

NamPower National Science Fair

Judges Guide

1. Judging Schedule

Day 1:

16:00 - 18:00 Judges Briefing

18:00 - 19:00 Dinner

Day 2:

06:30 - 07:15 Breakfast at different venues

07:30 Arrival of Guests

08:00 - 08:35 Opening Ceremony

08:45 - 13:00 Judging without learners present

13:00 - 14:00 Lunch

14:00 - 18:00 Judging with learners present

18:00 - 19:00 Dinner

Day 3:

06:30 - 07:15 Breakfast at different venues

08:00 - 10:00 Judging with learners present

10:00 - 13:00 Final Judging and public viewing (with learners present)

13:00 - 14:00 Lunch

15:00 - 16:00 Dismantling of projects

19:00 - 21:00 Prize-Giving Ceremony

2. Judges Briefing

Judges will consist of the following groups:

Primary Schools

- 1x Head Judge
- 1x Assistant Head Judges
- 1x Category Lead Judge (one for each Category)
- Category Judges

Secondary Schools

- 1x Head Judge
- 1x Assistant Head Judges
- 1x Category Lead Judge (one for each Category)
- Category Judges

The Head Judge must have an initial briefing with all of the judges before the judging process starts. The following should be done during the initial briefing:

- Head Judge, 1 Assistant Head Judges and all Category Lead Judges should be introduced to the judges;
- A roll call of the judges should be done;
- Projects should be assigned to judges and the projects of any no-show judges should be reassigned to another judge;
- Each judge should go through the list of assigned projects to check if there are any conflicts of interest and must declare it in order for the project(s) to be reassigned;
- Each judge must understand and **sign** the form of conflict of interest;
- Each judge must understand and **sign** the form of confidentiality;
- Each judge should check the content of their clipboard/ file;
- The judging forms, procedures, criteria and guidelines should be reviewed, especially with new judges;
- It should be made clear to the judges that they **must not** do the calculations on the form because this will be done by the Quality Assurance Committee in the spirit of fairness; and
- All judges who interview a learner must initial on the form provided at each project and put a sticker on the project to indicate that the project was judged.

During the first caucus the Head Judge should make sure that the judges understand that they are to interview all of the learners whose projects they judged earlier in the morning.

3. Judging Procedure

Awards are based on the recognition of excellence in the conception and realization of a science or engineering project. Awards encourage the learner to make further efforts in the study of science and engineering.

The Head Judge and the Assistant Head Judge will be responsible for the coordination of all judging activities for Primary and Secondary Schools respectively.

For each Category, a Category Lead Judge will be appointed. This Lead Judge will be responsible for all judging assignments within that Category. This include ensuring that all projects are judged by 3 judges, ensuring that there is no conflict of interest with judging such as judging your school's projects, judging your own child's project or that of his/her classmates or judging a child from a family that you know well.

Each judge will receive a clipboard with a list of projects and judging forms. If there is any conflict of interest, such as being asked to judge your school's projects, judge your own child's project or that of his/her classmates or asked to judge a child from a family that you know, please raise this with your Category Lead Judge and asked for a different assignment. **Failure to do so will lead to your scores for this project and all other projects you've judged being disregarded, thus resulting in you being disqualified as a judge with immediate effect.**

Each project must be evaluated by 3 judges and judges must spend at least ± 10 - 15 minutes on a project.

The judging is based on the following steps:

A. Initial Judging

The projects are judged in the absence of the learners. Each project will receive a numerical score from each judge which will be recorded on the judging form. **Judges should not tally the scores on the judging forms.**

B. First Caucus: Preliminary Scoring

Judges within each category meet in caucus to discuss the merits of individual projects. Judges should freely discuss both the merits and shortcomings of the projects in their category.

C. Interviewing the Exhibitors

Judges will interview the learners whose projects they judged. The interview is perhaps the most educational aspect of the National Science Fair experience. The interview provides a means for the judge to evaluate the exhibit more accurately and should also

serve to stimulate the learner's thinking, to suggest means of improving the work and working habits, to point out errors, and to provide feedback to the learner from the judge, who is most likely a specialist in a given field. Science education within the country can only benefit from this practice, thus the judges should be encouraging and supportive to the learners.

D. Handing in of Judging forms

Judges should turn in the judging forms, **without calculating the scores**, at the end of the interviews, to the Chairperson of the Quality Assurance Committee. Judges should remain on the premises until the Quality Assurance Committee has checked the forms for completeness.

Once the final judging has been done, all judges **except the Head judge and the Assistant Head judges** are free to leave.

Be discreet when discussing projects or making critical comments on the premises. Judges should leave all documentation and notes regarding judging in the judging room. These items will be collected and destroyed at the conclusion of judging. Keep confidential any privileged information or ideas that were conveyed as part of the judging process and do not disclose such information or ideas to third parties. Judges may not inform learners of the scores they have received. All results are **CONFIDENTIAL** until announced at the Awards Ceremony.

4. Judging Criteria

Five judging criteria are used to rank the projects within each category. Each project will receive a numerical score from each judge. The five criteria are listed below. Each criterion stands on its own merits for rating and is judged independently of the others.

- A. Creative Ability (30);**
- B. Scientific Thought or Engineering Goal (30);**
- C. Thoroughness (15);**
- D. Skill (15); and**
- E. Clarity (10).**

Judges rate the project on the basis of the five criteria. Scores are recorded on the Judging Forms provided.

5. Judging Guideline

While judges may deviate from the guidelines provided, all awards must be selected based on reasonable criteria for scientific merit. All scores must be submitted according to a 100-point scale. The following are suggested guidelines for point distribution:

A. Creative Ability (30 points)

- 1) Does the project show creative ability and originality in:
 - a) the approach to problem-solving?
 - b) analysis of the data?
 - c) interpretation of the data?
 - d) use of equipment, if applicable?
 - e) construction or design of new equipment, if applicable?
- 2) Does the research support an investigation and help answer a question in an original and/or innovative way?
- 3) Does the project promote an efficient and reliable method for solving a problem?

B. Scientific Thought or Engineering Goals (30 points)

I. Scientific Thought (30 points)

(For engineering projects, see B.II. Engineering Goals.)

- 1) Is the problem stated clearly and unambiguously?
- 2) Is the problem sufficiently limited to allow a plausible study?
- 3) Is there a procedural plan for obtaining a solution?
- 4) Are the variables clearly recognized and defined?
- 5) If controls are necessary, did the learner/team recognize this, and were they applied correctly?
- 6) Is there adequate data to support the conclusions?
- 7) Does the learner/team recognize the limitation of the data?
- 8) Does the learner/team have an idea of what might be important for further research?
- 9) Did the learner/team cite scientific literature (vs. only popular literature, e.g., local newspapers, magazines)?

II. Engineering Goals (30 points)

(For science projects, see B.I. Scientific Thought.)

- 1) Does the project have a clear objective?
- 2) Is the objective relevant to the needs of the potential user?
- 3) Is the solution: workable? Acceptable to the potential user? Economically feasible?
- 4) Could the solution be utilized successfully in design and/or construction of an end product?
- 5) Is the solution a significant improvement over current state-of-the-art or applications?
- 6) Has the solution been tested for performance under conditions of use?

- 7) Their independent contributions to the work?

C. Thoroughness (15 points)

- 1) Was the project carried to completion within the original scope?
- 2) How completely was the problem addressed?
- 3) Are the conclusions based on a single experiment or replication?
- 4) How complete are the project notes?
- 5) Is the learner/team aware of other approaches or theories?
- 6) How much time did the learner/team spend on the project?
- 7) Is the learner/team familiar with scientific literature in the relevant field?

D. Skill (15 points)

- 1) Does the learner/team have the required laboratory, computation, observational, and design skills to obtain the supporting data?
- 2) Where was the project performed (e.g., home, school laboratory, university laboratory)?
- 3) Did the learner/team receive assistance from parents, teachers, scientists, or engineers?
- 4) Was the project completed under adult supervision, or did the learner/team work largely alone?
- 5) Where did the equipment come from?
- 6) Was it built independently by the learner/team?
- 7) If the work was performed in a "mentor-rich" environment, does the learner/team exhibit evidence of their independent contributions to the work?

E. Clarity (10 points)

- 1) How clearly does the learner/team discuss his/her/their project and explain the purpose, procedure and conclusions? Watch out for "canned" speeches that reflect little understanding of principles.
- 2) Does the written material reflect the learner's/team's understanding of the research?
- 3) Are the important phases of the project presented in an orderly manner?
- 4) How clearly are the data presented?
- 5) How clearly are the results presented?
- 6) How well does the physical display explain the project?

6. Determining the Category Awards

Three Category Judges will judge each Project in the different Categories.

The Quality Assurance Committee will look at the scores given by all the judges for a given project and the average of the three scores will be calculated as the final score for the project.

If there are discrepancies, such as one or more score(s) is (are) more than 10% higher or lower than the closest score of the other two judges for that project, then the committee will ask one Assistant Head Judge for that phase to judge the project. Once the Assistant Head Judge completed and handed in his/her judging form, the Quality Assurance Committee will look at the scores again. The three judging forms with the closest scores will then be taken and the average of these scores will be calculated.

However if there is still a discrepancy, such as the three closest scores still being more than 10% different, than the second Assistant Head Judge will be asked to judge the project. Once the second Assistant Head Judge completed and handed in his/her judging form, the Quality Assurance Committee will look at the scores again. The three judging forms with the closest scores will then be taken and the average of these scores will be calculated.

However if there is still a discrepancy, such as the three closest scores still being more than 10% different, than the Head Judge will be asked to judge the project. Once the Head Judge completed and handed in his/her judging form, the Quality Assurance Committee will look at the scores again. The three judging forms with the closest scores will then be taken and the average of these scores will be calculated.

This would be the final score for that project.

Projects are then awarded as follows:

Gold medals:	80 - 100%
Silver medals:	70 - 79%
Bronze Medals:	60 - 69%

All projects that are given a final mark within this range will received the relevant medal regardless of the number of the same type of medal for that Category, e.g. there can be more than one gold medals awarded within a Category provided all the said projects were judged to be above 80%.

7. Determining the Category Winner

The Quality Assurance Committee will look at the final scores of all projects within a category and will award the project with the highest final score as the Category winner. Should there be a tie, the Head Judge and Assistant Head Judges will be asked to judge the projects. The Quality Assurance Committee will than use the average of these scores from the Head Judge and two Assistant Head Judges to determine the Category winner.

8. Determining the Overall winners

The Quality Assurance Committee will look at the final scores of all projects within a phase and will award the project with the highest final score as the Overall winner. Should there be a tie, the Head Judge and the Assistant Head Judges will go through all the projects of the category winners of their phase (Primary or Secondary phase) in order to determine the overall winners. Judges decision is final.

9. Determining Best School for Primary and Secondary

The Quality Assurance Committee will determine the best school for Primary and Secondary as follows:

- A maximum of five projects per school can be considered.
- Only the five best projects per school will be considered.
- These top five projects will be awarded points that will be added to determine the best school for each phase.
- Points will be awarded as follows:
 - Gold Medal 5 Points
 - Silver Medal 3 points
 - Bronze Medal 1 Point
- Additional Points:
 - Category Winners (if winner is Gold Medal) 5 points
 - Category Winner (if winner is Silver Medal) 3 points
 - Category Winners (if winner is Bronze Medal) 1 points
 - Overall Phase Winner 5 points

Thus, a school can get a maximum of 55 points:

- 25 (5 gold medals); +
- 25 (5 category winners with gold medals); +
- 5 (overall phase winner).