Exhibit & Presentation Guidelines (grades K-5)

COASTAL BEND REGIONAL SCIENCE FAIR
AT TEXAS A&M UNIVERSITY-CORPUS CHRISTI
JANUARY 27–28, 2017 • sciencefair.tamucc.edu

Important:

- Teachers, parents and students must make safety their first concern.
- All experiments/projects must be approved by the teacher and parent before beginning.
- Any experiment/project determined as unsafe or unethical (per the following guidelines) by the regional science fair will be disqualified.

Registration:

- Required forms by grade level are provided at **http://sciencefair.tamucc.edu/registration.html**.

Questions/contact:

- E-mail: **cbsciencefair@tamucc.edu**
- Web site: **http://sciencefair.tamucc.edu**
- Phone: **361-825-2142**

HOW TO PREPARE FOR A SCIENCE FAIR

A. **TEACHER'S ROLE**

The teacher is the key individual in a science fair. Every teacher involved in a science fair should assume the following responsibilities:

1) Serve as an advisor to the students
2) Recognize the importance of active student involvement
3) Be available when needed
4) Respect the student's ideas and intelligence
5) Encourage students to follow up on their ideas
6) Be generous with praise and enthusiasm
7) Contact interested scientists or professionals for special equipment or resources as needed
8) See that the exhibits arrive on time and that all exhibits are removed from the display area at the designated time following the Science Fair

But most importantly, teachers must understand that this type of activity gives the students a tremendous educational experience and may help them start thinking about future careers in STEM.

B. **PARENT'S ROLE**

Parents are often willing to help in the following ways:

1) Resource Person - May provide expertise on the topic
2) Supplies - May furnish or locate needed equipment
3) Transportation - May take students to library, to meet with resource people, or to gather supplies
4) Place - May provide a garage, nursery, or laboratory

- Each school and/or district is responsible for providing sufficient chaperones at the regional science fair. The number of chaperones required depends on the grade-level being supervised.

K-2: 1 adult per 20 youth
3-5: 1 adult per 40 youth

The suggested number of chaperones and judges per school district will be a % of projects registered.

C. **STUDENT'S ROLE**

While teachers will be available to advise students, the initiative and responsibility belongs to the student. Please use this guide packet and sciencefair.tamucc.edu web site as references.

Plagiarism, scientific fraud, and misconduct, are not condoned at any level of competition. Projects that are fraudulent or are plagiarized may be disqualified at the regional science fair.

THE DISPLAY

Each student must prepare a **DISPLAY** poster, which illustrates the project. All displays **MUST** be on a self-standing backboard. Judges like to see tabulated data and data in graphic form on the display.

A. **BACKBOARD (see diagram on pg. 4)**

The purpose of the **BACKBOARD** is to illustrate the experiment and conclusions derived from the project. For example, a person viewing the backboard should be able to grasp the general idea of the project and conclusions without talking to the student.

The **BACKBOARD** can be constructed from poster board, cardboard, masonite, plywood or other material that will **STAND UPRIGHT**, and can be 3-sided or 2-sided. These are available at local craft and office supply stores.

Size of display boards (inclusive of all materials, headers, decorations, and supports) may not exceed 48" wide, 30" deep, or 72 " in height. Due to space limitations, displays that exceed these measurements cannot be accepted. Written material, drawings, and pictures should be securely attached to the display board. Projects will be displayed on tables 36 inches high.

For a 3-sided board: Each side panel should not be larger than 12" wide and 72" tall.
The middle panel may not be wider than 24" nor taller than 72".

For a 2-sided board: The same overall dimensions stated above apply. The overall dimension of the 2-sided board should not exceed 48" x 72".

Each backboard for K-5 **MUST** include the following information:

1) **Title**
2) **Statement of the Problem or Question**
3) **Hypothesis** - A statement of what is to be investigated, with a possible solution to the problem (Experimental and Comparative Investigations)
4) **Materials** - Materials used to perform experiment or complete the project
5) **Procedure** - List of steps followed during the investigation

6) **Observations/Data** - Pictures or schedules illustrating the experiment; graphic and tabulated results of the investigation (charts, tables, graphs)
7) **Conclusions/Inferences** - Written findings, conclusions, and statement of acceptance or rejection of the hypothesis

B. **PHYSICAL ITEMS IN/ON THE EXHIBIT**

Entrants should not bring any of the equipment or materials used to conduct their investigations to the regional science fair. *Exceptions to this would be completed engineering or construction projects that can be displayed within the space requirements described above.*

Organic materials are prohibited in the display. This includes water, soil, bacteria, etc***.***

Chemicals, explosives, and pharmaceuticals are prohibited in the display.

Electricity will NOT be provided for displays.

Pictures or other illustrations should be used to convey the research process and results to the judges. Pictures, drawings, charts, graphs, etc. should be attached to the backboard. Pictures should include appropriate credit providing the source, date taken, and/or author of the picture.

ORAL PRESENTATION

Each student must be available for interviews with the judges. Exhibits may be visited multiple times by different sets of judges. It is important that students remain at their displays ready to discuss their projects for the full time. The judges may choose to ask questions concerning the project **or** they may ask for a prepared presentation.

The oral presentation may include the following parts:

1) **INTRODUCTION**: A brief statement of the background and goals of the research.

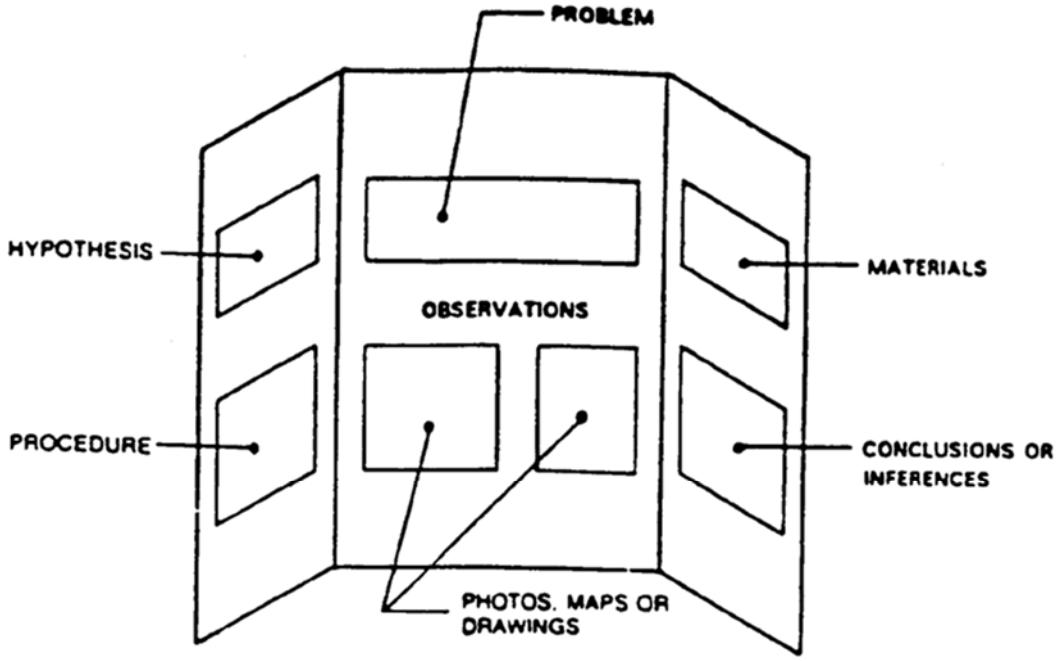
2) **PROCEDURES/ EXHIBIT EXPLANATION**: Step-by-step description of what was done or how the experiment was conducted.

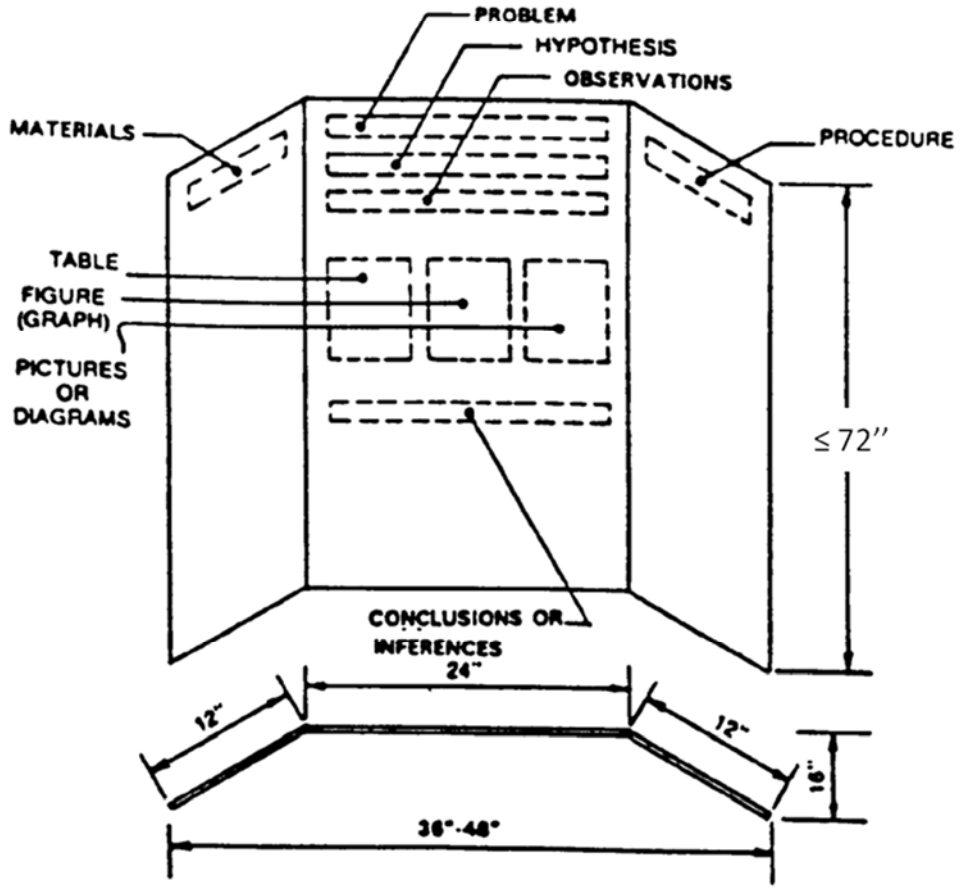
3) **FINDINGS**: Results or observations, including collected data.

4) **CONCLUSION**: Interpretation of the graphs, statistics, and/or results. Application or significance of the findings. How might the findings apply to everyday life?

5) **RECOMMENDATIONS**: Now what? What would you do further if you were a scientist? What new questions come to your mind after completing your experiment?

OPTIONS AND DIMENSIONS





HOW TO PREPARE A SCIENCE EXPERIMENT

A. CHOOSING A SUBJECT

1) Deciding what to do may be the most difficult part. Start by listing subjects you are interested in (i.e. football, sewing, chemistry, music, etc.).

2) From each general subject area, list questions that you think you might be interested in exploring. For example: "How does air temperature affect pressure in a football?"; "How constant is the chlorine content of our drinking water?"; or, "How do the notes of a clarinet and saxophone differ?". Try to make your question as specific as possible.

3) Finally, choose a question that you think you can answer by doing an **experiment**. Before selecting a research topic, do some preliminary research and consider these three questions:
   a) Will it be interesting and safe?
   b) Can I get the necessary equipment or materials to do it?
   c) Will I have enough time to complete it?

B. PROJECT PROPOSAL

Once you have chosen your problem, plan and write out your experiment. In your proposal, you will list your problem, materials and general procedures you plan to use. Submit your proposal for approval to your teacher or advisor **before you begin** (if you change problems or procedures you must submit a new proposal).

C. THE EXPERIMENT (Experimental and comparative investigations)

Once your proposal is approved, follow the timetable your teacher/advisor gives you.

1. RESEARCH

Find as much as you can about your topic. Research information in science books and magazines or interview a scientist or specialist in the area you are studying.

2. STATE YOUR HYPOTHESIS

What do you *predict* you will discover once your experiment is finished? The hypothesis should be written in the form of a statement.

A good hypothesis states the **manipulated variable** (variable being tested) as well as the **responding variable** (variable observed for results). Your hypothesis can either be accepted or rejected. A sample hypothesis might be: "Change in temperature affects the air pressure in a football".

3. BEGIN YOUR EXPERIMENT

a) Make measurements and record your data. Write and follow your procedure carefully. Use scientific language and **metric measurements (3rd grade and above)**.

b) Use a control variable if applicable.
In the experiment above, we will use two footballs. One will be heated and cooled. The other will remain at room temperature. The unaffected one is called the "CONTROL" and allows us to make sure that it is the heating and

cooling of the other football that is causing the change in the pressure and not some other factor, such as humidity and cosmic rays. Each time we sample, we will also check the pressure in our "CONTROL" football. By measuring the "CONTROL", we will also see how much air is lost each time we insert the pressure gauge into the ball.

c) Manage your variables properly and safely.
Make sure all external influences stay the same (CONTROLLED VARIABLES) except the one you are testing (MANIPULATED VARIABLE). The RESPONDING VARIABLE will be the one you are observing for the results.

In our sample experiment, we must use the same footballs, thermometer and pressure gauge each time we measure and keep all other factors (humidity, etc.) constant. The only factor we will change is the temperature (MANIPULATED VARIABLE). We will heat the experimental football in an oven and cool it in a freezer to predetermined safe temperatures. We will then measure and record the pressure (RESPONDING VARIABLE) inside the ball.

d) Have a sufficiently **LARGE SAMPLE SIZE. ALWAYS PERFORM YOUR EXPERIMENT MORE THAN ONCE.**

If you do the same experiment ten times, will the results be similar? Do you think all footballs will react the same way? Should you try other ones to be sure? Is it okay to compare footballs from different manufacturers?

e) Tabulate and present your results under the Observations section of backboard. Tables, charts and graphs are helpful to evaluate the data. You may have to do some statistical analyses to best evaluate your results (averages, means, medians, modes, standard deviation, etc.)

f) From your results, form your conclusions or inferences.
Was your original hypothesis supported by the results of your investigation? Can you do additional experiments to verify your results?

It is also possible that you may have negative results. For example, you may discover that the pressure does not change in the football from -10 degrees C to 35 degrees C. Report these results. Negative results – results that are not what we expected – are sometimes more interesting and scientifically important than when we simply confirm what we think we “know” about a phenomenon. It is important to report data even if it does not support your hypothesis.

D. **MAKING YOUR EXHIBIT AND PREPARE THE ORAL PRESENTATION**

1. Follow the exhibit guidelines given by your teacher/advisor. Make your exhibit look interesting and present all information clearly. Plan ahead to be sure that all lettering and segments will fit.

3. Design your exhibit backboard for easy transport. ***Use photographs of simulations and attach them to the exhibit backboard rather than displaying fragile items. Hazardous items displayed on the backboard are not allowed (see below).***

4. Have a photograph taken of you and your exhibit for your scrap book. Years later you will be glad you did it!

5. When the judging is over, students and teachers are responsible for removing all exhibits between 6:30 pm and 7:00 pm on Saturday, February 27, 2016. Make arrangements with your teacher; be sure all involved parties are aware who is collecting students' boards. Each board that is removed must be signed out.

SAFETY RULES

Anything that could be hazardous while on display is prohibited

Teachers and students must ***make safety their first concern***. ***All experiments must be approved by the teacher before beginning.*** Any experiment determined as unsafe by the regional science fair will be disqualified. No chemicals, animals, or equipment used to conduct the experiment should be included in the display.

Students must follow the safety rules while conducting their investigations and displaying their exhibits.

K- 5 RULES FOR PARTICIPATION

1. **Project Forms (only required of students promoted to the regional fair) can be found at** http://sciencefair.tamucc.edu/registration.html
   - Elementary Division parents (grades K-2) must complete a **Project Approval Form** and submit it with the school's registration packet.
   - Intermediate Division students (grades 3-5) must complete a **Project Research Form which requires parent/guardian approval** and submit it with the school's registration packet.
   - All students participating in the regional science fair must complete a **Code of Conduct/Media Release Form** and submit it with the school's registration packet.

2. **Projects That Are Not Allowed**
   No student in the elementary or intermediate division will be allowed to design or conduct any science project that involves:

   • firearms, explosives, or discharge air pressure canister devices (i.e. potato guns)
   • growing bacteria or mold at home
   • causing pain, suffering, sickness, or death of an animal
   • any activity or substance that presents a danger to the student or the environment, including hazardous chemicals or radioactive materials

3. **Display and Safety Guidelines**
   All student projects must follow the guidelines listed below to be allowed to display in the festival exhibit hall.

   Items Not Allowed
   • **No organisms; living, dead or preserved (plants or animals)**
   • No human/animal parts or body fluids (for example, blood, urine)
   • No human or animal food
   • No bacteria or mold cultures

- No liquids – laboratory/household chemicals including water (Exceptions: water integral to an *enclosed* apparatus or machine)
- No poisons, drugs, controlled or hazardous substances
- No sharp items (for example: syringes, needles, pipettes, knives, tacks, nails)
- No glass or glass objects unless encased or an integral and necessary part of a commercial product (for example, a computer screen)
- No pressurized tanks or containers
- No batteries with open top cells (so that battery acid can be seen)
- No dirt, soil, gravel, rocks, sand, waste product, etc.
- No project, device, activity, or substance that may be deemed hazardous to student health or safety
- No photographs or pictures of animals or people in surgical techniques, dissections, or necropsies

Discouraged Items

- Expensive, breakable, or fragile items.

Allowed and Encouraged Items

- Photographs, drawings, stuffed animals/artificial plants, or imitation (play) food should be used to depict the prohibited or discouraged items. Students should always plan on taking photographs of their project steps as a visual explanation of their effort. Students must ask permission before photographing any other individuals for display on project. Be sure to properly credit/acknowledge all photographers on the display board (Photograph taken by . . .)
- Students may use a computer and printer for written parts of the project
- Electrical projects may use batteries (completely enclosed and used as intended) as sources of electricity

4. Display Board

Display boards must follow the guidelines described on page 3 of this guide.

5. Electricity for Your Display

Electrical projects may use closed-cell batteries. Electricity will not be provided.

6. Project Organization (see http://sciencefair.tamucc.edu/student_guide.html for descriptions of the following divisions.)

A. **Grade Level** - Each project is categorized by grade level or grade level equivalent

B. **Category Division** - Each project is categorized as either Physical/Engineering Science or Life/Health Science.

C. **Investigation Type** - There are four types of projects that students may enter. These "types" are based (in part) on the Science TEKS and are 1) Descriptive Investigations 2) Experimental Investigations 3) Comparative Investigations, and 4) Technology or Engineering Investigations.

7. Parental Help

Some students are fortunate to have parents who have time to help them. However, parents who do the thinking or build the project for them do not really help students.

Parents are encouraged to help their children in these ways:

- Read and discuss the “Rules for Participation”
- Select projects which are appropriate for the child’s age and grade level
- Plan and manage project work, documentation and clean-up times
- Take your child to the public library or other places for research
- Help draw straight lines for a young child
- Listen to your child’s oral explanation of the project
- Ensure the child’s safety

Students should list any parental help in the References and Acknowledgements section of the project.

ANIMAL PROJECT RULES

A. **COMFORT**

The comfort and ethical care of all animals used in any project shall be a prime concern. Animals must be obtained from a reliable source. The following basic needs must be assured:

1) Appropriate, comfortable quarters
2) Adequate food and water
3) Cleanliness and humane treatment
4) Exercise when required for the species of animal

Students **MUST** arrange to provide these basic needs at all times, including weekends, vacations and holidays.

B. **CARE**

No vertebrate animal will be subject to any procedure or condition, including nutritional deficiency experiments, which results, ***EITHER BY INTENT OR NEGLECT***, in pain, distinct discomfort, abnormal behavior, injury, or death (except terminal, nonexperimental, humane euthanasia). The term "vertebrate animal" includes vertebrate embryos, fetuses and fowl embryos.

To assure the humane treatment of animals, a qualified adult supervisor must assume responsibility for the conditions of all living animals used. A "qualified adult supervisor" is defined as an individual who has been properly trained in the techniques and procedures to be used in the investigation. Usually this will be the student's teacher. Occasionally, other trained and qualified adults (parents, scout leader, etc.) may observe and supervise the project.

C. **DISPOSITION**

When planning the experiment, the student **MUST** arrange for the humane disposition of all animals involved after the experiment is completed. This may be done by placing them in an environment where they are assured of continued humane care, by releasing undomesticated species into a suitable wildlife environment, or by arranging for their humane euthanasia by a qualified adult. Students must not perform euthanasia on vertebrate animals under any circumstances.

D. **DISPLAY**

No animals, animal parts, or animal fluids can be included in the display.