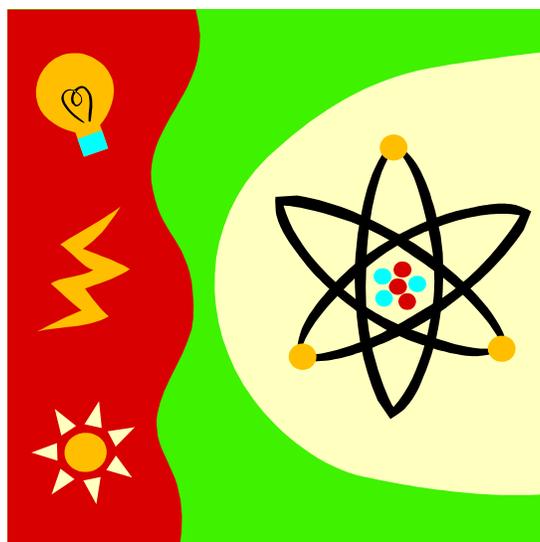


# SCIENCE

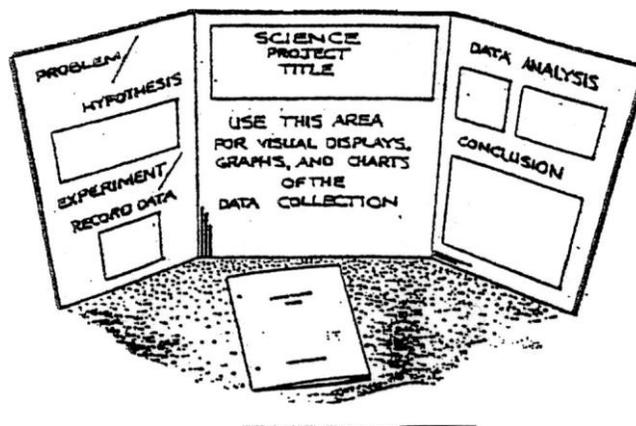


## **THIS PACKET CONTAINS:**

1. Entry Requirements
2. Student Awards Program
3. Category Guidelines
4. Judging Criteria

## GUIDELINES FOR SCIENCE PROJECTS

1. **Any scientific concept or concepts are acceptable that would show, explain, or apply the way science or scientific methods are used throughout the coal industry.** Entrants can pick one specific area or several areas to demonstrate. Science projects can take a variety of forms such as, but not limited to: formation of coal (shown in an aquarium); experiments on the different types of coal; safety: air and other gases; carbon monoxide detection; water quality; flow rate, force of water; hydrostatic pressure; specific gravity used in coal preparation; experiments to compare/contrast coal and natural gas as an energy source; experiments to compare/contrast coal and oil as an energy source; experiments that focus on the development of *future* uses of coal, mining processes, and/or methods to reduce the environmental impact of mining or utilizing coal as an energy source. Entrants are encouraged to use their imagination and to be as creative as possible.
2. **Visual representations, such as experiments, models, graphs, tables, or pictures should accompany the scientific concepts the student wishes to represent.** Visual representations should be mounted in such a way that they are self-standing and self-contained.
3. All scientific work should be shown as neatly as possible and **a written explanation must accompany the work.** This explanation is to communicate the concepts and ideas of the project clearly and explain how the student used scientific methods as a tool to investigate and validate his/her hypothesis. The written explanation should be in a clear-front presentation folder.  
**(Judges will be looking for scientific process and/or concepts.)**
4. The entrant should also include within the written explanation, all the tools and how they were used to help them convey their concepts; for example, the type tools used in the scientific process to help reach the conclusion and calculations used in measurement, if any.
5. Specifications for exhibiting your project:
  - **If a model is part of the exhibit, it cannot exceed 36" in any direction, including the base.**
  - **CEDAR will require a freestanding, three-sided display that is no larger than 48" wide, 48" high, and 30" deep.** Display boards may be purchased from a local educational or office supply store. The display may also be constructed out of plywood or fiberboard hinged together or may be constructed from folded, corrugated cardboard or reinforced poster board and should be covered with white or colored paper. The exhibit should be organized according to the following arrangement:



**NOTE:** The information for each step should be neatly printed on paper and fastened below the appropriate heading. Construction paper may be used as backing for the information. The written research report or abstract will be placed in front of the display.

**Projects that do not meet all guideline limitations will not be considered for the awards program.  
(Guideline limitations are shown in bold print.)**

# SCORING SHEET

## SCIENCE

PROJECT NO.

|   | <u>Points Available</u> | <u>Points Awarded</u> |
|---|-------------------------|-----------------------|
| <b>SCIENTIFIC THOUGHT/DESIGN:</b>                     | <b>25</b>               | _____                 |
| Use of scientific thought process                     |                         |                       |
| Use of scientific method                              |                         |                       |
| Research appropriate, consistent and balanced         |                         |                       |
| Analysis is accurate                                  |                         |                       |
| <b>RELEVANCE TO COAL</b>                              | <b>20</b>               | _____                 |
| <b>ABSTRACT:</b>                                      | <b>30</b>               | _____                 |
| Shows depth of understanding                          |                         |                       |
| Hypothesis is well stated and a conclusion is reached |                         |                       |
| Neat, organized and grammatically correct             |                         |                       |
| Completion of adequate research                       |                         |                       |
| <b>DISPLAY:</b>                                       | <b>25</b>               | _____                 |
| Relevant to scientific process                        |                         |                       |
| Self-explanatory                                      |                         |                       |
| Shows creativity and enterprise                       |                         |                       |
| Data arranged coherently                              |                         |                       |
| Originality of science/coal investigation             |                         |                       |
| <b>TOTAL POINTS AWARDED</b>                           |                         | _____                 |

**REMARKS:**

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