2015 SAN MATEO COUNTY STEM FAIR

Project Categories and Display Regulations

The San Mateo County STEM Fair project categories are aligned to the four Disciplinary Core Ideas (DCI) from the Next Generation Science Standards. They are also compatible with San Francisco Bay Area Science Fair categories and the California State Science Fair categories.

Each Disciplinary Core Idea (in red) has one or more STEM Fair Categories (numbered) Examples of project titles in italics. **Note: It is the teachers' responsibility to determine the appropriate category for each students project. However, the fair director has the discretionary right to re-classify projects if they are not categorized correctly.

Physical Sciences

1. **Chemistry** - physical chemistry and chemical reactions - thermodynamics, non-biological and inorganic chemistry
Ex: *Conductivity of Electrolytes, Does Water Purity Affect Surface Tension?; Isolation, Purification, and Specific Rotation of Determination of Ricinoleic Acid*

2. **Physics** - motion, force, energy, waves (electromagnetism), stability, aerodynamics, hydrodynamics
Ex: *Chaotic Pendulum, Effect of Fins on Water Rocket Stability, Transmission of Information by Laser*

3. **Materials Science** - static physical properties, characterization of static materials,
Ex: *Can Foam Make Steel Bridges Stronger?; Which Metal Conducts the Most Heat?*

Life Sciences

****Important! Life Science projects involving (even if only observing) human subjects, invertebrate or non-human vertebrate animals, recombinant DNA, tissues, pathogenic agents, or controlled substances must be submitted to the Science Review Committee (SRC) prior to starting the project. Download the form from: http://stemfair.net/assets/2015-SRC-Form.pdf For studies involving human subjects, an Informed Consent Form for each participant must be included with the project. This includes any type of survey or tests with humans.**

4. **Biological Systems** - pharmaceutical, heredity, molecular biology, microbiology, botany, zoology (non-behavioral)
Ex: *Determination in Orange Juice Using a Redox Reaction; Vitamin Deficiencies; Transpiration of Plants Under Different Light Sources*

5. **Behavioral Sciences**- cognitive, social, & health science, survey projects
Ex: *A Study of Senses in Stress Management; AIDS Awareness in Teens; Does Age Affect Implicit Learning?*

Earth, Space, and Environmental Sciences

6. **Earth, Space, and Environmental Sciences** - ecosystems, ecology, interactions, climate change, erosion, weather, Earth and human activity, astrophysics, and oceanography
Ex: *The Effects of Fire on Flora and Fauna; Solar Activity and Geosynchronous Satellites; Dependence of Liquefaction upon Soil Composition*

Engineering, Technology and Application of Science - (Engineering is anytime you build a product or device that solves a problem or improves something (not including Genetic Engineering)

7. **Engineering, Technology and Application of Science** - product science, comparing consumer oriented applications, prototype designs, structural engineering and analysis, mechanical Inventions, renewable resources
Ex: *How Do Different Foundations Stand Up to Earthquakes?; Are Maglev Trains Practical?*

8. **Math and Software** - computer sciences, geometry, topology, morphology, number theory, algorithm analysis, modeling and simulation, programming environments, programming languages
Ex: *Knot Mathematics; Partitions of Positive Numbers; Computer Modeled Evolution*

Display Regulations

Displays exhibited at the Fair should be limited to a Free-Standing Presentation Board (see specifications below) succinctly explaining all aspects of your research in words, graphs or pictures. While some models/displays may be allowed it is preferable to show the model/display in photographs or if the action of the model is essential to the project (as in an engineering project) then capture the action on DVD which can be submitted using the DVD guidelines below. If your project required Informed Consent Forms then a binder with all forms and the project title on the front cover (no names) should accompany your display. Optionally you may display your lab notebook. As a reminder – NO names (student, school, teacher) or photos of the students should appear on any of the displayed items this includes the back of your presentation board and the contents of your notebooks.

Presentation Board Specifications

The display communicates the essential parts of the project in a quick, visual way. The display should be sturdy, free standing, colorful, simply illustrated, well labeled, and attractive. The title and section headings on the board should be clearly visible and readable from a distance of three to four feet. Use complementary colors as background and bright or dark letters for the titles of each section. Use appropriately sized typeface for titles, subtitles and text. The title should have the largest print on the display board and be neatly done. Enlarge graphs and use color for the different lines or bars. Use photographs that are clear and sharp, with the correct exposure. There should be an explanation under each photo and graph.

A standard sized Presentation Board is a free standing tri-fold measuring 48 inches wide by 36 inches tall. Typical material is corrugated cardboard or foamcore though masonite, pegboard, or wood boards are also acceptable.

Cardboard and Foamcore trifolds are available at most office or craft stores.

DISPLAY HEIGHT: Standard TriFold is 48" wide by 36" high – the 3 panels are 12"- 24"-12" respectively. A display can be made larger by stacking boards – the maximal height is 108 inches or 3 standard boards stacked. If you choose to submit a board taller than the standard height of 36", please ensure that it is sturdy enough to remain free-standing and can easily be moved. **Note:** Boards taller than 72 inches are extremely difficult for judges to read and not recommended.

DISPLAY WIDTH: The width of each display is limited to a **48 inch wide tri-fold.** To accommodate all fair entries equally, each student is allotted 36 inches of table space. If you choose to submit **a FLAT presentation board** it will need to fit into the same footprint as a standard tri-fold and therefore **should not exceed 39 inches in width** and must also be free standing.

Setting up your Presentation Board: Set the entire display board flat on the floor and arrange the various parts before beginning the final assembly. Be certain all titles, graphs, photos, and text are lined up properly and in place before gluing them down. Use spray adhesive or rubber cement instead of glue or glue sticks. Make sure the edges of the paper are glued down securely to the backing to prevent peeling or drooping later. All this attention to detail will result in a display board that is attractive, easy to read and as neat as possible.

Rules for Exhibits

- Each Student will have 36-39 inches of table space with about an 18 inch deep area to place any notebooks or other items in front of their presentation board. If your model or demonstration is larger please do not plan to leave it with your display – Take pictures or use the DVD option. Exception for large notebooks containing Informed Consent documents
- There are no electrical outlets available in the exhibit area so if you need to show some device requiring electricity please plan to submit a DVD. Secure the DVD to your project board so judges can review it at judging time.
- **The following should not be brought to the fair** and should only be shown in photos or DVDs: live, dead or preserved plants, vertebrate or invertebrate animals or parts (including embryos, microbial cultures, algae or fungi), liquids of any kind, dangerous or combustible solids or gases, glass or breakable objects, Soil/Dirt,

toxic materials, any flammables, any drugs, alcohols, tobacco or controlled substances, any sharp objects, petri/agar dishes, firearms, projectiles, railguns, etc.

- Displays: 1.5 ft deep x 4 ft. wide x 3 ft. high (up to 9 ft. high allowed)
- Projects must be free-standing and durable with all parts firmly attached. Provide back support for your exhibit.
- No attachment to walls.
- No electrical, gas or water outlets are available at the fair
- Displays of bacterial/viral cultures, molds and live or preserved plants and animals, animal parts, embryos, etc. may not be displayed during the science fair. Photographs may be used

Note: Projects exceeding these dimensions will not be admitted to the fair. The Executive Committee of the San Mateo County STEM Fair reserves the right to disqualify any exhibit considered unsafe or unsuitable for public exhibition or any project that is considered inhumane treatment of animals or human subjects

PLAN AHEAD—A GOOD DISPLAY TAKES TIME TO CREATE!

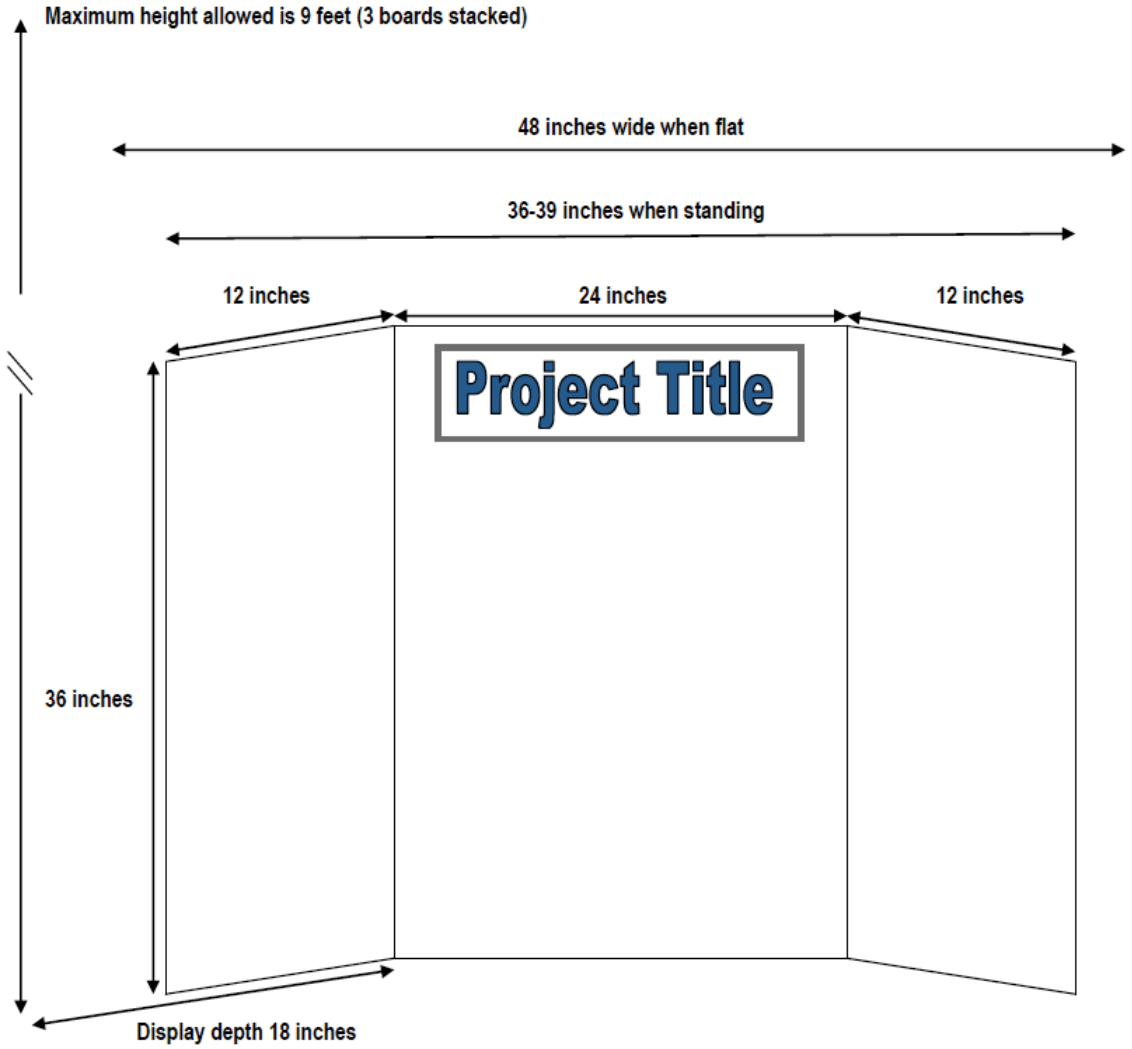

Table space per project is approximately 36-39 inches wide by 18 inches deep.
Displays need fit into allotted space, stand stably and be easily movable.