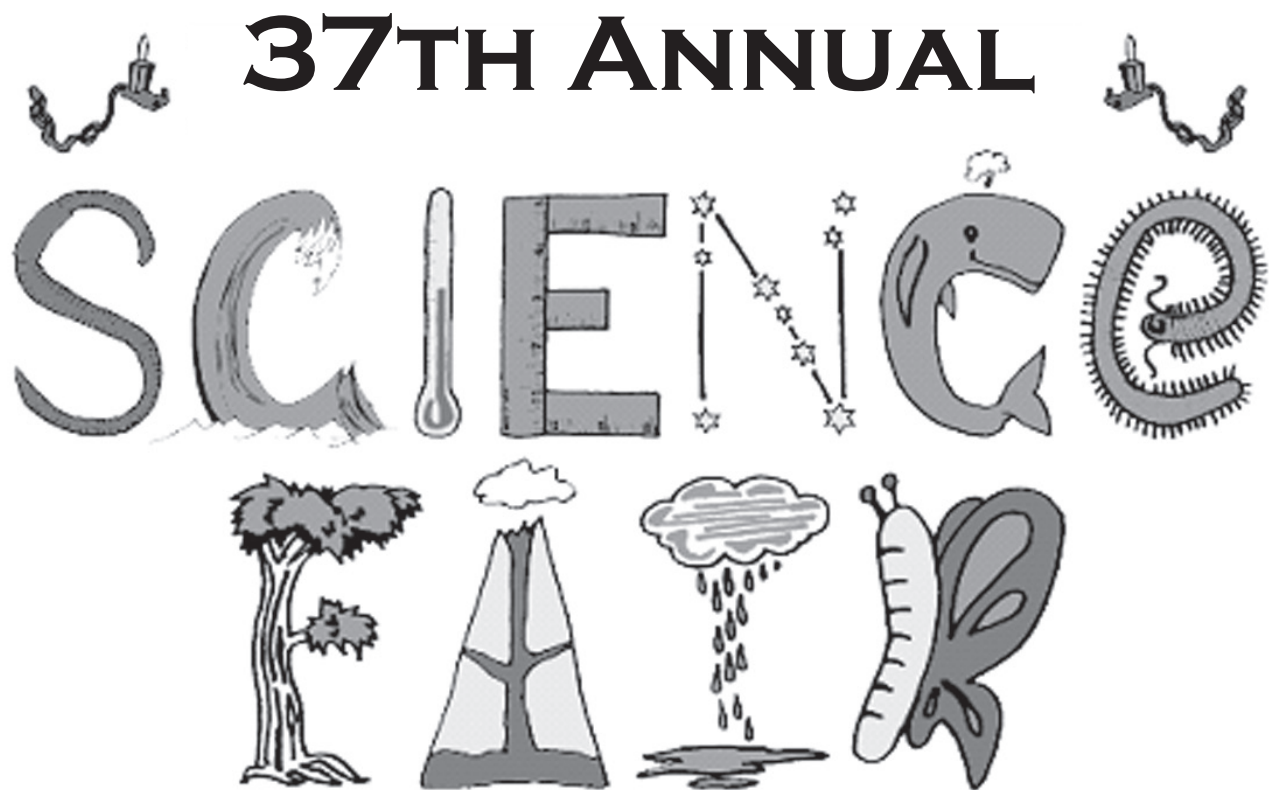


**2020**

**HUMBOLDT COUNTY  
DORIS NILES  
SCIENCE FAIR**

**RULES & REGULATIONS**

**MARCH 16-20**



Rules, deadlines, ideas for projects, and access to hot links:  
[hcoe.org/science-fair](http://hcoe.org/science-fair)

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# Humboldt County Doris Niles Science Fair 2020

## Humboldt State University

|                          |                             |   |
|--------------------------|-----------------------------|---|
| Monday, March 16 .....   | 9:00 a.m. - 12:00 noon..... | Project Set-up                                  |
| Tuesday, March 17 .....  | 8:30 a.m. - 8:00 p.m.....   | 4 – 8 grades Display Judging                    |
| Wednesday, March 18..... | 9:00 a.m. - 12:00 noon..... | Data Entry & Calls for Interviews               |
| Thursday, March 19.....  | 9:00 a.m. - 12:00 noon..... | 6 – 12 grades Interviews                        |
|                          | 4:00 p.m. - 7:00 p.m. ....  | Open for Public Viewing                         |
| Friday, March 20.....    | 9:00 a.m. - 3:00 p.m.....   | Open for School Field Trips<br>& Public Viewing |
|                          | 3:00 p.m. - 8:00 p.m. ....  | Project Removal                                 |
|                          | 7:00 p.m. - 8:00 p.m. ....  | Awards Ceremony -<br>Lumberjack Arena           |

### Purposes of the Humboldt County Science Fair

- To support Next Generation Science Standards (NGSS).
- To stimulate an active interest in science in young people by engaging them in original investigations and the development of new insights.
- To promote and recognize excellence in participants for their science research and investigation.
- To foster school/community cooperation in developing the scientific potential of Humboldt County students.

### Humboldt County Science Fair Planning Committee

Lynne Bryan - Retired Teacher  
 Heidi Conzelmann - Morris School  
 John Davis - Community Volunteer  
 Kim Dedini - McKinleyville Middle School  
 Nick Dedini - Jacoby Creek School  
 Loretta Eckenrode - Retired Teacher  
 David Haller - Freshwater Charter School  
 Jessie Hobba - Sunny Brae Middle School  
 Michele Kamprath - Retired Science Teacher  
 Kevin Lane - Retired Science Teacher  
 Melody McGuire - Science Fair Coordinator  
 Ken Pinkerton - Retired Science Teacher

Nancy Rickard - Community Volunteer  
 Kassie Robinson - Pacific Union School  
 Dan Scofield - St. Bernard's Academy  
 Jeff Self - Retired Teacher  
 Sheryl Steiner - Monument Middle School  
 Kevin Trone - Rio Dell School District  
 Greta Turney - Kneeland School  
 Perrin Turney - College Student  
 Julie Van Sickle - Humboldt State University  
 Heidi Walsh - Jacoby Creek School  
 Rick Zechman - Humboldt State University



# Humboldt County Doris Niles Science Fair 2020

## Rules and Regulations



### I. Eligibility

- A. Students in grades 4 through 12 attending a public or private school in Humboldt County which has filed an "Intent to Participate" form are eligible to enter.
- B. All projects must be entered by a School Science Fair Coordinator. Students and parents cannot enter projects directly to the County Science Fair.
- C. The School Science Fair Coordinator will be responsible for reviewing all entries from his or her school to ensure compliance with County regulations.
- D. Each project must be entered separately on the Google Docs form.

#### **NEW: Approval Research Form for ALL projects:**

1. *To be eligible to enter the Humboldt County Science Fair, **ALL students must fill out a Research Approval Form** for their project. Any student wishing to do projects involving **humans, human tissue, animals, or hazardous substances** are required to complete the approval process outlined in these rules **prior to beginning any work.***
2. **All Projects must have Approval forms** filled out and stapled to the front page of the logbook. **Do not fax to HCOE!** (Points will be deducted if not found in logbook.)
3. **6th – 12th grades require original abstract placed in the front of the logbook (do not fax to HCOE).**

### II. Project Categories

*All projects will now require a Research Approval Certificate (page 20).*

A. **Life Science - Animals** - zoology, anatomy, physiology, biology, and psychology, sociology, behavioral studies, personal preference surveys.



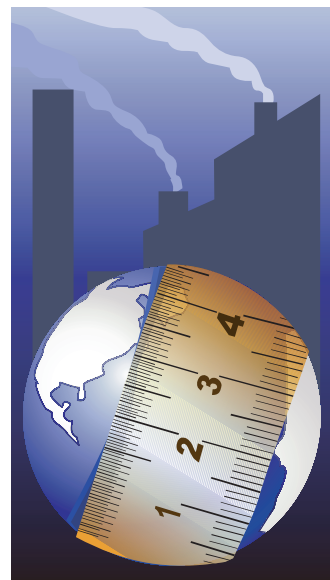
B. **Life Science - Botany** - plants, fungi, molds, bacteria.



C. **Earth/Space Science** - minerals, rocks, volcanoes, crystals, geology, weather, gravity, astronomy, stars, and planets.

D. **Math/Engineering/Inventions** - pure and applied math, geometry, probability, number theory; engineering shapes and structures to test physical laws, projects in which a potentially useful product is created.

- E. **Physical Science** - including studies involving **matter** (i.e. density studies, changes of state, evaporation, crystallization, chromatography or other separation techniques), **chemistry** (i.e. chemical reactions and interactions; rust, decay, discoloration; effects of acids and bases; production of gases and precipitates; effects of chemicals on living organisms, biochemistry), **force and motion** (i.e. simple machines, friction, effect of gravity, applications of force to physical systems) and **energy** (i.e. electricity, magnetism, batteries, motors, static electricity and heat, light, sound studies such as absorption or reflection of light/sound; lasers and prisms, musical instruments; waves, insulation experiments).
- F. **Consumer Science is NOT** an accepted category for the Humboldt County Science Fair. Teachers are encouraged to redirect student interest in product comparisons to studies of scientific principles. For example, "Which Brand of Golf Ball Goes Farthest?" could become "What Properties Have the Greatest Effect on the Distance a Golf Ball Will Travel; Weight, Size, Surface Texture, etc.?", which would then be in the Physical Science category.
- G. Projects with an **environmental emphasis** may occur in all categories. **They should be entered into the category which is the primary focus of the study.** For example, water pollution studies should be placed in Earth Science, energy conservation in Physical Science, effects of acid rain on plant growth in Life Science - Botany, etc.
- H. ***Students may not use any illegal drugs, alcohol, marijuana, tobacco, vaping products, firearms, or dangerous weapons OF ANY KIND for a Science Fair project investigation.***
- I. Students have the option to display their work on a backboard (specifications on pages 15-16) or to prepare a multi-media computer presentation (page 16).



### III. Entry & Deadline

**All project entries should be submitted on the Google Docs form.**

(Link to access the form emailed to Science Fair Coordinators.)

**All Projects must have a completed MANDATORY Research Approval Certificate** filled out and stapled to the front cover of the logbook. (Points will be deducted if not found in logbook.)

***Entry Deadline: Wednesday, March 4, 2020, by 5:00 p.m.***

## IV. Entry Numbers

Schools with an enrollment of 150 students or more may send up to 20 projects to the County Science Fair.

Schools with an enrollment of 149 or less students may send up to 10 projects to the County Science Fair.

- Additional entries may be possible. For more information please contact Melody McGuire, Humboldt County Science Fair Coordinator, at [melmcguire@yahoo.com](mailto:melmcguire@yahoo.com) or call **707-616-4435**.

## V. Types of Projects Recommended

A. Students in **grades 4-5** may enter:  
**Please Note: Judging criteria favors experiments and observational studies.**

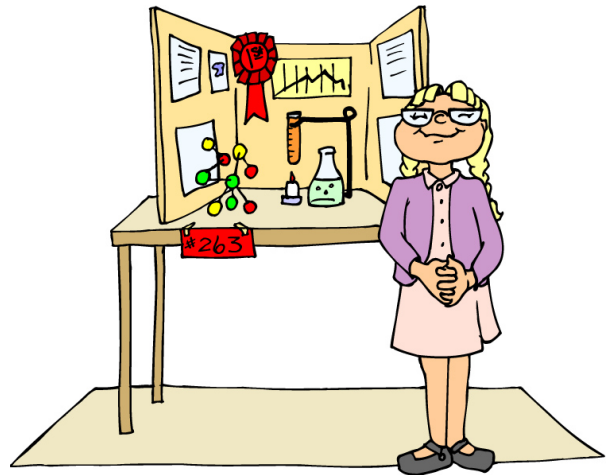
1. Experiments

2. Non-experimental projects such as:

- three-dimensional displays (i.e. the solar system, structure of atoms) or collections based on research;
- models demonstrating a scientific principle or technology (i.e. what causes erosion or how to build a homemade seismograph);
- observations of the environment (how plants disperse seeds, what lives in a drop of pond water);
- data collection projects (how do the number of seeds in different fruits compare, how fast do bean plants grow).

B. For students in **grades 6-12, judging criteria is for experiments and observational studies only**. Students in these grades must follow scientific methodology.

C. Original, innovative research will be judged higher than projects simply following experiments printed in textbooks or found in other sources for Science Fair projects.



## VI. Team Efforts



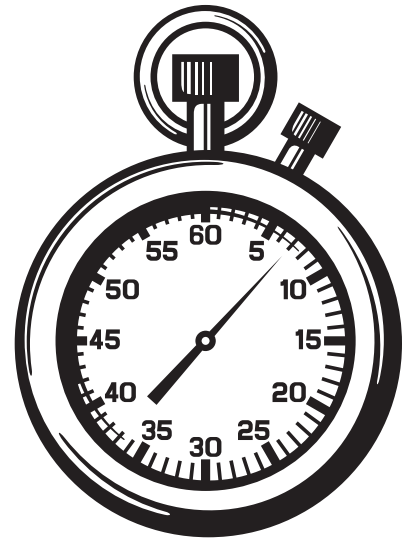
- A. Students in all grades may work on a project individually or with a partner. **Only two students to a team.**
- B. Team projects may be entered in any category. There is no separate category for team projects.
- C. **It is important to note, however, that 1) criteria for judging projects in this category will include evidence of equal contribution by both students, 2) each student working on the project MUST have his/her own logbook, 3) if students are of different ages, the project will be entered in the grade level of the eldest child.**

## VII. Two-Year Projects

- A. Two-year projects will be admissible only if a new question is asked or an extension beyond the previous year's work is apparent.
- B. The logbook from the original project must be displayed.
- C. The project must be prominently labeled "Two-Year Project" and first year results must be indicated separately from second year results.

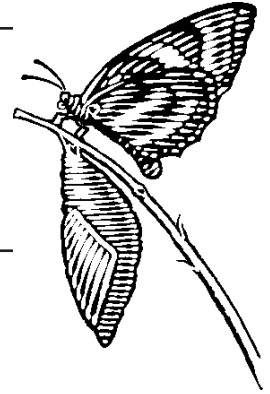
## VIII. Project Removal

- A. **It is the School Science Fair Coordinator's responsibility** to make certain all projects from his or her school are removed between 3:00 p.m. and 8:00 p.m. on Friday, March 20.
- B. Projects **may not** be removed before 3:00 p.m. on Friday.
- C. ***Projects not removed by 8:00 p.m. on Friday, March 20, will be discarded.***



## IX. Use of Animals in Science Fair Projects

*Animals covered by the regulations below include vertebrates (mammals, reptiles, amphibians, birds, fish) and invertebrates (insects, crustaceans, mollusks, etc.); wild animals including game species, and domestic animals including family pets.*



There can be *no exceptions* to the following requirements.

### A. Approval Procedures

1. Students with projects involving **an experiment or observation** of any living animal must have a qualified Research Advisor who will be responsible for the safe treatment of any animal subject to the student's study.
2. **Before any work on the project begins**, the student **must** make an appointment to meet with a Research Advisor. This person will review all pertinent regulations and advise the student on the safe treatment and/or non-invasive observation of animals involved in the project. S/he will also **complete Part 1 of the Humboldt County Science Fair Research Approval Certificate on Page 19**.
3. Research Advisors must have the following educational background:
  - a. For projects involving **vertebrate animals**, the Research Advisor must have a **doctoral degree in science or medicine** (D.V.M., Ph.D., M.D.). It is recommended that Research Advisors review regulations in the federal Animal Welfare Act of 1966 with students (copies of relevant sections are available from the County Science Fair Coordinator).
  - b. For projects involving **invertebrates**, the Research Advisor must have educational experience in science education. It is recommended this person be the School Science Fair Coordinator or the student's classroom teacher.
4. Projects involving **observations of wild animals or the collection or display of any wild animal part**, must have clearance for the project from a **Department of Fish and Game Control Officer**. This approval may be obtained by telephone. Students must have a *Research Approval Certificate* indicating the name of the person providing approval, his/her title and the date of the telephone conversation. This documentation must be displayed on the inside cover of the logbook presented at the time the project is set up for judging. (See rules specific to wild animals following this section.)







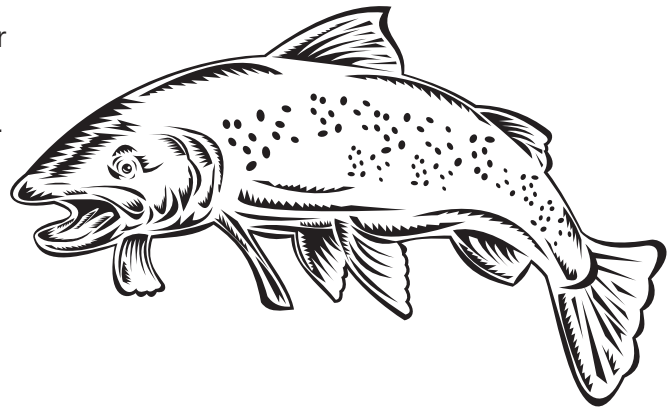
5. At the initial meeting, students must provide the Research Advisor with all of the following:
  - a. a written description of procedures they plan;
  - b. a copy of these Humboldt County regulations; and
  - c. a copy of the *Research Approval Certificate*.
6. A responsible adult must meet with the student and the Research Advisor. This person must agree to supervise the student's work on the project to ensure compliance with the animal care instructions provided by the Research Advisor. This adult supervisor must also sign Part I and Part II of the *Research Approval Certificate*.
7. A copy of the *Research Approval Certificate* **MUST** be in the student's logbook and be present when the project is set up. (Points will be deducted if not found.)
8. Any project not conducted in conformity with these rules and the Humane Laws of California will not be allowed to compete.

## B. Wild Animals

1. Under **Department of Fish and Game Regulations (Section 3005.5)**, any animal found in the wild is **protected**. It is, therefore, illegal for students to capture or confine any wild mammal, bird, fish, reptile, amphibian or invertebrate animal for the purpose of a Science Fair project. It is also important that teachers and students are aware:
  - Section 3039 states: it is illegal to sell or to purchase **any part of any animal found in the wild**. This includes feathers or other body parts from any migratory bird or the carcass, skin or other parts of non-game animals including, **but not limited to**, endangered species.
  - The only exceptions to this regulation are:
    - a) fur from mammals taken legally under the authority of a trapping license;
    - b) parts of **domestically reared** game birds; and
    - c) shed antlers from **domestically reared** animals.

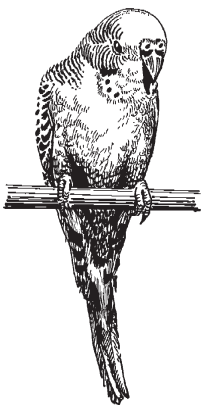


- Students should also be aware these protections extend to **marine life**. The collection of tide pool animals is prohibited except for those species subject to sport regulations. In the case of these animals, students must obey all Fish and Game sport regulations on limits, opening and closing dates, specific locations and required licenses.
  - Game species that are hunted are subject to sport fishing and/or hunting limits and regulations and require the appropriate licenses, proof of which must be included with the student's logbook.
2. Care should be taken to return animals to their native habitat and to avoid releasing non-native species into a non-suitable environment.
  3. Projects using any animal parts (teeth, stomachs, hides, etc.) must have written documentation indicating the source of the animal parts.



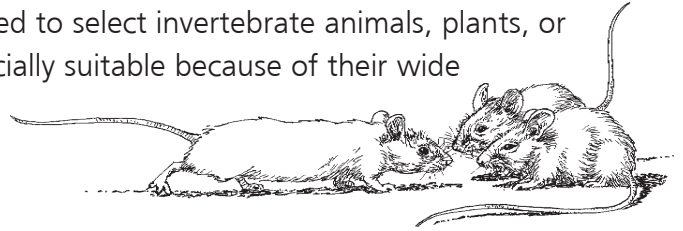
### C. State Law

1. California State Law and the California Educational Code require:



- a. The comfort of all animals used in any project shall be a prime concern. Animals **MUST** be obtained from a reliable source and the following basic needs **MUST** be assured: appropriate, comfortable quarters; adequate food and water; cleanliness and humane treatment; exercise when required for the species of animals used. Students **MUST** make arrangements to provide these basic needs at all times, including weekends, vacations, and holiday periods.
- b. No vertebrate animal will be subjected to any procedure or condition, including nutritional deficiency experiments, which results, **either by intention or negligence**, in pain, distinct discomfort, abnormal behavior, injury, or death.
- c. No surgery, including biopsy, will be performed on any living animal.
- d. When planning the project, the student **MUST** arrange for the humane disposition of all animals involved after the project is completed. This may be done by placing them in an environment where they are assured of continued humane care or by releasing undomesticated species into a suitable wildlife environment. Students **MUST NOT** perform euthanasia on vertebrate animals under any circumstances. A complete account of the final disposition of all animals used **MUST** be included in the final report of all projects involving living animals.

- e. The basic aim of any project involving living animals should be to increase the knowledge and understanding of life processes. It should not include the demonstration or development of surgical techniques. All projects involving animals must, therefore, have a clearly defined objective which requires the use of animals to demonstrate a biological principle or to answer a specific question.
- f. A lower form of life should be selected for the project, rather than a higher form, whenever possible. Students are strongly urged to select invertebrate animals, plants, or tissue cultures. Invertebrate animals are especially suitable because of their wide variety and availability in large numbers.
- g. California humane laws specifically forbid the mistreatment or neglect of animals, including animals used in schools and school-sponsored activities. Students, teachers, and supervisors must know and obey these laws. Any student research involving animals **MUST COMPLY** with the requirements of the California Education Code stated here:



*HUMANE TREATMENT OF ANIMALS, State of California Education Code Title 2, Division 2, Part 28, Chapter 4, Article 5, Section 51540.*

*In the public elementary and high schools or in public elementary and high school-sponsored activities and classes held elsewhere than on school premises, live vertebrate animals shall not, as part of a scientific experiment for any purpose whatsoever:*

*a) be experimentally medicated or drugged in a manner to cause painful reactions or induce painful or lethal pathological conditions; or*

*b) be injured through any other treatments, including, but not limited to, anesthetizing or electric shock.*

*Live animals on the premises of a public elementary or high school shall be housed and cared for in a humane and safe manner.*

## X. Use Of Human Subjects in Science Fair Projects



*These rules apply to all projects involving human subjects in any of the following:*

- physical activity
- blood testing
- tasting or sampling of food or drink
- surveys of opinions or behaviors

### A. Research Advisors

1. In order to protect the health, safety and legal rights of human subjects, the student conducting the project must have a Research Advisor approve his/her plans **prior** to any work with human subjects. The Advisor will meet with the student and a responsible adult who will supervise student work. Qualifications for Research Advisors vary with the type of project as follows:

#### a. If the project involves:

- 1) a physical activity **in any way beyond the scope of any subject's everyday life** (running endurance trials, sitting in hot tubs of different temperatures, studying test performance after sleep deprivation, etc.);
- 2) work with human blood; and/or
- 3) the ingestion of a food, drink or any other substance **in any way beyond the scope of any subject's everyday life...**

**...the Research Advisor must be a medical doctor (M.D.).**

#### b. If the project involves:

- 1) the ingestion of a food, drink or any other substance **completely within** the scope of any subject's everyday life;
- 2) a physical activity **completely within** the scope of any subject's everyday life (i.e. Does color affect taste? Do different ages have different food preferences? Measuring changes in height before and after sleep, etc.); and/or
- 3) the collection of information through a questionnaire or survey...

**...the Research Advisor must be the School Science Fair Coordinator or the School Site Administrator.**

2. **At the initial meeting, students must provide the Research Advisor with all of the following:**
  - a. a written description of procedures they plan;
  - b. a copy of these Humboldt County regulations pertaining to human subjects;
  - c. a copy of the *Humboldt County Science Fair Research Approval Certificate*; and
  - d. the form to be sent to parents for their approval of their child’s participation in the project.
3. The Advisor will complete Part 1 of the *Research Approval Certificate*. A **copy** of this Certificate must be placed in front of the logbook.
4. Research Advisors must assure that each individual human subject will not be exposed to any risk of possible injury either physical, psychological, or social as a consequence of participation in a science fair project.

## **B. Parent Permission**

**Written permission approving any activity (including tasting or completing surveys or questionnaires) by a student “subject” must be obtained from the parent or guardian prior to the student engaging in the activity. These permission forms must be kept on file, and a copy must be included in the student’s logbook.** Simple notification of the questionnaire to be administered is not sufficient.



California Education Code 51513 requires that parents receive notification and provide written authorization prior to student participation in the types of activities mentioned above. The intent of this Section is to protect family privacy and personal beliefs; nonetheless all surveys including those, for example, with questions about television viewing habits, birth weights, etc. must comply with this requirement for parental pre-approval.

## C. Surveys

1. See parent permission requirements in Section B, previous page.
2. The **data collected from surveys** must be presented in such a way that no one can identify the individual who completed a specific survey, including the student administering the survey.

## D. Additional Restrictions

1. **No bio-medical deprivation studies** involving human subjects will be allowed.
2. Any human **blood samples** used in the project must follow safety procedures for the handling of bloodborne pathogens as stated in the California Occupational Safety and Health Standards, Section 5193. Copies of these guidelines are available from the Humboldt County Science Fair Coordinator. Written documentation that blood samples are free of HIV and Hepatitis B, must be presented with the *Project Entry Form*. Testing may be done at the Humboldt County Health Department or other medical laboratory.
3. The **exhibition of human parts** is prohibited except for teeth, hair, and nails. Slides or other samples of human tissue professionally encased by a scientific supply company may be displayed provided proof of source is attached to project or in logbook.



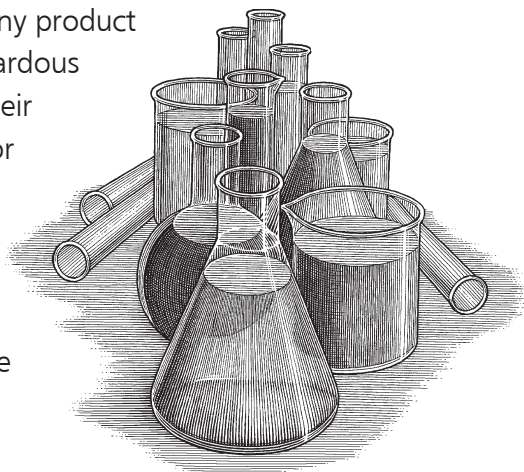
## XI. Use of Plants

Care must be taken that no rare or endangered plant species be collected or disturbed for a Science Fair project.

## XII. Use of Firearms and Weapons in Science Fair Projects is not permitted.

### **XIII. Use of Hazardous Substances in Science Fair Projects**

Students intending to work with substances that may be hazardous must follow the rules below. For the purposes of the County Science Fair, any product labeled "Danger, Caution or Warning" will be considered a hazardous substance. Students using products of this type must submit their experimental methods to the School Science Fair Coordinator for approval. The School Science Fair Coordinator will advise the student of safe handling procedures, safe concentrations of chemicals, concerns about fumes or if eye wear is required for safety. Teachers, students and parents should be aware many chemicals and commercial products commonly used in the home may pose potential health hazards.



#### **A. Research Advisors**

1. To ensure the safety of the student and any people or animals in the vicinity of the project, students using hazardous materials in their projects must have a Research Advisor approve his/her plans **PRIOR** to beginning work on the project. Research Advisors for such projects **must be the School Science Fair Coordinator**. The Advisor will meet with the student **and a responsible adult** who will personally supervise **all** student work involving the substance.
2. Students must provide the Research Advisor with all of the following:
  - a. a written description of procedures;
  - b. a copy of these Humboldt County regulations pertaining to the use of hazardous substances;
  - c. a copy of the *Humboldt County Science Fair Research Approval Certificate*; and
  - d. a copy of the Materials Safety Data Sheet (MSDS) for any hazardous substance with a label including the words 'danger', 'caution', or 'warning' if the substance is used in the Science Fair project.
3. The Research Advisor must:
  - a. research the potential hazard and safety guidelines identified on the MSDS for each substance;
  - b. inform the Adult Supervisor of potential risks associated with the substance to be used; and
  - c. complete the mandatory *Research Approval Certificate*. A copy of this Certificate must be placed in the front of the logbook.

**PLEASE NOTE:** Research Approval Certificates are now **MANDATORY** for **ALL** projects. Points will be deducted if not found stapled into front cover of logbook.

## **B. Materials Safety Data Sheets (MSDS)**

1. Materials Safety Data Sheets are required for all hazardous substances purchased from scientific supply companies (as identified by the General Industry Safety Order 5194). A copy of the MSDS sheet can be obtained at the store where the item was purchased or by writing to the address of the manufacturer of the product.
2. Copies of any MSDS needed must be included in the student's logbook.



## **C. Illegal Drugs, Alcohol, Tobacco, Firearms, & Weapons**

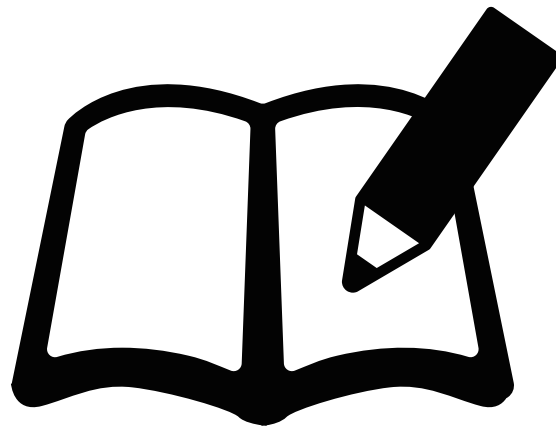
1. ***Students may not use any illegal drugs, alcohol, marijuana, tobacco, vaping products, firearms, or dangerous weapons OF ANY KIND for a Science Fair project investigation.***



## **XIV. Logbooks**

### **Ideally, a logbook is:**

- a BOUND notebook, not a loose leaf notebook.
- a record (or journal) of EVERYTHING you do concerning your Science Project.
- a CHRONOLOGICAL record of every DATED entry, including how you chose your topic and what your HYPOTHESIS is.
- the place to put copies of all PERMITS and CERTIFICATES which give permission for experiments with animals, humans, or specific study sites.
- all records in YOUR OWN HANDWRITING, unless you have something generated on your computer that you paste into the logbook DATED ON THE APPROPRIATE DAY.
- a record of summaries of INTERVIEWS on the date you arranged them and the date you conducted them.
- a record of summaries of your RESEARCH on the appropriate dates.
- a record of the actual PROCESS and EQUIPMENT for your project.
- a record of all MATERIALS used, including the identification of BRANDS, WHERE PURCHASED, HOW PRODUCED, etc.
- a record of ALL DATA you collect, in its ORIGINAL FORM as you collected it.
- a record of any RESULTS from your work.
- a record of your CONCLUSIONS after you analyze your results.
- Accommodations are acceptable based on student needs.



### **Some notes to help you:**

- Because you are instructed to put your Approval Certificate and your Abstract in the front of the book, be sure to leave pages for them before you begin your log.
- If you want something to be found easily, you can tab and label it, such as your bibliography, which you will compile from your daily notes after you have completed all your research.
- A Table of Contents is not necessary but if you want one, number each page as you write on it, and then fill in your Table of Contents when you have completed your work.
- Graphs and tables of results can be generated on your computer, printed, and pasted into your logbook on the appropriate date.

## XV. Exhibit Display Specifications

### A. Backboards

- All Science Fair backboards must:
  - stand upright (without leaning against other backboards).
  - be labeled by the student with his/her:
    - name
    - school
    - grade level
  - NOT have any items on the table in front of display! Photographs, models, and drawings must be mounted on the blackboard.
  - NOT display ribbons or awards won at school or district science fairs.
- All projects must be within the following specifications:
  - 36" wide x 30" deep (no height limit)
  - High school projects may be 48" wide
- Logbooks must be attached to the project backboard with string or cord at least **one meter in length**.
  - Logbooks: Entries must be in student's handwriting or typed on computer by student.
  - The **Bibliography** listing sources of background information must be behind a clearly marked tab in the student's logbook. Students are encouraged to gather information from people as well as Internet and books. Dates and times of interviews with people should be noted on the Bibliography.
  - Research approval form and abstract, if required, **must** be in front cover of logbook.

### 3-Sided Display Board

The diagram illustrates a 3-sided display board layout. The board is divided into several sections:

- Left Panel:** Purpose, Hypothesis, Variables, Materials (with two small boxes).
- Center Panel:** TITLE, Name, School, Grade, Procedures, Data, Graphs.
- Right Panel:** Results, Conclusion, Real World Applications.

A logbook is shown attached to the bottom of the board.

- Use two large sturdy boards.
- Cut one in half.
- Tape to both sides of large board.

4. For reasons of safety, it is highly recommended students bring only a project backboard and their logbook to the County Science Fair. **Under no circumstances may students display:**

- Glass or other fragile or easily breakable items
- Live cultures (molds, bacteria, etc.) in covered petri dishes or in any other containers
- Food samples
- Pills, drugs or medications of any type
- Live animals (including live insects)
- Blood or other tissue samples, human or animal
- Fire or open flames, or the equipment to make them
- Dangerous chemicals
- Batteries with open top cells

**NOTE: Students may use some of these items if necessary to *conduct* their experiments, but none can be *displayed* at the County Science Fair.**

**Science Fair officials reserve the right to remove any exhibit or any portion of an exhibit that is objectionable or hazardous.**

## **B. Multimedia Format**

Students may choose to present their project findings using **multimedia presentations on their own laptops**. Projects in this category must address all the same elements required on the standard backboard (Statement of Purpose, Procedures, Conclusions, etc.).

In addition to the computer presentation, students with multi-media projects are required to display:

- 1) their logbooks and bibliographies, and
- 2) a printed copy of the text for the presentation.

## **C. Liability**

*Students must be prepared to assume all risks for any damage to their projects. The County Science Fair Committee **will not be responsible for losses or for projects not picked up by 8:00 p.m. on Friday, March 20.***



## **XVI. Recognition**

### **A. Project Judging**

1. There are two levels of judging.
  - a. Display Judging** - 4th through 8th grade students' work will be judged against the standards outlined on the judging score sheets on pages 21 and 22. Students are encouraged to review these forms **before** beginning work on their projects. Medals, rosettes, and ribbons will be awarded to 4th and 5th grade students based on these scores.
  - b. Interviews** - 6th through 8th grade students will also be interviewed by a second group of judges. Medals will be awarded based on the total of the interview judges' scores (1/2) and the display judges' scores (1/2).

2. 9th - 12th grade students will be interviewed on Friday, March 20.  
All high school projects are included in one judging category.
3. Projects that do not meet basic requirements will not be eligible for medals.
4. Judges' comments will be available for students to pick up on Friday, March 20.

### **B. Awards**

1. The following ribbons are awarded based on the number of points earned:
  - *Science Fair*
  - *Honor*
  - *Excellence*
2. Honorable Mention rosettes are given to all students participating in the interview judging and not receiving medals.
3. 1st, 2nd, and 3rd place medals are awarded for the top projects at each grade level.
4. Winners will be identified on Thursday, March 19. Students will receive their medals at the Awards Ceremony on Friday evening.

## **C. Special Recognition To Be Awarded**

### **Rotary Club of Eureka 6<sup>th</sup>-12<sup>th</sup> grades**

Grand Prizes will be awarded to assist selected students in their travel to compete in the California State Science Fair.

### **Local Rotary Clubs – 6<sup>th</sup>-12<sup>th</sup> grades**

Grand Prizes will be awarded to assist selected students in their travel to compete in the California State Science Fair.

### **Dr. Doris Niles Perpetual Trophy – 4<sup>th</sup>-5<sup>th</sup> grades**

A trophy will be presented to a young student of promise, and their name will be added to the perpetual plaque displayed at the Humboldt County Office of Education.

### **North Coast Unified Air Quality Management District – 4<sup>th</sup>-12<sup>th</sup> grades**

An award will be presented to assist Grand Prize winners in their travel to compete in the California State Science Fair. They will also present a commemorative plaque.

### **The Professional Engineers in California Government (PECG) – 6<sup>th</sup>-12<sup>th</sup> grade**

PECG awards a prize to assist a Grand Prize student in their travel to compete in the California State Science Fair

### **California Association of Professional Scientists – 7<sup>th</sup>-12<sup>th</sup> grades**

A \$100 savings bond will be presented to an “Outstanding Young Scientist.”

### **The California Native Plant Society (CNPS) – 4<sup>th</sup>-12<sup>th</sup> grades**

A prize of \$50 and a 1 year membership to CNPS will be awarded for the best project investigating native plants.

### **The Redwood Regional Audubon Society – 4<sup>th</sup>-12<sup>th</sup> grades**

The Society awards a student with a membership to the Audubon Society and a \$50 award for the study of wild birds.

### **The Friends of the Arcata Marsh – 4<sup>th</sup>-12<sup>th</sup> grades**

A prize will be awarded to 2 students for the best projects related to wetlands.

### **The North Group Sierra Club – 4<sup>th</sup>-12<sup>th</sup> grades**

A prize will be awarded to 2 students for projects best related to environmental protection.

### **Veterinarians’ Choice – 4<sup>th</sup>-8<sup>th</sup> grades**

The Sunny Brea Animal Clinic will award a prize for a project in the Life Sciences category.

### **Recology of Humboldt County – 4<sup>th</sup> 12<sup>th</sup>**

An award will be presented for the best project helps reduce the need for fossil fuel or studies alternative renewable energy.

### **LACO Engineering – 4<sup>th</sup>-12<sup>th</sup> grades**

Two prizes will be awarded for the best engineering project.

Humboldt County Science Fair  
**RESEARCH APPROVAL CERTIFICATE**  
Humans, Human Tissue, Animals, or Hazardous Substances  
**Mandatory Form**

Student name: \_\_\_\_\_

School Name: \_\_\_\_\_ School Phone #: \_\_\_\_\_

**PART I (Must be filled out PRIOR to beginning any work on project.)**

**Check here if project DOES NOT involve humans, human tissue, animals, or hazardous substances. IF YOU CHECK THIS BOX STOP HERE.**

***If project involves Humans, Human Tissue, Animals, or Hazardous Substances the Required Research Advisor must be a:***

**D.V.M., Ph.D., or M.D.**

- animals, vertebrates (mammals, reptiles, fish, amphibians, birds).....Doctor (D.V.M., Ph.D., or M.D.)
- human subjects (involved in activity **beyond** the scope of everyday life) ..... Medical Doctor
- human tissue, blood or viruses ..... Medical Doctor

**School Coordinator or Administrator**

- human subjects (involved in activity **within** the scope of everyday life) ..... School Science Fair Coordinator
- invertebrate animals (worms, starfish, insects, etc)...School Science Fair Coordinator or Teacher
- hazardous substances ..... School Science Fair Coordinator
- potential pathogens (including bacteria) ..... School Science Fair Coordinator

I certify that I have met with the above student. \_\_\_\_\_

Printed name of advisor

Signature of advisor

On lines above you need printed name and signature of *D.V.M., Ph.D., or M.D., Adult Supervisor, School Administrator, Teacher, or School Fair Coordinator.*

***I have given him/her clear and specific instructions on safe procedures that must be followed. The Adult Supervisor named below will supervise the actual work with humans, animals, or hazardous substances, and has agreed to be responsible for this student's compliance with my instructions and with State law, local ordinance and County Science Fair Rules.***

**Part 2: Adult/Parent supervisor of actual work will be:** \_\_\_\_\_

Signature \_\_\_\_\_ Relationship \_\_\_\_\_

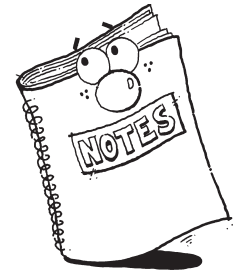
Phone # \_\_\_\_\_ Date \_\_\_\_\_

***All projects must have a Research Approval Certificate filled out and stapled to the front page of the logbook. Do not fax to HCOE.***



Name \_\_\_\_\_  
 School \_\_\_\_\_ Grade \_\_\_\_\_  
 Category \_\_\_\_\_ Project # \_\_\_\_\_

**HUMBOLDT COUNTY SCIENCE FAIR PROJECT SCORE FORM**



**A. Required Research Approval Forms**

All projects must have Research Approval Certificates stapled to the inside front cover of the logbook. Projects that have used animals, human subjects, human blood, or hazardous substances must have completed the appropriate sections of the research forms with advisor's signature.

**If mandatory form is not found in the logbook, see committee member at front table.**

**B. Evidence of Scientific Knowledge**

**1. FOUND IN LOGBOOK**

- **Mandatory** Research Approval Certificate found and completed.
- Entries are in student's handwriting. If done on computer, wording appears to be his/her own.
- Origin of idea for project is explained.
- Work done on all phases of project is recorded as appropriate (dates, times, places, diagrams). If a team project, each student has a separate logbook.
- Notes or comments on problems, methods, conclusions are included.
- Notes from background reading are present.
- Bibliography and sources of information (written materials, interviews) are cited. *May be on display.*

|          | <b>Score</b> |        |   |   |
|----------|--------------|--------|---|---|
|          | 0            | - or - | 6 |   |
|          | 0            | 2      | 4 |   |
|          | 0            | 2      | 4 |   |
|          | 0            | 2      | 4 | 6 |
|          | 0            | 2      | 4 | 6 |
|          | 0            | 2      | 4 | 6 |
| Subtotal |              |        |   |   |

**2. FOUND ON DISPLAY BACKBOARD (or in computer presentation)**

- Purpose or problem is clearly stated. If experiment, hypothesis is included.
- Methods and procedures followed are clearly stated. If a team project, evidence indicates both members have contributed equally.
- For experiments: results in the form of observations, graphs, charts or written explanations are present. For demonstrations: models, collections or diagrams are present.
- Conclusions that are justified by student observations are presented.
- Project is neatly labeled and organized.
- Grammar and spelling on backboard are correct.  
(Do not deduct for spelling or grammar errors in logbook.)

|          |   |   |   |   |   |
|----------|---|---|---|---|---|
|          | 0 | 1 | 2 | 3 | 4 |
|          | 0 | 1 | 2 | 3 | 4 |
|          | 0 | 1 | 2 | 3 | 4 |
|          | 0 | 1 | 2 | 3 | 4 |
| Subtotal |   |   |   |   |   |

**3. OVERALL QUALITY**

- Originality of idea for investigation
- Creativity of approach (methods/procedures)
- Level of difficulty of task
- Relates project to broader scientific principles, real-world applications

|          |   |   |   |   |
|----------|---|---|---|---|
|          | 0 | 1 | 2 | 3 |
|          | 0 | 1 | 2 | 3 |
|          | 0 | 1 | 2 | 3 |
|          | 0 | 1 | 2 | 3 |
| Subtotal |   |   |   |   |

Judge's I.D. # \_\_\_\_\_

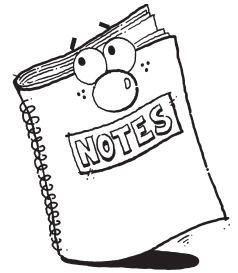
TOTAL POINTS \_\_\_\_\_



Name \_\_\_\_\_  
 School \_\_\_\_\_ Grade \_\_\_\_\_  
 Category \_\_\_\_\_ Project # \_\_\_\_\_

**GRADES  
6, 7, 8**

**HUMBOLDT COUNTY SCIENCE FAIR PROJECT SCORE FORM**



**A. Required Research Approval Forms**

All projects must have Research Approval Certificates stapled to the inside front cover of the logbook. Projects that have used animals, human subjects, human blood, or hazardous substances must have completed the appropriate sections of the research forms with advisor's signature.

**If mandatory is form not found in the logbook, see committee member at front table.**

**B. Evidence of Scientific Knowledge, Procedures**

**Score**

1. FOUND IN LOGBOOK

- **Mandatory** Research Approval Certificate found and completed. 0 - or - 6
- Entries are in student's handwriting. If done on computer, wording appears to be his/her own. 0 2 4
- Origin of idea for project is explained. 0 2 4
- Notes from background reading, research are present. 0 2 4 6
- Work done on all phases of project is recorded as appropriate (dates, times, places, diagrams). If a team project, each student has a separate logbook. 0 2 4 6
- Tables, tally marks or notes used to record preliminary results or thoughts about the project are included. 0 2 4 6
- Bibliography is present; sources for information are cited (books, magazines, interviews with people, etc.). *May be on display.* 0 2 4 6
- Abstract accurately summarizes project. 0 2 4

Subtotal

2. FOUND ON DISPLAY BACKBOARD (or in computer presentation)

- Purpose or problem is clearly stated. 0 1 2 3 4
  - Hypothesis is clearly stated. 0 1 2 3 4
  - Methods and procedures followed are clearly stated. If a team project, evidence indicates both members have contributed equally. 0 1 2 3 4
  - Variables to be controlled and to be manipulated are identified. 0 1 2 3 4
  - Observations in the form of graphs and/or charts are presented. 0 1 2 3 4
  - Experiment was repeated to establish validity. 0 1 2 3 4
  - Written explanation of results are clearly stated. 0 1 2 3 4
  - Factors that could have influenced results are discussed. 0 1 2 3 4
  - Conclusions are related to the hypothesis and are clearly stated and justified from student's observations. 0 1 2 3 4
  - Project is neatly labeled and organized. 0 1 2 3 4
  - Grammar and spelling on backboard are correct. 0 1 2 3 4
- (Do not deduct for spelling or grammar errors in logbook.)

Subtotal

Subtotal

3. OVERALL QUALITY

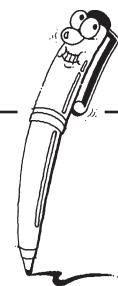
- Originality of idea for investigation 0 1 2 3 4
- Creativity of approach (methods/procedures) 0 1 2 3 4
- Level of difficulty of task 0 1 2 3 4
- Relates project to broader scientific principles, real-world applications 0 1 2 3 4

Subtotal

Judge's I.D. # \_\_\_\_\_

TOTAL POINTS \_\_\_\_\_

# Science Fair Scoring Rubrics



## 1. Logbook 0, 2, 4, 6 points

- 0 - Not present in any form.
- 2 - Limited completion of requirements. May be missing some components.
- 4 - Meets requirement stated.
- 6 - Exceptional work that goes beyond requirements.

## 2. Display 0, 1, 2, 3, 4 points

- |                 |   |
|-----------------|---|
| 0 - Not present | Not on board display or in logbook.   |
| 1 - Minimal     | Unclear or not comprehensive (needs elaboration).   |
| 2 - Standard    | Clearly stated. Accomplishes purpose of the task.   |
| 3 - Good        | Clear, and demonstrates good understanding of scientific principles or practices.   |
| 4 - Excellent   | Clear, comprehensive and demonstrates STRONG understanding of scientific principles or practices (exceptional insights into the nature and resolution of problems encountered). |

## Spelling and Grammar

### All Grades

- 0 pts - for 8 or more errors
- 1 pt - for 5, 6 or 7 errors
- 2 pts - for 3 or 4 errors
- 3 pts - for 1 or 2 errors
- 4 pts - for 0 errors

## 3. Overall Quality

**No suggestions for score values for this section are offered. Judges are advised to use their personal experience and expertise in assigning scores in this section.**

# A New Vision for Science Education

## Implications of the Vision of the Framework for K-12 Science Education and the Next Generation Science Standards

| SCIENCE EDUCATION WILL INVOLVE LESS:  | SCIENCE EDUCATION WILL INVOLVE MORE:  |
|---|---|
| Rote memorization of facts and terminology  | Facts and terminology learned as needed while developing explanations and designing solutions supported by evidence-based arguments and reasoning.                          |
| Learning of ideas disconnected from questions about phenomena   | Systems thinking and modeling to explain phenomena and to give a context for the ideas to be learned  |
| Teachers providing information to the whole class   | Students conducting investigations, solving problems, and engaging in discussions with teachers' guidance   |
| Teachers posing questions with only one right answer  | Students discussing open-ended questions that focus on the strength of the evidence used to generate claims   |
| Students reading textbooks and answering questions at the end of the chapter                                  | Students reading multiple sources, including science-related magazine and journal articles and web-based resources; students developing summaries of information.           |
| Pre-planned outcome for "cookbook" laboratories or hands-on activities  | Multiple investigations driven by students' questions with a range of possible outcomes that collectively lead to a deep understanding of established core scientific ideas |
| Worksheets  | Student writing of journals, reports, posters, and media presentations that explain and argue   |
| Oversimplification of activities for students who are perceived to be less able to do science and engineering | Provision of supports so that all students can engage in sophisticated science and engineering practices  |