

## Judging Criteria

The following is a description of each of the areas of judging including some questions, statements, and suggestions a judge may consider within that area of evaluation.

### A. Scientific Thought (Maximum 40 points)

There are three possible types of project: Experiment, Study, Innovation.

There are four levels possible for each type of project. The levels (I through IV, or Acceptable – Fair – Good – Excellent) correspond to how extensiveness of the project and influence the maximum points attainable in this section. Typically, the more criteria the project meets, the higher the level.

#### Experiment (Quantitative)

1. The problem/hypothesis is clearly stated.
2. The student shows evidence of extensive research and reading on the subject.
3. Experimental design reflects understanding of the underlying scientific principles.
4. The student used and understood variables and control of variables.
5. A large enough sample size or a sufficient number of trials was used to establish reliability of results. Observations are clearly summarized in tables/graphs.
6. Conclusions and summary remarks are logically connected to the experimental data and answer the problem/hypothesis. The student recognizes possible sources of error.
7. The degree of difficulty of this project is exceptional.

#### Study (Qualitative)

1. The problem/research question is clearly stated.
2. The student shows evidence of extensive research and reading on the subject.
3. The student has collected data appropriate for solving the problem/answering the question.
4. The student has sampled a variety of cases/subjects to establish trustworthiness.
5. The student has identified his/her biases and the implications of these for the research.
6. The scientific information presented establishes trustworthiness (is believable).
7. The student effectively organized and analyzed the research.
8. A logical conclusion, deriving from the data and the problem/research question, is presented.
9. The degree of difficulty of this project is exceptional.

#### Innovation

1. The problem/hypothesis is clearly stated.
2. The student shows evidence of extensive research and reading on the subject.
3. Innovation design displays scientific principles appropriate for solving the problem.
4. The student demonstrates awareness of the possible implications/impact of this innovation.
5. The student demonstrates that the original plan for the innovation has been modified (if necessary) and why it was modified.
6. The student has effectively gathered, combined and organized the information.
7. The student is able to demonstrate the innovation works better than current solutions.
8. The student can suggest improvements to the innovation.
9. The degree of difficulty of this project is exceptional.

### B. Oral Presentation and Understanding (Maximum 24 points)

The exhibitor should present his/her project in a comprehensive and enthusiastic manner. If two students completed the project, then both students should be involved in the presentation. Sometimes judges believe the ideas the students grappled with are too difficult for the age of the student. However, some students are quite capable. We do not want to encourage our students to do less than they are capable of, just to convince the judges it was their own work. The oral presentation is the judge's opportunity to listen to the students and question them on their understanding of the concepts. If the judge has the impression that someone else did the work, this should be brought to that attention of the head judge. Some things to consider:

- Did the student use demonstrations where appropriate, refer to the exhibit where appropriate, refer to past research, student research and results where appropriate?
- Did the student display understanding of the scientific concepts and equipment used?
- Were you confident that the student understood the work they did?
- Did all participants share in the presentation?
- Was the student able to answer the questions adequately?
- Did the student give the impression that they understood the implications of the research?

Again, there are three levels that influence the maximum number of points available.

### **C. Originality (Maximum 16 points)**

The section deals with the spark, new twist or "Aha!" that eludes many people. The concept of creativity is open-ended and is therefore very subjective.

- Is the topic unique?
- Although the topic of the project may not be unique, the originality may come in the approach to the topic by the methods used, the variables identified, etc.
- Are the equipment, resources, ideas, or information used in unique ways?
- Are the methods of presentation (visuals or oral) unique?
- Has the exhibitor gone beyond the most obvious interpretations and considered the less predictable?
- Has the exhibitor identified other avenues of study which follow from this project?

### **D. Visual Display (Maximum 20 points)**

The visual display is the exhibit the student has constructed. The display should be informative, but should also attract your attention. Some things to consider:

- Is the display attractive?
- Is the title of the project obvious?
- Is the text in large enough print to read?
- Is the display well-constructed and neat?
- Has the student selected the most appropriate aspects of the project to present textually?
- Is the layout of material logical and self-explanatory?
- Is the data presented to demonstrate the relationships among them?