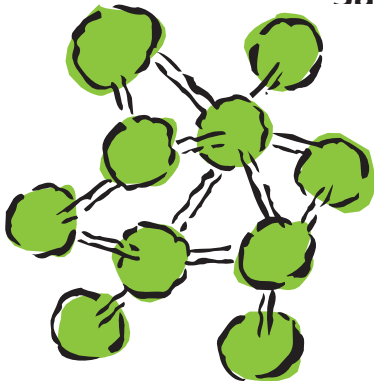


**THE TWENTY-EIGHTH ANNUAL
INLAND SCIENCE & ENGINEERING FAIR**

**STUDENTS'
GUIDE TO
PARTICIPATION**

**National Orange Show
Damus Building
689 South E Street
San Bernardino, California
April 13-14, 2010**



Presented By

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CONTENTS

Congratulations.....	3
What is a Science and Engineering Fair?.....	3
What will taking part mean to you?	3
What is a science project?.....	3
What is the Scientific Method?	3
Will you have to do an experiment?	4
How do you communicate your project to others?	5
What questions should you ask yourself about your projects?	5
How will your project be judged?	5
General Regulations	6
Safety Rules	7
Elementary Division (4-5) Categories.....	8
Junior & Senior Division (6-12) Categories.....	9
Instructions for Application	14
Grades 4-5 Project Registration Form (for district fairs*)	15
Jr. & Sr. Project Registration Form (for district fairs*)	17
Project Abstract Examples.....	19
State Science Fair Application Criteria	20
SBCSS Website for additional forms	21
RIMS Inland Science & Engineering Fair Schedule & Map.....	22

*** County registrations must be completed online February 23-March 10, 2010.**

STUDENT'S GUIDE TO PARTICIPATION

Congratulations!

You have just made an important decision. You are about to take part in one of the most rewarding and exciting learning experiences available to students—the Science and Engineering Fair.

What is a Science and Engineering Fair?

A Science and Engineering Fair is a competition of student science projects held each year at your school, in your district, in your county, and in the state of California.

What will taking part mean to you?

Participating in a science fair means that you will have the opportunity to:

- Develop and display a science project of your choice
- Share your creative abilities, knowledge, and interests with other students
- Meet and talk with scientists in your field of interest
- Be recognized and feel satisfaction for a job well done
- Compete for awards which range from certificates, ribbons, trophies, and medals to industry tours, cash prizes, and scholarships

What is a science project?

A science project is an active “fun” approach to science, something you do rather than something you only read about or watch someone else do.

A science project is an investigation of a question about a science topic that interests you. The difference between this kind of project and other ways of working on a problem is the use of a systematic plan called the Scientific Method.

What is the Scientific Method?

The Scientific Method is a way of working on a problem using a series of related steps. In brief, these steps are as follows:

- Step 1:** Identify and state the problem (usually as a **question**) and purpose of the investigation.
- Step 2:** **Research** the question—find out what is known about the problem from reading and by talking with experts.
- Step 3:** Form a **hypothesis**—write a statement expressing your opinion about the question.

- Step 4:** Plan an **experiment** that will test your hypothesis. Your experiment should contrast a control group or situation with a test group or situation. Describe how you will do the experiment (your procedure or **method**). List your **materials**. The order in which you do the experiment is termed your protocol.
- Step 5:** Do the experiment—record all your information, observations, measurements, charts, and graphs in a notebook or journal. Display your **data** as graphs, histograms, or charts.
- Step 6:** State your **conclusions**—tell what happened in the experiment, whether your experiment proved or disproved the hypothesis. (Your experiment does not have to prove it correct or true!) Did your experiment suggest some other experiment to be tried?

Words underlined above may be topic headings on your display. Example of how to apply the Scientific Method:

1. I am interested in how the Mendelian ratio determines the color of flowers of pea plants. My reading suggests that hydrocarbons (gasoline) in the environment alter normal genetic behavior.
2. My question develops: Does the presence of gasoline in the environment alter the Mendelian ratio? I can not answer this question directly but I can do an experiment which will test my opinion about this question. My opinion (or hypothesis) is: hydrocarbons in a plant's environment will change the expression of the Mendelian ratio. I can design an experiment to test this hypothesis.
3. My experiment will be to grow pea plants in an atmosphere that is rich in gasoline fumes (test group). I will grow other pea plants in a similar situation with no fumes (control group). In both control and test groups, all other facts or variables will be the same.
4. I do the experiment (often several times), making observations (measurements, written descriptions) at frequent and regular intervals. These data are recorded in a notebook or journal. Graphs are prepared from the data tables and both are used to form a conclusion about my hypothesis. Is another question or experiment suggested by what I have done?
5. Finally, I prepare a Summary Statement or Abstract (in perhaps 200 words) about my experiment, conclusion, and the importance of my work.

Will you have to do an experiment to qualify for the Science and Engineering Fair?

There are many ways to participate in the Science Fair. Ask your teacher for suggestions to get you started. If you would like to compete in the regional or the state fair, your project must show that you can use the Scientific Method.

Generally, this means you must do an experiment. The Mathematics & Software category does seek to provide additional rewards for other creative abilities. Even here a project is stronger if the Scientific Method has been used to organize or communicate the content of your project.

How do you communicate your project to others?

A Science Fair project is really made of three parts:

1. **The Problem, your Research Plan, and Experiment.** This is all the work that you do to investigate your question. This is a measure of your thinking. This is what the judges want to find out about. This is what you want to communicate about.
2. **The Written Record.** You must include a journal containing an explanation of the problem and all records of your experiment. Careful record keeping is considered a mark of a good scientist. The judges will carefully examine your notebook.
3. **The Display.** Your display should show your understanding and application of the Scientific Method. If you use a three panel display, the steps of the method may be read on the panels, from top to bottom, from left to right, with a statement of the problem at the top left, and the conclusion at the bottom of the right panel.

What questions should you ask yourself about your project?

1. Did you choose a topic that is important to you and one about which you would like to know more?
2. Did you discuss your ideas with your teacher? Your parents?
3. Did you establish a question, then gather materials to help solve the question?
4. Did you use a control in your experience?
5. Did you take notes and record data as you developed your project? Was a journal of your activities kept?
6. Have you asked your teacher to help you evaluate your progress?
7. Did you use mathematics and include graphics in your project (photos, drawings, graphs, and charts)?
8. Have you included a bibliography?
9. Did you include a summary statement (or abstract) of your project?
10. Did you conform to the state laws regarding vertebrate animals?
11. Did you ask your teacher to check your final project and display?

How will your project be judged?

Your science projects will be judged by teams of professional people, educators, and scientists using criteria adapted from the International Science and Engineering Fair judging standards. Grades 6-12 students will be interviewed at their displays by the judges.

INLAND SCIENCE AND ENGINEERING FAIR

GENERAL REGULATIONS

1. Construction must be durable with all parts firmly attached. No attachment to walls will be allowed. Provisions should be made to support the back of the exhibit. Maximum size is:

Table Project: 122 cm wide X 76 cm ft. deep X 198 cm ft. tall (4 ft. wide X 2.5 ft. deep X 6.5 ft. tall)

Floor Project: 122 cm wide X 76 cm ft. deep X 274 cm ft. tall (4 ft. wide X 2.5 ft. deep X 9 ft. tall)

No items may be displayed outside the 4'x 2.5' footprint, e.g. no equipment may be set up in front of the table.

2. No living or non-living plants, mold, viral or bacterial materials may be on display.
3. Open flames will not be permitted in the display. No gas, water, or extension cords will be provided.
4. A student may participate in only one project (for example, a student may not enter an individual and a team project and may not enter two team or two individual projects). Teams are limited to 2-3 students within their division. No limit is placed on the number of team projects per district, but each team project uses one of your district's allocations. Projects may only be grouped as follows: 4th and/or 5th, 6-8, or 9-12. (a project completed by both 4th and 5th grade students will be judged as a 5th grade project). Students must be from the same district.
5. All experimental work must be completed by the student. Adults may supply materials, advice, and consultation. (Districts & schools should not advance projects to the Inland Science Fair that do not meet this requirement.)
6. The Science Fair Committee reserves the right of refusal of an exhibit that it deems unsafe, unsuitable for public exhibition, or in direct conflict with California Education Code. This includes, but is not limited to, any projects that display or discuss subjects that require parental consent and/or rights of review.
7. All projects must be pre-approved by the student's teacher and begun at any time during the year preceding the pre-registration date. A previously investigated topic may continue under investigation, but data previously displayed must be treated as "research." New data must be generated, displayed, and conclusions drawn based on this data.
8. Displays entered in the Inland Science and Engineering Fair must have been selected at a local school system science fair or selection process.
9. The Science Fair Committee and all cooperating groups will assume no responsibility for loss or damage to any exhibit or part thereof. Students assume responsibility for all displayed equipment. It is recommended that valuable components including original notebooks or data not be left on public display.
10. All regulations conform to the recommendations of the California Education Code. Their enforcement is required for all projects and participants.

TOBACCO, ALCOHOL, AND CONTROLLED SUBSTANCES

1. No project may use consumable alcohol, tobacco or illegally obtained narcotics and/or controlled substances. This includes surveys that compare use of the above substances; (e.g. smokers vs. non-smokers).
2. Controlled Substances (drugs, chemicals, anesthetics, etc., the use of which is regulated by the Comprehensive Drug Abuse Prevention and Control Act of 1970) must conform to existing local, state, and federal laws. Such substances may not be exhibited at the Fair.

Inland Science and Engineering Fair Safety Rules

1. Electrical materials:

- ◆ Electrical materials must meet standard safety laws and practices.
- ◆ No exposed electrical hazards.
- ◆ Only UL approved grounded power cords and/or surge protectors are allowed. (Cords are NOT provided, you need to bring your own)
- ◆ Batteries with open top cells (wet cell batteries) are not permitted.

2. Lasers and Rays:

- ◆ Any device (vacuum tubes, lasers, etc.) that generates dangerous rays must be properly shielded.
- ◆ Only Class I and Class II are the only type of lasers allowed to be operated at the fair and must be designed to prevent human access to the beam during operation.
 - The laser will be operated only by the exhibitor and will be disconnected when not being operated.
 - The display will bear the sign: **LASER RADIATION: DO NOT STARE INTO THE BEAM.**
- ◆ Class III or Class IV lasers are **NOT** allowed at the fair.

3. Biofuels

- ◆ Research involving biofuel/alcohol production must conform to the U.S. Department of the Treasury, Alcohol and Tobacco Trade Bureau regulations. Permits must be acquired prior to the production of any alcohol in the project. Regulations and permit applications may be found at the government website at:
<http://www.ttb.gov/forms/F511074.pdf>.
Copies of all permits must be present with the project. If you have any questions, you may call their offices at 888/882-3277 or 513/684-7150.

4. Chemicals

- ◆ Only chemicals listed in Appendix C, page 138-139 of the "science Safety Handbook for California Public Schools" (current edition) may be used under the direct supervision of a qualified teacher/adviser.
- ◆ No projects that use a chemical with a hazard rating of five or with asterisks will be allowed to participate in the fair.

5. Projectiles:

- ◆ Projects that do not comply with current California Code sections (Penal and Health and Safety) will **NOT** be allowed in the fair. Examples include but are not limited to:
 - Sealed devices containing dry ice or other chemically reactive substances designed to produce an explosion by a chemical reaction,
 - Rocket-propelled projectile or similar device with an engine greater than 0.60 inch in diameter
- ◆ Projects involving the discharge of a single or multiple projectiles through mechanical, chemical or electromagnetic means may NOT be displayed at the Fair. Examples include but are not limited to:
 - Archery, tackle, airguns, firearms of any type, electromagnetic railguns, etc.

6. Fire regulations prohibit the use of highly flammable or combustible materials in project displays.

DISPLAYS WILL BE INSPECTED FOR COMPLIANCE

Inland Science and Engineering Fair Categories

Elementary Division (4-5)

(Separate awards are given for each grade level, except for team projects which are judged at the highest grade level represented in the project.) Team projects, which are produced collaboratively with two to three students in any of the eight areas of science listed below, are judged along with the individual projects in the same category.

- 1. Behavior Science - (01)**
Studies of behavior, conditioned responses, learning, psychiatry or psychology in humans and other animals.
- 2. Biology Animals - (02)**
Studies of vertebrate or invertebrate zoology.
- 3. Biology/Other Kingdoms - (03)**
Studies of plants, fungi, protists and bacteria.
- 4. Chemistry - (04)**
Studies of the chemical and physical properties of organic and inorganic materials.
- 5. Consumer Science - (05)**
Examination, comparison, analysis, testing of manufactured devices or trade name chemicals, materials, etc. Product quality, safety and consumer satisfaction.
- 6. Earth Sciences - (06)**
Studies of geology, meteorology, oceanography, astronomy and space science.
- 7. Environmental Education - (07)**
Projects using biological systems/organisms to study the impact of natural and man-made changes on our environment.
- 8. Math - (08)**
Studies in geometry, topology, number theory, statistics, computer graphics, artificial intelligence, and modeling or simulations.
- 9. Physics - (09)**
Studies of electricity, magnetism, aerodynamics, energy, physical properties of matter and applied mechanics.

Junior & Senior Division (6-12)

Students in Junior Division (grades 6-8) and Senior Division (grades 9-12) may compete in the following categories:

Category	Examples	Related Categories
<p>1. Aerodynamics/ Hydrodynamics (Junior Division Only): Studies of aerodynamics and propulsion of air, land, water, and space vehicles; aero/ hydrodynamics of structures and natural objects. Studies of the basic physics of fluid flow.</p>	<p>Effect of Dimples on Golf Ball Flight; Airfoil Stall Characteristics; Effect of Fins on Water Rocket Stability; Low Drag Launch Lug for Model Rockets.</p>	<p>Ballistics studies comparing other than different shapes or surface textures belong in Materials Science or Applied Mechanics. Senior Division projects appropriate for this category belong in Applied Mechanics.</p>
<p>2. Applied Mechanics & Structures: Studies concerning the design, manufacture, and operation of mechanisms, including characteristics of materials, dynamic response, and active/ passive control. Testing for strength and stiffness of materials used to provide structural capability; studies and testing of structural configurations designed to provide improved weight and force loading or stiffness capabilities. Senior Division only: includes aerodynamics, hydrodynamics, and fluids projects.</p>	<p>An Underwater Glider for Marine Exploration; Measurement of CD Variations; Tensile Strength of Composite Materials; Bridge Design; Can Foam Make Steel Stronger?; How Does Arch Curvature Affect Strength? How Do Different Foundations Stand Up to Earthquakes? Sr. Div: "Arrow" Dynamics; Measuring the Effect of Aerodynamic Design on Vehicular Drag.</p>	<p>Junior Division aerodynamics/ hydrodynamics projects belong in Aerodynamics/ Hydrodynamics. Engineering studies of soil stability during earthquakes belong in Earth Sciences.</p>
<p>3. Behavioral & Social Sciences: Studies of human psychology, behavior, development, linguistics, and the effects of chemical or physical stress on these processes. Experimental or observational studies of attitudes, behaviors, or values of a society or groups within a society, and of the influences of society on group behavior. Includes gender and diversity studies, anthropology, archaeology, and sociology. Studies may focus on either normal or abnormal behavior.</p>	<p>A Study of the Senses in Stress Management; Racial Awareness in Infants; AIDS Awareness in Teens; The Effect of Authority Figures on Group Decision Making.</p>	<p>Animal behavior projects belong in Zoology or Mammalian Biology. Junior Division projects studying memory, learning, and sensory perception belong in Cognitive Science.</p>
<p>4. Biochemistry/ Molecular Biology: Studies at the molecular, biochemical, or enzymatic levels in animals (including humans), plants, and microorganisms, including yeast. Studies of biological molecules, e.g., DNA, RNA, proteins, fats, vitamins, nutrients.</p>	<p>Lipoxygenase Influence on Lipofuscin Granule Formation in Bananas; Effects of P1 Precursors on Virus Growth; What Sugars Do Yeast Use? Catalyzed Reactions of Enzymes; Isolation of Pre-mRNA Mutants in <i>Saccharomyces cerevisiae</i>; Determination of Ascorbic Acid Concentration in Orange Juice Using a Redox Reaction; Effects of Food Preparation on Vitamins.</p>	<p>Studies of the physical properties of biochemicals such as oxidation-reduction reactions belong in Chemistry. Functions of major organ systems belong in Mammalian Biology or Zoology.</p>

Junior & Senior Division (6-12)

Students in Junior Division (grades 6-8) and Senior Division (grades 9-12) may compete in the following categories:

Category	Examples	Related Categories
<p>5. Chemistry: Studies in which chemical and physico-chemical properties of nonbiological organic and inorganic materials (excluding biochemistry) are observed.</p>	<p>Isolation, Purification, and Specific Rotation Determination of Ricinoleic Acid; Conductivity of Electrolytes; Does Water Purity Affect Surface Tension?</p>	<p>Chemical studies of metabolic processes (e.g. fermentation and/or yeast), processes mediated by biochemical intermediates (e.g. enzymes), or biological organic molecules belong in Biochemistry. In the Junior Division, projects that deal with the characterization of chemical products in everyday life belong in Materials Science or Product Science (Physical).</p>
<p>6. Cognitive Science (Junior Division Only): Studies of learning, memory, and perception in humans, using human or animal models for human processes. Studies of the effects of chemical or physical stress on cognition. Includes projects on subliminal perception, optical illusions, recall and observations (e.g. reliability of eyewitnesses), and the interaction of different senses.</p>	<p>Does Age Affect Implicit Learning?; The Effectiveness of Flash Cards vs. Computer Scripts; Optical Illusions; Subliminal Persuasion by Television; Eyewitness Identifications; Effect of Curcumin on Memory.</p>	<p>Senior Division projects appropriate for this category belong in Behavioral and Social Sciences.</p>
<p>7. Earth & Planetary Sciences: Studies in geology, seismology, engineering geology, atmospheric physics, weather, physical oceanography, marine geology, coastal processes, and comparative planetology. Studies of the effects of human activity on naturally occurring physical phenomena.</p>	<p>Gravity Current Velocities; Beach Sand Fluctuations and Cliff Erosion; Dependence of Liquefaction upon Soil Composition; Solar Activity and Refraction Properties of the Ionosphere.</p>	<p>Studies concerning pollution caused by human activity belong in Environmental Engineering/Science. Earthquake engineering projects (other than soil stability) belong in Applied Mechanics & Structures.</p>
<p>8. Electronics & Electromagnetics: Experimental or theoretical studies with electrical circuits, computer design, electro-optics, electromagnetic applications, antennas and propagation, and power production.</p>	<p>Satellite Reception Without a Dish; The Gauss Rifle; Transmission of Information by Laser; Effect of Solar Power; Are Maglev Trains Practical?</p>	<p>Projects that merely use electronics to study something else (e.g. hearing in birds) belong in another category (Zoology in this example).</p>

Junior & Senior Division (6-12)

Students in Junior Division (grades 6-8) and Senior Division (grades 9-12) may compete in the following categories:

Category	Examples	Related Categories
9. Environmental Engineering: Projects which apply technologies such as recycling, reclamation, restoration, composting, and bioremediation which could benefit the environment and/or the effects of pollution on the environment.	Newspapers as Mulch; Oil Control; Water Hyacinth: Primary Water Treatment?; What Soil Conditions Best Control Soil Erosion While Assisting Growth?; Designing a New Home Sewer System.	In the Senior Division this category includes projects that fit into the Environmental Science category described below.
10. Environmental Science (Junior Division Only): Projects surveying, measuring, or studying the impact of natural and man-made changes on the environment. Examples include: floods, fires, biohazardous spills, acid rain, earthquakes, air pollution, and water pollution.	The Effects of Fires on Flora and Fauna; Rebirth after the Wild Fires; How Does Water Quality Affect the Abundance and Diversity of Micro-invertebrates; Bacteria Pollution in Our Beaches; Does Fire Stimulate Plant Growth?	Studies performed within a normal physiological range under a sustained environment to examine the effect of substances or conditions on living things belong in the relevant basic science category (e.g., Plant Biology, Mammalian Biology, Zoology, etc.).
11. Mammalian Biology: Studies of growth and developmental biology, anatomy, and physiology in mammals. Studies of the behavior of all mammals (excluding humans) in their natural habitats (or reproductions of them).	Effect of Age on Aerobic Abilities; Peripheral Vision; Correlation of Strength with Gender; Effect of Vaccination on Antibody Development in Neonatal Bovines.	Projects studying physiology of birds, insects, etc. belong in Zoology. Studies of the effect of chemicals on a physiological function may belong in Pharmacology. Studies in which mammals serve as a model for human learning belong in Cognitive Science (Jr) or Behavioral & Social Sciences (Sr).
12. Materials Science (Junior Division Only): Studies of materials characteristics and their static (not in motion) physical properties. Includes measurements and comparisons of materials durability, flammability, and insulation properties (thermal, electrical, acoustic, optical, electromagnetic, etc.).	Which Metal Conducts the Most Heat? What Is the Effect of Duct Tape as an Insulation Material? Sun Protection on the Courts: A Test of Colors and Materials in Tennis Clothing; Which Building Material Disrupts a Wireless Connection the Least?	Studies of fundamental properties of matter (e.g. specific heat) belong in Physics. Studies comparing and testing natural and manmade products for effectiveness in intended use in real-world, consumer-oriented applications belong in Product Science (Physical).
13. Mathematics & Software: Studies in geometry, topology, real and complex analysis, number theory, algorithm analysis and optimization, artificial intelligence, computability, computer graphics, modeling and simulation, programming environments and languages.	Maximally Dispersed Points on a Sphere; Computer Modeled Evolution; Knot Mathematics; Coupled Chaotic Systems and Stability; Mathematical Optimization of Multiple Precision Multiplication; Partitions of Positive Numbers; Neural Network Model of Vision.	Projects using mathematics or computers as a tool in the study of a different subject belong in that category. Studies that merely model or simulate biological or physical systems usually belong in this category. Computer hardware projects (e.g., comparing algorithm speed on different hardware platforms) belong in Electronics & Electromagnetics.

Junior & Senior Division (6-12)

Students in Junior Division (grades 6-8) and Senior Division (grades 9-12) may compete in the following categories:

Category	Examples	Related Categories
14. Microbiology: Studies of epidemiology, genetics, growth, physiology, pharmacology, and toxicology of bacteria, fungi, protists, algae, or viruses.	Studies of Light Producing Bacteria; Effect of Light Before and After UV Damage to E. coli.	Projects using bacteria as a tool to study another subject belong in that subject. Projects studying yeast and fermentation belong in Biochemistry. Studies of the effectiveness of natural and commercial products killing bacteria (etc.) belong in Product Science (Biological).
15. Pharmacology/ Toxicology: Studies of the effects of drugs, chemicals, and other factors (e.g. biological, physical, electromagnetic) at the cellular or higher levels on plants and animals.	Vitamin Deficiencies; Copper Toxicity of Marine Embryos; The Effects of Petroleum Contaminated Water on Aquatic Plants; Effect of Caffeine on Daphnia; Effect of Insecticides on Mosquitoes; The Effects of Intermittent and Constant EMFs on Drosophila.	Projects which study the effect of fertilizers on plant growth belong in Plant Biology. Toxicology studies on microorganisms belong in Microbiology. In the Junior Division, studies of the toxic effects of environmental changes on biological systems belong in Environmental Science.
16. Physics & Astronomy: Studies of the physical properties of matter, light, acoustics, thermal properties, solar physics, astrophysics, orbital mechanics, observational astronomy, and astronomical surveys. Computer simulations of physical systems are appropriate in this category.	Emissivity as a Function of Geometry; Do High Temperature Superconductors have a First Order Phase Transition?; Chaotic Pendulum; Photometric Detection of an Extrasolar Planetary Transit; Jupiter's Decametric Emission; Solar Activity and Geosynchronous Satellites.	Studies of the physical properties of other planets themselves (as opposed to their orbits) belong in Earth Sciences. Antennas (i.e., rf electromagnetic propagation studies) belong in Electronics & Electromagnetics. Junior Division projects otherwise appropriate for this category may belong in Materials Science.
17. Plant Biology: Studies of the genetics, growth, morphology, pathology, or physiology of plants.	The Effects of Organic and Inorganic Fertilizers on Plant Growth; Effect of Rhizobium on Legume Plants (Pisum); Transpiration of Plants Under Different Light Sources.	Studies which use plants to restore the environment may belong in Environmental Engineering. Studies of the effect of chemicals other than fertilizers on plants belong in Pharmacology. In the Junior Division, studies using plants which involve environmental changes may belong in Environmental Science.

Junior & Senior Division (6-12)

Students in Junior Division (grades 6-8) and Senior Division (grades 9-12) may compete in the following categories:

Category	Examples	Related Categories
18. Product Science (Biological) (Junior Division Only): Comparison and testing of natural and man-made products for quality and/or effectiveness for intended use in real-world consumer-oriented applications. This category is reserved for experimental methods involving biological sciences and processes.	Natural vs. Pharmaceutical Antibiotics; Does Garlic Inhibit the Growth of Oral Bacteria? Antibacterial Soap vs. Antibacterial Gel: Cause for Concern?	Studies of biological organisms and processes not related to a consumer product application belong in their respective Life Science Category.
19. Product Science (Physical) (Junior Division Only): Comparison and testing of natural and man-made products for quality and/or effectiveness for intended use in real-world consumer-oriented applications. This category is reserved for experimental methods involving non-biological, physical sciences and processes.	Water Absorption in Eight Selected Hardwoods With and Without Sealants; Best Plywood for Homemade Skateboards; Cotton, Linen, Wool: Which One Lasts Longer?; Fire Resistance of Roofing Materials; Which Laundry Detergent Works the Best? Shock Attenuation in Baseball Helmets; Effective Sound Barrier Materials.	Studies of basic material characteristics and physical properties not related to a consumer product application belong in Materials Science (Junior Division only).
20. Zoology: Studies of growth and developmental biology, anatomy, and physiology in animals other than mammals. Studies of the behavior of all animals (excluding mammals) in their natural habitats (or reproductions of them).	Hot Fish, Cold Fish: Respiration in Goldfish; Hearing and the Dominance Hierarchy of Crickets; Effect of Gravity on Living Organisms; Invertebrates in Kelp Holdfasts; Auditory Stimuli in Interganglial Neurons of <i>Acheta domesticus</i> ; Bird Responses to Boar Rootings.	Studies of mammals belong in Mammalian Biology. Studies in which animals serve as a model for human behavior belong in Behavioral Sciences.

INSTRUCTIONS FOR APPLICATION

DEADLINE FOR STUDENTS: March 10, 2010

DEADLINE FOR COORDINATORS: March 18, 2010

Students must register online between February 23 - March 10, 2010. Students may obtain the website address from their district coordinator. All information must be completed accurately, and all forms applicable to your project must be included. Applications are to be signed and given to district coordinators who, in turn, will submit all applications to the county office. Keep a copy for your records. **Coordinators, faxed applications are not acceptable.** Applications may be sent by messenger or overnight mail, provided they are received by the application deadline.

Team Projects

Each member of the team must complete a separate application, taking care to list the same project title, and check the "Team Project" box in addition to the category box on the Project Summary as well as list the other members of their team on the front side of the application. All members of the team should submit their applications together.

Some Key Points

- Name:** Your name as you wish it to be listed in the Inland Area Science and Engineering Fair Program. Use correct capitalization and small letters for first and last names.
- Address:** Your mailing address. If your mail is delivered to a post office box, use that address.
- Home Phone:** If your application is incomplete or rejected, we would like to contact you as soon as possible.
- School** Your school's name is listed in the brochure and should be clear.
- District:** Do not abbreviate your district's name as many of them will be the same.
- County:** Use the following capitalized abbreviations for the county in which you reside: RV=Riverside; IN=Inyo; MO=Mono; SB=San Bernardino
- Project Title:** Do not abbreviate unless necessary, but please avoid extremely long titles. Your title need not be the same as it was in your qualifying fair, but must be the same as it will appear on your display at the Inland Area Science and Engineering Fair.
- Requirements:** Indicate whether you have a floor display or a table top project. If you do not indicate a choice, you will be assigned a table top space. If you need an extension cord you must bring your own (100 foot extension cord is recommended) and you must bring duct tape to safely secure the extension cord. **The Fair has no extension cords available.**
- Certifications:** If your project involves the use of human or animal tissue(s), live vertebrate animals, or human subjects, complete the Certification Form and submit to your district coordinators.
- Signatures:** Both you and a parent or guardian must sign and date the form when indicated. Your district Science Fair Coordinator must sign and date the form, certifying that your project complies with the rules and regulations. Your district coordinator must certify that you are eligible to enter the Inland Area Science and Engineering Fair.

Note: Applications must be received as a packet containing all completed forms from a district with a completed green transmittal sheet. NO individual applications will be accepted.

Elem. App p.1

Elem App. p2

Jr/Sr app p1

Jr/Sr. App p.2

PROJECT ABSTRACT EXAMPLES

Your abstract is important. Your judges will receive this abstract in advance of the Fair so they can preview your work. Your judges will be able to better understand your work and prepare for your interview if you follow these samples or use similar formats.

What Makes Good Electrical Conductors?

Grades 4-5

Objectives/Goals: The objective of my project is to determine which materials make the best electrical conductors.

Methods and Materials: I used wood, plastic, copper, steel, tin, and grass as my materials to be tested. I also used a volt/ohms meter and the test probes to make my measurements.

Results: The meter I used showed the metals to all be excellent conductors and that the plastic and wood did not conduct an electrical current.

Conclusions: My conclusion is that the metals I tested are excellent conductors of electrical current and that neither wood or plastic conducts electricity.

The Effect of Surface Finish on Rocket Drag

Grades 6-12

Objectives/Goals: My project was to determine if surface finish has an effect on the drag of a model rocket. I believe that a model with a smooth surface will have lower drag and will reach higher altitudes.

Methods and Materials: Five model rockets with identical size and shape, but different surface preparations, were conducted. One rocket was left with an unfinished surface, three had surfaces finished to various degrees of smoothness, and the fifth rocket had its surface sealed, primed, sanded to 600 grit, painted, and covered with clear gloss. The rockets were ballasted to weigh the same and flown 10 times each with B5-4 motors.

Results: The rocket with the clear gloss finish consistently reached the highest altitudes of all 5 rockets, while the unfinished rocket consistently reached the lowest altitude.

Conclusions: My conclusion is that surface finish has an important role in model rocket drag and rockets with carefully prepared surfaces will reach higher altitudes.

CALIFORNIA STATE SCIENCE FAIR

2010 APPLICATION ACCEPTANCE CRITERIA

Submission of an Application to the California State Science Fair does not guarantee acceptance to the fair. The Fair has always rejected applications on the basis of inappropriate content and for violations of Fair regulations. Projects which are substandard (poor quality) or incomplete will also be rejected. The basis for this judgement of quality is exclusively the Application Form and Project Summary on its reverse side, particularly the Project Abstract. The California State Science Fair does not consider other submitted materials or awards won at affiliated fairs.

The following is the official list of acceptance criteria:

1. Acceptance to present a project at the California State Science Fair requires the approval of an Application submitted by the student(s).
2. Applications without a Project Abstract will be rejected without recourse to appeal. Each student on a team project must complete his/her own personal Application, but the Project Abstract need only be supplied by one member of the team. As long as the Abstract is provided by at least one member, other members of the team may choose to provide or omit the Abstract without penalty.
3. Abstracts must demonstrate a level of knowledge and investigation that is appropriate or the grade of the student and discipline and which is beyond what is considered common knowledge. In other words, the investigations must demonstrate knowledge that is not found in middle or high school textbooks.
4. Abstracts must communicate ideas effectively, use standard English, and be legible.
5. The methodology and experimental design should be appropriate for the student's grade and discipline, and should include the following where appropriate:
 - ~ experiments are appropriate to achieve the stated objective;
 - ~ the sample size and/or number of trials is sufficient for projects where replication is necessary to establish validity;
 - ~ the statistical analysis is appropriate for the student's grade and discipline; the conclusion is relevant to the stated hypothesis.
6. Projects which are merely demonstrations, display collections, and literature searches are generally not acceptable. In order to be acceptable, the student must use the demonstrations, collection, or search results, to extract new information not previously known to the student.
7. Applications may be rejected for failing to satisfy the rules of the Fair.
8. The Application fees are not refundable if the application is rejected.
9. All rejected Applications will be reviewed by the Directors of Judging and are subject to appeal (with the exception of those applications which do not contain an Abstract).

Students, parents, and advisors should be aware that these acceptance criteria are not intended to limit the number of participants but rather, by requiring higher standards for project abstracts, to improve the quality of the Fair and to ensure that all participants are able to effectively communicate their projects to the judges. Only a small percentage of Applications have ever been identified as likely to be rejected. Every Application so identified this year will be contacted in a timely manner.

SBCSS Website for Additional Forms

For additional information on projects using Live Vertebrate animals / Research involving human subjects / tissue(s), organ(s), human part(s), or animal parts, see the SBCSS website under the RIMS Inland Science & Engineering Fair. Forms can be downloaded from this site. Copy and paste the URL address below into your browser to go directly to the RIMS Science Fair information.

<http://www.sbcss.k12.ca.us/ess/rimsSciEngr.php>



**Inland Science and Engineering Fair
National Orange Show
689 South "E" Street, San Bernardino
909-888-6788
April 13-14, 2010**



Damus Building Project Setup {Gates 7 for Parking}
Citrus Building Student Orientation-4/14 Awards Ceremony-4/15

**Tuesday's Schedule
For Students**

7:00–9:00 a.m.	Elementary Project Setup (grades 4-5) in Damus Building (Grades 4-5 do not stay on site; not interviewed)
7:00-8:30 a.m.	Junior/Senior Project Setup (grades 6-12) in Damus Building
8:30-9:15 a.m.	Orientation for juniors/seniors in Citrus Building
9:30-10:45 a.m.	Junior/Senior Judging and Interviews in Damus Building
10:45-11:00 a.m.	Break for students (Citrus Building)
10:45-1:30 p.m.	Science Olympics for juniors/seniors on buses in Citrus Building
11:00-12:00 p.m.	Junior/Senior Judging and Interviews in Damus Building
12:00-12:15 p.m.	Break for students (Citrus Building)
1:30 p.m.	Juniors/Seniors dismissed for the day
9:30-3:30 p.m.	Elementary Judging (Grades 4-5 do not stay on site; not interviewed)

E Street

Arrowhead Street

Wednesday's Schedule

9:00 a.m. – 9:00 p.m.	Public Viewing of Projects (Damus Building)
5:30 p.m.	Elementary Awards Ceremony (4/5 th Grades) (Citrus Building)
7:30 p.m.	Junior and Senior Awards Ceremony (Citrus Building)

The Science Fair is open for public viewing on Wednesday, April 14, 2010, 9:00 a.m. – 9:00 p.m. There is no charge for visitation, but organized groups, including school classes, should reserve a specific time by phone (951) 826-6570. Your group's visit should be planned for 1-1.5 hours. School groups should be organized as a properly documented, district-authorized "Field Trip" and students protected by insurance provisions. All participants and buses will enter through Gates 7 or 8 off Arrowhead Avenue per agreement with the National Orange Show. Tour groups must have at least one adult for each 8 students.

Reminder: The science fair is only a two-day event. Projects are judged on Tuesday and the awards ceremonies will be held on Wednesday. Our elementary awards will be held at 5:30 p.m. on Wednesday, followed by the junior & senior awards at 7:30 pm.

Note: Pick up all projects after your awards ceremony. Projects left in the Damus after 9:30 p.m. will be discarded by the National Orange Show.

