literature?

II. Engineering Goals (Individual – 30 pts.; Team – 25 pts.)

- A. Does the project have a clear objective?
- B. Is the objective relevant to the potential user's needs
- C. Is the solution workable, acceptable to the potential user, economically feasible?

- D. Could the solution be utilized successfully in design or construction of an end product?
- E. Is the solution a significant improvement over previous alternatives?
- F. Has the solution been tested for performance under the conditions of use?

III. Thoroughness (Individual – 15 pts.; Team – 12 pts.)

- A. Was the purpose carried out to completion within the scope of the original intent?
- B. How completely was the problem covered?
- C. Are the conclusions based on a single experiment or replication?
- D. How complete are the project notes?
- E. Is the finalist or team aware of other approaches or theories?
- F. How much time did the student or team spend on the project?
- G. Is the finalist or team familiar with scientific literature in the studied field?

IV. Skill (Individual – 15 pts.; Team – 12 pts.)

- A. Does the finalist or team have the required laboratory, computation, observational and design skills to obtain the supporting data?
- B. Where was the project performed? (home, school laboratory, university laboratory) Did the finalist or team receive assistance from parents, teachers, scientists or engineers?
- C. Was the project completed under adult supervision, or did the finalist or team work largely alone?
- D. 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 (Individual – 10 pts.; Team – 10 pts.)

- A. How clearly does the finalist or team discuss his/her/their project and explain the purpose, procedure, and conclusions? *Watch out for memorized speeches that reflect little understanding of principles.*
- B. Does the written material reflect the finalist's or team understands of the research?
- C. Are the important phases of the project presented in an orderly manner?
- D. How clearly are the data presented?
- E. How clearly are the results presented?
- F. How well does the project display explain the project?
- G. Was the presentation done in a forthright manner, without tricks or gadgets?
- H. Did the finalist or team perform all the project work, or did someone help?

VI. Teamwork (Team – 16 pts.)

- A. Are the tasks and contributions of each team member clearly outlined?
- B. Was each team member fully involved with the project, and is each member familiar with all aspects of the project?
- C. Does the final work reflect the coordinated efforts of all team members?