

# DISTRICT 13 SCIENCE DAY

Judging Tips, Tricks, Rules, and  
Regulations

# THANK YOU!!!

- ◉ Without judges, we could not have a Science Day!
- ◉ We appreciate you giving up your Saturday to be with us, and hope you find the experience enjoyable.
- ◉ There will be a light breakfast available for judges (bagels/pastries and beverages) in room L04 of Bracy Hall (basement).
- ◉ Upon arriving, please make your way to Bracy Hall to check-in and grab a bite to eat! The judges meeting will take place in room L04.

# WHY WE HAVE DISTRICT 13 SCIENCE DAY

- ◉ First, we hope to encourage students to become interested in research and scientific evaluation.
- ◉ Second, we hope to help students understand what “good research” means by giving them opinions and feedback about their projects.
- ◉ Finally, we hold this Science Day in order to select projects for State Science Day in May.

# WHAT IS EXPECTED OF JUDGES

- ◉ We expect judges to evaluate student projects using the criteria set forth by the Ohio Academy of Science.
- ◉ We expect judges to be courteous, interested, and engaged in their discussions with students. Remember, these are CHILDREN SCIENTISTS you are judging and they should be treated accordingly!
- ◉ Constructive criticism and suggestions for improvement are expected. If you did not award the project a perfect score, then there should definitely be comments written on the judging card.
- ◉ We DO NOT expect, or appreciate, scathing comments, rude behavior, or unprofessionalism. If a judge's behavior is found to be inappropriate, that judge will be asked to leave and will be barred from future District 13 Science Days.

# GUIDELINES FOR PROJECTS

- All student projects should follow the Ohio Academy of Science Science Day Standards
- These were available for all students and can be found at <http://www.ohiosci.org/sds.htm>.
- There are four possible rankings
  - Superior
  - Excellent
  - Good
  - Satisfactory

# COMPONENTS OF STUDENT PROJECTS

- ◉ Identified problem and hypothesis
  - A scientific problem is a question for which a hypothesis can be written and tested
- ◉ A hypothesis is a statement to address a basic question about the natural world
  - Often states the relationship between the independent and dependent variables in an experiment.
  - Background research determines the validity of the hypothesis before testing
- ◉ Research establishes, confirms, verifies or validates the truth or falsity of hypotheses
  - Testing should be done by methods which give data and observations that can confirm or deny the hypothesis

# COMPONENTS OF STUDENT PROJECTS CONTINUED

## ○ Research plan documentation

- Adult supervision
  - Checklist of Adult Sponsor (1)
- Student Awareness
  - Student Checklist (1A)
    - This form is to be attached to the written research plan which includes brief descriptions of the following:
      - Question or problem being addressed
      - Hypothesis
      - Description in detail of method or procedures
      - References/Literature Cited
        - \*\*Some projects may also require additional items if they involve human subjects, vertebrate animals, potentially hazardous biological agents, or hazardous chemicals, activities, or devices.\*\*
- Research risks (animals, human subjects, hazardous materials, etc.)
  - Approval Form (1B)

# COMPONENTS OF STUDENT PROJECTS CONTINUED

- ◉ We do not expect judges to review these documents-this was done by the teachers before students were permitted to participate; however, you can make sure they are in the students' folders, if you wish
- ◉ We simply want you to be aware of the steps each participant has taken to get to this point



# COMPONENTS OF STUDENT PROJECTS CONTINUED

## ○ Detailed research report

- Title page
  - Including date and name of student
- Table of contents
  - Optional if the report is fewer than 10 pages
- Abstract
  - Single paragraph with project title and name of students
  - 250 words or fewer
- Introduction
  - Background statement
  - Problem/hypothesis/design
- Methods and materials
- Results
  - Including an analysis of collected data with graphs, tables, photographs, and diagrams to illustrate investigation
- Discussion
  - Including conclusions and implications for further research
- References/Literature Cited

# COMPONENTS OF STUDENT PROJECTS CONTINUED

## ◉ Poster Display

- Project Title
- Abstract
- Background information, objective, problem, and hypothesis
- Experimental Design (Methods and Materials)
- Results
  - Tables and graphs of data
- Discussion/Conclusions

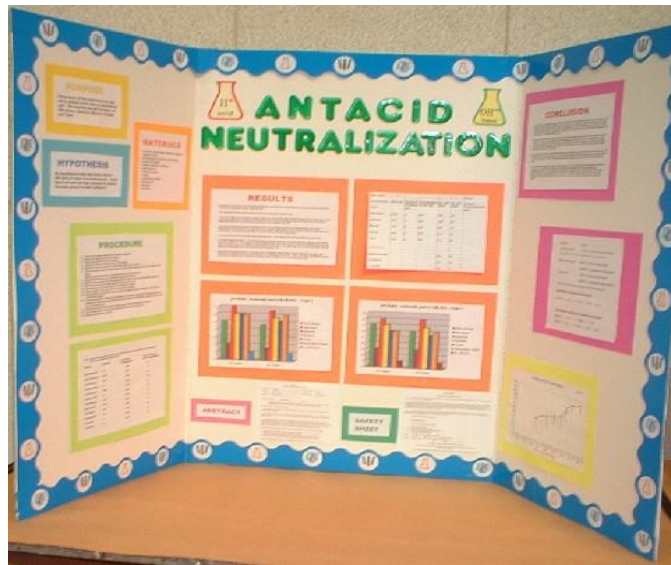
## ◉ Other materials

- Logbook, research plan, protocols, and required forms
- Photographs/diagrams of equipment, samples, or other experimental items

# COMPONENTS OF STUDENT PROJECTS CONTINUED

## ○ Display Rules

- Students are expected to present the results of their projects
- They are not expected, or permitted, to perform or demonstrate an experiment
- Equipment is not allowed as part of the display



# ORAL PRESENTATION

- ⦿ A 5-10 minute summary of the research
- ⦿ Should not be read word-for-word from a script or seem over rehearsed
- ⦿ Students should ask for questions
- ⦿ Judges should ask questions that encourage students to justify the methods they used, defend their conclusions, and explain the originality and implications of their projects
- ⦿ REMEMBER: students will most likely be nervous, so please take that into account when critiquing their presentations

# ORAL PRESENTATION CONTINUED

## ○ Possible questions to ask

- Where did you get the idea for your project?
- How long have you been working on your project?
- Who was your advisor/mentor? In what way did he/she help you?
- Which of your results surprised you the most?
- What was the hardest part of your project?
- If you were to do this project again, how would you change it?
- Did you enjoy this project? Why or why not?

# JUDGING CRITERIA

## ◉ Knowledge achieved

- Background
  - Why it works
- Use and understand scientific words
- Literature search
  - Look for references/literature cited section
- Age appropriate
- Students understand what they are saying and are not repeating a script written for them by their parents or teachers

# JUDGING CRITERIA CONTINUED

- Effective use of scientific method
  - Hypothesis with independent and dependent variable
    - Change one variable and see the effect of that change on another variable
  - Experimental controls
  - Collection of data
  - Adequate number of trials
    - Usually three or more
  - Conclusion substantiated by data
  - Logbook
    - Should be handwritten

# JUDGING CRITERIA CONTINUED

## ○ Clarity of expression

- Written report with an abstract
- Display, report, and presentation well organized
- Logical oral report
  - Not read from a script or over-rehearsed
  - Can use outlines or note-cards
- Able to answer questions based on displayed information
- Uses proper scientific terminology when appropriate



# JUDGING CRITERIA CONTINUED

- Originality and creativity
  - Replication of another's work is permissible
    - Good science is reproducible
    - The topic is probably new to the student
    - Look for a new twist
      - New instrumentation or method
      - New application

# TEAMWORK

- For team projects only
- Did the team work together?
  - Does only one team-member seem knowledgeable about the project?
  - Can each team member describe the project in sufficient detail?

# SUPERIOR PROJECTS

- Must receive a minimum of 36 points for individual projects and 45 points for team projects
- Must include:
  - Written report with indications of a literature search
  - Display
  - Abstract
  - Log book
  - Forms
  - Thoughtful and informative oral presentation

# JUDGING RATINGS

- The minimum number of points for each rating are:
  - Superior
    - 36 for individual project
    - 45 for team project
  - Excellent
    - 24 for individual project
    - 30 for team project
  - Good
    - 12 for individual project
    - 15 for team project

# JUDGING CARDS

- ◉ Each judge receives a card for each project from the Room Monitor
- ◉ This is the card we ask you to use when judging individual projects

The OHIO ACADEMY of SCIENCE  
Local, District and State Science Day Judging Card

**INDIVIDUAL**

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**JUDGING CRITERIA**

**POINTS      BULLETS DO NOT HAVE A PRE-DETERMINED NUMERICAL VALUE.**

**1. KNOWLEDGE ACHIEVED (10 points maximum)**

- Correct use and understanding of terms and principles
- Project exceeds classroom level for the student's grade level based upon the judge's opinion
- Adequate depth of knowledge
- Literature search: extent of scientific, engineering or medical journals /sources or just popular literature citations
- Supplements answers with additional relevant information

**2. USES OF SCIENTIFIC METHOD or TECHNOLOGICAL DESIGN (10 points maximum)**

- Experimental design: specific problem or question, clearly stated hypothesis or technological design statement; clear method(s) with correctly defined and measured variables and controls; sufficient understanding of methods from related studies in the literature
- Data handling, data tables, graphs, statistics; sufficient number of trials or samples for the problem
- Valid conclusion(s) or discussion of results
- Well-documented lab journal/data record book
- Student effectively used professional equipment or correctly constructed/used home-made apparatus, equipment, experimental materials or models

**3. CLARITY OF EXPRESSION (10 points maximum)**

- Abstract with clear statement of results
- Written report: unambiguous title, organization, results, correct grammar and spelling, citations, references
- Visual display: neatness, conveys essence of the idea, hypothesis or design statement, results and conclusion(s)
- Oral presentation: understanding or from memory; questions answered correctly and clearly

**4. ORIGINALITY & CREATIVITY (10 points maximum)**

- New idea, concept, principle, hypothesis, insight or non-obvious approach or problem definition
- Novel association or relationship of previous discoveries or knowledge
- Rigorous and exhaustive analyses of extensive or robust data or results that reveal previously unknown relations
- Inquiry or design-based rather than a summary of knowledge

**TOTAL POINTS**

**CIRCLE RATING: Superior    Excellent    Good    Satisfactory**

Minimum score for **INDIVIDUAL** projects at Local or District Science Days: SUPERIOR: 36 points, EXCELLENT: 24 points, GOOD: 12 points, \*SATISFACTORY: 4 points (\*not used at State Science Day).

Minimum score for State Science Day: SUPERIOR: 36 points, EXCELLENT: 24 points, GOOD: 12 points

JUDGE'S Printed Name \_\_\_\_\_ Signature \_\_\_\_\_

**JUDGES MUST ADD COMMENTS ON BACK:** Please add your comments about the project. Students especially look for constructive criticism to improve the project for future science days.

# JUDGING CARDS

- This is the card we ask you to use when judging team projects

*The OHIO ACADEMY of SCIENCE*  
**Local, District and State Science Day Judging Card**

**TEAM**

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**JUDGING CRITERIA**

**POINTS      BULLETS DO NOT HAVE A PRE-DETERMINED NUMERICAL VALUE.**

**1. KNOWLEDGE ACHIEVED (10 points maximum)**

- Correct use and understanding of terms and principles
- Project exceeds classroom level for the student's grade level based upon the judge's opinion
- Adequate depth of knowledge
- Literature search: extent of scientific, engineering or medical journals /sources or just popular literature citations
- Supplements answers with additional relevant information

**2. USES OF SCIENTIFIC METHOD or TECHNOLOGICAL DESIGN (10 points maximum)**

- Experimental design: specific problem or question, clearly stated hypothesis or technological design statement; clear method(s) with correctly defined and measured variables and controls; sufficient understanding of methods from related studies in the literature
- Data handling, data tables, graphs, statistics; sufficient number of trials or samples for the problem
- Valid conclusion(s) or discussion of results
- Well-documented lab journal/data record book
- Student effectively used professional equipment or correctly constructed/used home-made apparatus, equipment, experimental materials or models

**3. CLARITY OF EXPRESSION (10 points maximum)**

- Abstract with clear statement of results
- Written report: unambiguous title, organization, results, correct grammar and spelling, citations, references
- Visual display: neatness, conveys essence of the idea, hypothesis or design statement, results and conclusion(s)
- Oral presentation: understanding or from memory; questions answered correctly and clearly

**4. ORIGINALITY & CREATIVITY (10 points maximum)**

- New idea, concept, principle, hypothesis, insight or non-obvious approach or problem definition
- Novel association or relationship of previous discoveries or knowledge
- Rigorous and exhaustive analyses of extensive or robust data or results that reveal previously unknown relations
- Inquiry or design-based rather than a summary of knowledge

**5. TEAMWORK subtotal points (maximum of 10)**

- All members have shown active participation and understanding of the entire project
- Team members participate equally in presentation
- Individual expertise or contributions are explained
- All team members participate in correctly and clearly answering questions

**TOTAL POINTS**

**CIRCLE RATING: Superior    Excellent    Good    Satisfactory**

Minimum score for **TEAM** projects at Local or District Science Days: SUPERIOR: 45 points, EXCELLENT: 30 points, GOOD: 15 points, \*SATISFACTORY: 5 points (\*not used at State Science Day). Minimum score for State Science Day: SUPERIOR: 45 points, EXCELLENT: 30 points, GOOD: 15 points

JUDGE'S Printed Name \_\_\_\_\_ Signature \_\_\_\_\_

**JUDGES MUST ADD COMMENTS ON BACK:** Please add your comments about the project. Students especially look for constructive criticism to improve the project for future science days.



# REJUDGING POLICY

- Rejudging is automatic and allowed only when all three of the following conditions occur:
  - 1. judges' final ratings are in different categories
  - 2. average of the two scores is in the lower category
  - 3. judges' final rating differ in total points by more than five
- If you finish early, or have judged in prior years, please check to see if we need you to rejudge

# JUDGING PROCEDURE

- The first thing you should do is find all of your projects, introduce yourself to the students, and tell them you will be back
- Begin by reintroducing yourself to the student and asking the student to give his/her presentation
  - Feel free to ask questions before, during, and after the presentation, but try to refrain from telling the student what you find wrong with the project until after the presentation is complete

# JUDGING PROCEDURE

- Check the documentation
  - Quickly make sure all forms are present, check the abstract and report
  - Make sure a literature cited/references section is included
  - Check the logbook and highlight areas you find to be satisfactory and discuss areas you find to be unsatisfactory, then give suggestions for improvement
- Discuss the project and presentation with the student before moving on
  - Make recommendations but do not give the score or ranking to the student at this time

# SCORING

- Each pair of judges should judge together but score separately
- Each pair of judges can discuss the projects with each other as they judge
  - Be careful not to do this within hearing of students
- Turn in score cards to runners (people in orange vests) before moving on to the next project-DO NOT SHOW THEM TO THE STUDENT(S) AT THIS TIME

# OTHER THINGS TO CONSIDER

- ◉ Age of the student
  - 5<sup>th</sup>-10<sup>th</sup> graders usually have had no chemistry or physics classes
  - 5<sup>th</sup>-9<sup>th</sup> graders usually have had no biology classes
  - Most of the students may not have had any public speaking/speech classes
- ◉ Judge each project against the criteria, NOT against other projects
- ◉ The primary purpose of Science Day is “to discover and foster interest in science”
  - Keep this in mind when providing feedback to the students

# INTERNATIONAL SCIENCE AND ENGINEERING FAIR PROJECTS

- These projects are being judged twice today, once by ISEF rules and once by Ohio Academy of Science rules
- These projects are aimed at achieving an overall goal rather than working with dependent and independent variables

# JUDGING ETHICS

- Please return your scorecards to the room monitor if any of the following apply:
  - You know the student
  - The project is outside your area of expertise
  - There are language issues/barriers that impair communication
  - You do not have enough time left to devote to the student
  - Any other reason that raises a question in your mind about whether it would be ethical for you to judge a particular project

# FINAL NOTES

- ⦿ A science professional is paired with a science teacher when possible
- ⦿ Each team will have 4-6 projects to judge
- ⦿ Please check with room monitors to see if you are needed to judge additional projects before you leave (rejudging, leftover projects, etc.)
- ⦿ **THANK YOU FOR YOUR TIME!**