Judging Information

a) Instructions to Judges
The attitude and conduct of the judges determine the success of any Science Day Activity. Therefore, it is vital that each judge understands thoroughly his or her duties and obligations. All judges need to have a genuine interest in young people combined with a desire to offer encouragement and guidance in their efforts to pursue learning in the various fields of science.

- Judges should have full knowledge of all The Ohio Academy of Science’s requirements and expectations for Science Day participants.
- Judges should read through the abstract and the final report to determine their quality. A check of the references will assist in making fair determination of the scope and depth of the literature search. The quality and quantity of the references should be taken into account to evaluate the student’s research methodology.
- Judges should determine the span of sustained interest in the particular field of science, as well as the approximate amount of time spent in developing the project being evaluated. Some premium should be granted for considerable extended interest and effort to encourage this quality of persistence.
- Judges are expected to enter comments for the student/s in a professional manner on each score card. The ratings and comments will be returned to the student thus the comments should reflect reasons for the rating, as well as suggestions for improvement.

b) Judging - The Process
The score received by a project is the average of the scores of the two judges. Fractional scores should be rounded up.

*Minimum number of points for each rating:*
Superior 36, Excellent 24, Good 12, Satisfactory 4 (Satisfactory not given at State Science Day).

All students at local, District or State Science Days shall have an abstract and a written report, which documents that the student has searched relevant literature, state a question and/or tested a hypothesis or technological design statement, collected and analyzed data, and drawn conclusions.

c) Judging Criteria Individual Projects will be judged on the following criteria:
- SECTION #1: ORAL, WRITTEN, AND VISUAL COMMUNICATION
- SECTION #2: ORIGINALITY
- SECTION #3: EXPERIMENTAL DESIGN
- SECTION #4: DEPTH OF UNDERSTANDING
Each criterion is rated 1 through 10 points with 40 points being the maximum

- Superior range is 36-40 points
- Excellent range is 24-35 points
- Good range is 12-23 points
- Satisfactory range is 04-11 points (not used at State Science Day)

FOR TEAM PROJECTS: IN EACH OF THE FOUR SECTIONS OF THE JUDGING RUBRIC YOU MAY CONSIDER HOW TEAMWORK PLAYED A PART AND CONSIDER WHEN ASSIGNING POINTS. THERE IS NO SEPARATE JUDGING SECTION WITH POINTS FOR TEAMWORK.

Consider how group functioned as a team? Was a team effort used to complete this project? Did all members of the team show an understanding and active participation in the entire project? All members of the team participate equally in the presentation of project; correctly and clearly answering questions.

d) The Criteria Interpreted

The following explanations interpret the various criteria on which the student’s project or exhibit will be judged. The bullets do not have pre-determined numerical value.

For all projects

SECTION #1: ORAL, WRITTEN, AND VISUAL COMMUNICATION:
Judges are encouraged to consider student abilities (or potential disabilities) in all three types of communication when assigning points

Written: Well written Research Report (includes relevant background, research question and hypothesis showing how it is related to background, experimental design and procedures, data acquisition techniques, data analysis, conclusion and bibliography). If Engineering Design project, includes clear statement of technical problem and criteria for success

Oral: Correct and concise explanation of project, design, and analysis. Responses reflect correct understanding of experimental results and limitations of, expansions of, and/or impact of project.

Visual: Logical organization of material, neatly displayed, graphics and legends appropriate to project, easy to read and understand. Photos and graphics cited. Includes required information.
SECTION #2: ORIGINALITY:
Project displays originality in concept relative to grade level (i.e. not "cookbook", not classroom lab, not a simple extension of "found" idea) New idea, concept, principle, insight or non-obvious approach; Novel association or relationship of previous knowledge, particularly rigorous and exhaustive analyses that reveals previously unknown relations, etc.

Evidence of student’s unique understanding and development of the project

SECTION #3: EXPERIMENTAL DESIGN:
Project addresses a clear, focused problem or question with hypothesis that is testable using scientific methods. If Meta-Analysis project, then hypothesis is testable using data from multiple peer-reviewed research papers. If Engineering Design project, addresses a clear, focused engineering design problem or need; criteria for success are identified; preliminary designs prepared; prototype is created and tested with results clearly communicated.

Well-designed plan and data collection methodology which identifies variables and controls. Grade appropriate control of variables (Not a summary of already known science) If Engineering Design project, student identifies and applies established engineering principles in their design.

Reproducible and sufficient data are collected, or if Meta-Analysis project, sufficient amount of scientific data is synthesized from other sources to address question/problem. Data used were collected using appropriate scientific protocols. If Engineering Design project, student used materials and processes effectively to correctly build prototype or model

Data are properly analyzed. Appropriate graphs illustrate the data. Statistics appropriate to the age of student are correctly used. If Engineering Design project, sufficient testing of prototype or model is completed; data is properly measured, presented and analyzed.

Valid conclusions are reached from the data obtained. Age appropriate discussion of results. Sources of error identified. If Engineering Design, prototype successfully meets criteria that were established for the project.

SECTION #4: DEPTH OF UNDERSTANDING:
Adequate age appropriate background research (journals, textbooks, websites, etc.) relevant to the project which provides basis for hypothesis.

Supplements answers with relevant information reflecting knowledge gained during the project.

Age appropriate use of terms and principles.

Age appropriate exploration of science in subject, depth of investigation, and/or sophistication of project.
e) Ranking vs Criteria (Rubric)
Except to fill quotas for participation in District and State Science Days, The Ohio Academy of Science does not rank students at local, District, or State Science Days. Rather, Judges for the Academy compare students against the judging criteria described above.

f) Re-judging Criteria to be used at Local, District and State Science Days
Teachers promoting local student research projects and conducting local science fairs or science days leading to District Science Days and to State Science Day are expected to have their students follow the official Science Day Standards outlined herein. Included in these Standards are the following Re-judging Criteria for both individual and team projects that teachers should use locally and that must be used at all District and State Science Days.

- Two judges will judge each project for the Ohio Academy of Science ratings.
- If each judge grants a total score within any one rating category (Superior, Excellent, Good, or *Satisfactory), that specific rating (Superior, Excellent, Good, or *Satisfactory) will be granted to the student and no re-judging is permitted.

- Re-judging is automatic if all three of the following conditions apply:
  - The judges’ final ratings are in different categories,
  - The average of the judges’ scores is in the lower category, and
  - If the judges differ in their total points by more than five points.
  *Satisfactory category is not used at State Science Day

No project will be re-judged at State Science Day based solely on rating. Individual districts, however, may choose to re-judge based on rating provided a consistent policy is developed and consistently applied within the individual district.

Under exceptional circumstances, a project may be re-judged at a District Science Day with the approval of the District Science Day Director or designee.

Under exceptional circumstances, a project may be re-judged at State Science Day with the approval of the Executive Director of The Ohio Academy of Science, or the Director of the Junior Academy Council, or designee.