DOUGLAS COUNTY SCIENCE & ENGINEERING FAIR

2007

Note: DCSF is early this year because we are now affiliated with the Greater Kansas City Science and Engineering Fair. See below.

All events are held at the **Douglas County 4-H Fairgrounds**
2110 Harper, Lawrence KS
BUILDING 21

Jan 17 - 26	Entry forms due **(There will be no walk in registration)**
Feb 6 (Tue.)	Set up exhibits, **3:00 to 8:00 PM**
Feb 7 (Wed.)	Set up exhibits, **8:00 AM to Noon** Judging from 6:00 to 10:00 PM
Feb 8 (Thurs)	Judging from 8:00 AM to Noon Exhibits open to public **3:00 to 9:00 PM**
Feb 9 (Fri.)	Exhibits open to public **Noon to 10:00 PM** **Awards Assembly, 7:00 - 9:00 PM**
Feb 10 (Sat.)	Exhibits open for pickup **9:00 AM to Noon** **Please remove exhibits by noon!** If you cannot come to pick up your exhibit during this time period, arrange to have someone pick it up. Unclaimed exhibits will be discarded.

Note: Starting Monday Feb 12, winners should submit their applications to the Greater Kansas City Science Fair. Details will be at the Douglas County Fair.

The Douglas County Science Fair is organized and run by community volunteers. All funds are obtained through voluntary contributions from the people and businesses of Douglas County. Also look at the shopping site www.tiesthatbind.com to help support the Fair. If you also wish to join these community members, please send your contributions to the Douglas County Science Fair, Lawrence Parks and Recreation Department, Box 708, Lawrence, KS 66044. If you are willing to join the volunteers, contact Dave Nordlund at the contacts listed below. Email is preferred.

See Your Teacher for Instructions

or

Call Dave Nordlund at 766-2136 or 842-0746
dave@nordlund.org

While no fee is required to enter an exhibit, a donation of at least $2.00 is requested.

DOUGLAS COUNTY SCIENCE & ENGINEERING FAIR
GENERAL INFORMATION BROCHURE

The purpose of the Douglas County Science & Engineering Fair is to give students in grades K-12 an opportunity to participate in the processes of research and review as practiced in the sciences. Students in the early grades should ask their teachers and parents to help them understand this brochure.

The outline below answers five frequently asked questions related to participation in the Douglas County Science Fair. If you would like help selecting a project or more information about proper procedures for the Science Fair, contact any of the following individuals:

Duane Peterson at Holcom Park Recreation Center, 832-7940

Dave Nordlund at, 842-0746 or 766-2136

I What kinds of projects may be entered in the science fair?

A. Descriptive research studies [1] [See notes on page 5];

B. Experimental research studies[2];

Animal Experimentation Policy: The Douglas County Science Fair Committee reserves the right to refuse experiments that use live animals in a way which causes discomfort, damage or death to animals and will not accept live animals as part of the exhibit.

C. Engineering projects. (Will be included in the Physical Science sections)

II What materials should be included in science fair exhibits?

A. Display boards for exhibits should be . . .

1. Self supporting as shown in the diagram on page 4. Each exhibit must fit within the following table dimensions: 35 cm deep, and 80 cm wide (15" x 32").

2. Made of foam-core board, illustration board, corrugated cardboard, light plywood, or particle board. Idea; save last year's exhibit to add support to this year's exhibit.

3. Securely joined on the back side with a strong tape such as duct or other fabric tape.

B. Written text and graphics on the display board should include the following parts:

1. The title of the project;

2. A short statement of the purpose[3] of the project or the research question;

3. The hypothesis[4];

4. A listing of constants and independent and dependent variables[5];

5. An outline of the procedure used in the project;

6. Graphs and calculations used to interpret data and determine the results;

7. A statement of the conclusion based on the results of the study;

8. Drawings or photographs that might help explain or verify the procedures or results of the study. Photographs are particularly important in studies that involve live animals because the exhibition setting is not prepared to deal with live animals of any type.

C. Written project report folder should include the following parts: (See Page 6 for Judge's Criteria)

Title 1. The title of the project;

Introduction 2. A statement of the research question, area, or topic including the purpose of the study and background information;

3. A summary of background information secured from the library, encyclopedias, magazines, newspapers, or interviews with experts;

4. The hypothesis;

Method 5. A description of constants and independent and dependent variables in the study; and a full description of the procedure used in the project;

Results 6. Complete tables of all data collected, observations made during the study and graphs or calculations used to interpret data and determine the results;

Discussion 7. A discussion of the conclusion based on the results of this study and how you would change this project if you did it again;

8. Drawings or photographs similar to those on the display board are optional in the project report. When studies involve live animals or materials that could not be preserved beyond the initial study time, photographs can be used to help document your results;

9. Listing of those things that parents, other family members, or community members did for the student.

D. Exhibit objects may be placed on the table in front of the display board.

III What role can parents and older members of the family play in helping a student with a science fair project?

A. Generally, these roles are ones of support or assistance to the student in the topic selection and planning, and completion of the project.

B. These roles may involve preparation of some part of the project under the following conditions:

1. The task to be performed is beyond the skill level of the student and is not the central purpose of the project. (e.g. lettering on display for a kindergarten student)

2. The task would be dangerous for the student at his/her skill level to perform, but is critical to the study; (e.g. assistance in getting into a tree to examine birds nests)

3. The task is one that the student has performed many times, but due to a schedule conflict, cannot perform a few times. (e.g. measuring rainfall while student is on a campout)

C. These roles should be acknowledged as noted in section II, C., 9. This type of participation is acceptable.

IV How many Science Fair participants can work on an exhibit?

A. Individual, one person exhibits are strongly encouraged.

B. **Two** person exhibits will be accepted, but will receive only one award. These projects will be judged at the grade level of the student who is in the higher grade in school. Submit only **ONE** registration form per exhibit. Official duplicate awards can be obtained at exhibitor's expense.

C. Group exhibits prepared by three or more individuals will be accepted, but are only eligible for the ‘Best Investigation’’ medals.

V What awards will be given during the science fair?

A. There will be a First Place, a Second Place, a Third Place, and three Honorable Mentions in Life and Physical Science or Engineering for each grade level. These awards are for individual and pair projects only.

Grade Levels are:

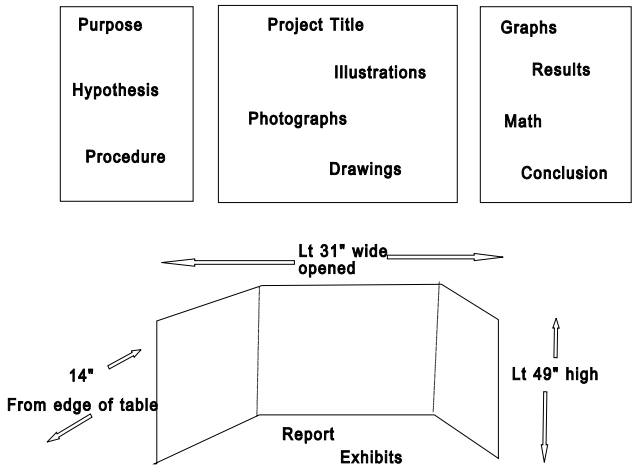
Kindergarten - First	Sixth
Second - Third	Junior High 7 - 8
Fourth	Senior High 9 - 12
Fifth	

B. One or more Judges' Special Awards will be given in each grade and division.

C. Medals for "Best Investigation in (specific area)" awards are listed below.

Best Investigation in Project Areas:

Experimental	Social and Behavioral Sciences
Descriptive	Health
Display	Energy and Energy Conservation
Apparatus	Electricity and Magnetism
	Mechanics
Humans	Optics
Animals	Inorganic Chemistry
Plants	Organic Chemistry
Microorganisms	Mathematics
Computers	Soil and Water Conservation
Earth Sciences	Aviation
Air, Space, Astronomy	Photography
Environment	Water



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1. In a descriptive study, the student collects data in situations in which he/she has not used a treatment intended to change the results of the study.

FOR EXAMPLE: Pat kept records of the number of different colors of birds that came to the yard on Saturdays between 8:00 and 10:00 A.M. and between 3:00 and 5:00 P.M. Then Pat looked for patterns in these records. This was a descriptive study.

2. In an experimental study, the student uses a treatment intended to change the results of the study. That is, the student changes one variable (independent variable) in some way to see if it will influence the way something behaves, grows, performs, lasts, etc. (dependent variable).

FOR EXAMPLE: If Pat (see above) placed bird seed in the yard during the first and third parts of her study, then removed it for the second and fourth parts of her study, then she would have run an experimental study. Her treatment would have been the presence or absence of bird seed in the yard.

3. The purpose of the project is a general statement of what the student is attempting to find out.

FOR EXAMPLE: The purpose of Andre's experimental study was to find out what type of house insulating material is most cost effective in the this area. Notice that nothing in this purpose statement can be directly, specifically tested.

4. The hypothesis is the specific idea that is to be proved or disproved through testing.

FOR EXAMPLE: As part of Andre's study, he needed to determine if there was a difference in the insulating properties of the available materials. His hypothesis was: Equal amounts (mass) of five different insulating materials will differ in the length of time that they will maintain a constant temperature within a small enclosure. Note that this one hypothesis did not give all the information that Andre needed to determine the most cost effective insulating material for this area. To fulfill his purpose, Andre had to consider other factors.

5. Constants are those factors that are kept the same for all groups/objects when testing an hypothesis.

FOR EXAMPLE: Among Andre's constants were the following

1.) the amount of insulating material;
2.) the way the temperature measurements are taken;
3.) the enclosure used for the measurements;
4.) the amount of heat and cold to which he exposed the box holding the small enclosure with the thermometer attached.

6. Independent variables are those factors that the student changed in experimental studies or selected in descriptive studies.

FOR EXAMPLE: In Andre's test, the type of insulating material was an independent variable. In Pat's descriptive study, the time of day that she chose to make her observations was an independent variable.

7. Dependent variables are those factors that were changed by or as the result of differences in the independent variables.

FOR EXAMPLE: In Andre's test of his hypothesis, the length of time that passed before the enclosure temperature changed was the dependent variable. In Pat's descriptive study, the number of birds of different colors that came to the yard in each time period was the dependent variable.

JUDGING SHEET

The judges will use sheets similar to this one, but only the portions underlined on this sheet will be present. The judges' sheets will have scores in place of the questions. The Science Fair Committee hopes the questions will help you when you prepare your project and display.

I Science Process

A. Background information: What do you already know?

B. Research Question: What are you investigating?

C. Hypothesis: What do you think is true/going to happen?

D. Variables:

1. Independent: What factor are you changing?

a. Control Condition (experimental designs): How do you usually find this factor?

b. Experimental Condition (experimental designs): How did you change this factor?

2. Dependent: What factor may be changed by the way the independent variable works?

E. Constants: What factors did you keep the same during your project?

F. Procedure: What did you do? Does your experiment need **repeating**? Did you **repeat** it?

G. Data Collection: What information did you gather?

H. Data Interpretation: What did you do with that information?

I. Conclusion: What did you find out from your data?

II Presentation

A. Written Report: Is your report **complete and legible**? Any means of preparing a legible report is acceptable in all age groups.

B. Display/Graphics: Is it self-supporting and complete? See the information section II, parts A, B, and D.