

## **Southern Minnesota Regional Science & Engineering Fair Judging Criteria | Middle School/High School Division**

The following evaluation criteria will be used for judging at the Southern MN Regional Science & Engineering Fair. It has been extensively reviewed and revised by the Judge Advisory Committee of Intel International Science & Engineering Fair (with whom the Southern MN Regional Science and Engineering Fair is affiliated) with additional input from science, engineering, and educational experts.

As shown below, both criteria have five sections as well as suggested scoring for each section. Each section includes key items to consider for evaluation both before and after the interview. Students are encouraged to design their posters in a clear and informative manner to allow pre-interview evaluation and to enable the interview to become an in-depth discussion. Judges should examine the student notebook and, if present, any special forms such as Form 1C (Regulated Research Institution/Industrial Setting) and Form 7 (Continuation of Projects). Considerable emphasis is placed on two areas: Creativity and Presentation, especially the Interview section, and are discussed in more detail below.

**Creativity:** A creative project demonstrates imagination and inventiveness. Such projects often offer different perspectives that open up new possibilities or new alternatives. Judges should place emphasis on research outcomes in evaluating creativity.

**Presentation/Interview:** The interview provides the opportunity to interact with the finalists and evaluate their understanding of the project's basic science, interpretation and limitations of the results and conclusions.

- If the project was done at a research or industrial facility, the judge should determine the degree of independence of the finalist in conducting the project, which is documented on Form 1C.
- If the project was completed at home or in a school laboratory, the judge should determine if the finalist received any mentoring or professional guidance.
- If the project is a multi-year effort, the interview should focus **ONLY** on the current year's work. Judges should review the project's abstract and Form 7 (Intel ISEF Continuation Projects) to clarify what progress was completed this year.
- *Please note that both team and individual projects are judged together, and projects should be judged only on the basis of their quality. However, **all team members should demonstrate significant contributions to and an understanding of the project.***

NOTE: Students at the Southern Minnesota Regional Science and Engineering Fair will NOT receive scoring results. All scores are used for internal rankings and ribbon assignments only. Therefore, as judges, it is imperative that constructive and positive feedback be provided each student— as this is what the students will get back from the Fair staff.

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Scoring Criteria	Points Possible	Points Awarded
<b>Research Question/Problem</b> <b>Scientific Method</b>   Clear and focused purpose; identifies contribution to field of study; testable using scientific methods. <b>Engineering Design</b>   Description of a practical need or problem to be solved; definition of criteria for proposed solution; explanation of constraints.	10	
<b>Design and Methodology</b> <b>Scientific Method</b>   Well-designed plan and data collection methods; variables and controls defined; appropriate, and complete. <b>Engineering Design</b>   Exploration of alternative to answer need or problem; identification of a solution; development of a prototype.	15	
<b>Execution:</b> <b>Scientific Method   Data Collection, Analysis, and Interpretation</b> Systematic data collection and analysis; reproducibility of results; appropriate application of mathematical and statistical methods; sufficient data collected and/or trials ran to support interpretation and conclusions. <b>Engineering Design   Construction and Testing</b> Prototype demonstrates intended design; prototype has been fully tested in multiple conditions/trials; demonstrates engineering skill and completeness.	20	
<b>Creativity</b> Project demonstrates significant creativity in one or more of the above criteria; problem at hand, solution methodology, use of resources, approach to solution or in any other way deemed fit.	20	
<b>Presentation: Poster</b> Logical organization of material; clarity of graphics and legends; supporting documents displayed.	10	
<b>Presentation: Interview</b> Clear, thoughtful, and enthusiastic responses to questions; understanding of basic science relevant to project; understanding interpretation and limitations of results and conclusions; degree of independence in conducting the experiment; recognition of potential impact in science, society, or economics; quality of ideas for further research. <b>Team Projects:</b> Contributions to and understanding by all team members.	25	
<b>TOTAL POINTS</b>	100	

### **RIBBON POINTS**

Purple Ribbon= 85-100  
 Blue Ribbon= 70-84  
 Red Ribbon= 55-69  
 Green Ribbon=0-54

**Purple Ribbon** - Project above expectations, superior in category  
**Blue Ribbon** - Project achieved expectations, satisfactory in category  
**Red Ribbon** - Project met expectations; additional development opportunities were identified  
**Green Ribbon** - Project has not met standard criteria

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### **FEEDBACK ASSESSMENT CATEGORIES | TEAM / INDIVIDUAL**

#### **CREATIVE ABILITY**

Questions asked are student-initiated and original; approach to solving the problem is creative; equipment is creatively used or had to be made/modified; interpretation of the data shows creative and original thinking by students; students understand project implications beyond their research.

#### **SCIENTIFIC THOUGHT (A) OR ENGINEERING GOALS (B)**

**A:** Clear and unambiguous statement of problem; clearly defined procedural plan for obtaining a solution; variables clearly recognized and defined; proper controls used correctly; data adequately supports students' conclusions; limitations recognized; scientific literature cited, not just popular literature (i.e. newspapers, web) OR

**B:** Project has a clear objective relevant to potential user's needs; solution is workable and economically feasible; solution could be used in the design or construction of an end product; solution is a significant improvement over current alternatives; solution has been performance tested under conditions of use.

#### **THOROUGHNESS**

Original question was completely addressed; conclusions are based on repeated observations (not single experiments); project notes / lab notebook are complete; students are aware of alternate approaches or theories.

#### **SKILL**

Data was obtained & analyzed appropriately by student; students worked largely independently; students have required skills/understanding to continue research on own.

#### **PRESENTATION**

Clear discussion of project (not a memorized speech); written material/poster reflects understanding of research project; data and results are presented clearly; presentation is forthright; students designed and created poster largely independently.

#### **TEAMWORK**

Tasks and contributions of each team member clearly outlined; each team member fully involved with project; coordinated effort evident.