Elementary Science Fair
Student/Parent Handbook

Congratulations on your decision to participate in Science Fair 2016!! As an elementary participant, you can choose to enter one of the following types of projects:

A. EXHIBIT: Demonstration, Model, or Display

An exhibit can be a demonstration, a model or a display. A demonstration or model describes how or why something works. A display reveals details about the topic.

DISPLAY BOARD ELEMENTS:

TITLE of Demonstration, Model or Display
RESEARCH REPORT gives background information about exhibit (may include diagrams and pictures)
EXPLANATION of what the exhibit shows
CONCLUSIONS
REFERENCES and ACKNOWLEDGEMENTS

CRITERIA FOR JUDGING
Exhibit: Demonstration, Model, or Display

	HIGHEST				LEAST
• Title – Student states project title	1	2			
• Research Report – Student provides written background Information	1	2	3	4	5
• Exhibit Explanation – Student describes what the exhibit shows. (Pictures of the student doing each step are encouraged.)	1	2	3	4	5
• Conclusions – Student describes what was learned	1	2	3	4	5
• References and Acknowledgements – Student credits all sources	1	2	3	4	5

EXAMPLES

Demonstration

You might want to demonstrate how light reflects off different objects. For instance, you might arrange a set of Lucite mirrors (no glass) or even pieces of foil to show how a beam of light from a flashlight bounces from one reflective surface to another. Your report could explain that light travels in straight lines. Many demonstrations are found in books like "Mr. Wizard," which are available from the library.

Model

You might like to make a model of a bridge out of wood or sticks. Diagrams could show the parts, and your report could explain how a bridge is constructed.

Display

You might design a display about monkeys, showing pictures of different types of monkeys. Your report could explain where the monkeys live, what they eat, and describe some interesting habits.

Remember to check the list of prohibited/discouraged/allowed items in the "Elementary Division Rules for Participation".

B. EXPERIMENT

An experiment is a test of a question to which you do not already know the answer. To test your question, you must follow the steps of the scientific method. The display board elements below lists these steps.

DISPLAY BOARD ELEMENTS

TITLE of experiment
PROBLEM: What question are you trying to answer?
DEFINITIONS: Explains the meanings of any special words stated in the "Problem."
HYPOTHESIS: This is what you think will happen before you start to test.
BACKGROUND INFORMATION: What do books, articles, and the Internet say about your topic? **EXPERIMENTAL MATERIALS:** What items do you need to perform your experiment? **EXPERIMENTAL PROCEDURE:** These are the steps you follow to test your problem.
RESULTS: What happened? (Use tables of data or graphs plus a description.)
CONCLUSION: What is the answer to the question in your "Problem?" How do you explain your results? **REFERENCES and ACKNOWLEDGEMENTS:** Books, resource people, articles (include the title and author) or specific Web sites (include the date the site was accessed). Neither search engines, such as Google and Yahoo, nor Wikipedia are scientific sources.

CRITERIA FOR JUDGING

Experiment	LEAST				HIGHEST
• Title of Project – Student states project title	1	2			
• Problem – Student asks a testable question or states his/her goal	1	2	3	4	5
• Definitions – Student knows the meaning of the words in the problem	1	2	3	4	5
• Hypothesis/Goal – Student predicts what the results will be or what they are trying to achieve	1	2	3	4	5
• Background Information – Student provides written research information of test	1	2	3	4	5
• Experimental Procedure – Student describes steps of test or construction	1	2	3	4	5
• Experimental Materials – Student lists items needed for test or construction	1	2	3	4	5
• Results – Student describes what happened; tables and graphs display data.	1	2	3	4	5
• Conclusion – Student answered the question posed in the problem or met their goal	1	2	3	4	5
• References and Acknowledgements – Student credits all sources	1	2	3	4	5

EXAMPLES

Do ants like diet soda? Do batteries of the same brand last the same amount of time? Does warm water freeze faster than cold water?

Remember to check the list of prohibited/discouraged/allowed items in the "Elementary Division Rules for Participation".

Students should always plan on taking photographs of their project steps as a visual explanation of their effort.

Rules for Participation

****Note: Failure to follow rules could result in disqualification. If you have a question about the rules, contact Deborah Castellano or Cheryl Pitt****

Projects That Are Not Allowed

No student in the Elementary 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 of any type**
- 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

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 on Display on day of Science Fair (pictures are encouraged instead)

- **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 liquids – laboratory/household chemicals including water
- 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 products, 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 sources of graphics and 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 as sources of electricity.

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 students do not really help them. 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 help them navigate the internet 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 must list any parental help in the References and Acknowledgements section of the project.

Science Fair Schedule

Jan. 9—Registration form is due to child's teacher, form located in the back of this packet

Jan. 20—School Science Fair, RRCA Gym

- Students can set up project in gym beginning at 7:30 am
- Students pick up project from gym at end of day
- All elementary projects that participate in the RRCA Science Fair will be invited to participate in the Regional Science Fair

Feb. 17—Project Set-up for Regional Science Fair (3rd-6th grade participants only), 2:00-7:00 pm, Palmer Event Center

Feb. 18—Regional Science Fair, judging and Explore Science Day

- More detailed schedule will be given out at RRCA Science Fair

STEPS FOR COMPLETION OF A SUCCESSFUL PROJECT

PURCHASE NOTEBOOK

• You will use this notebook as a journal or log book to write down everything you do. You need to date every entry and note how much time you spent on each item. Begin writing in your journal when you start brainstorming ideas.

2. BRAINSTORM GENERAL IDEAS

• What are your interests or likes? Sports, dance, computers, animals, food, gross stuff, building things… etc.
• What kind of science interests you?
• Plants (Botany)
• Animals (Zoology)
• Human Body (Anatomy)
• Electricity, Gravity, Force, Light (Physical Science)
• Chemicals, Acids/Bases (Chemistry)
• Memory, Illusions, Training (Psychology)
• Volcanoes, Rocks, Weather (Earth Science)
• Product Testing (Consumer Science)
• Surveys (Statistics)
• **Look at project idea books, and/or Web sites like www.sciencebuddies.org**

3. CHOOSE TYPE OF PROJECT

• **Exhibit: Demonstration, Model, or Display*** – shows how or why something works the way it does.
This information can be found in a book; the facts are known.
• **Experiment*** – uses the steps of the scientific method to answer a question to which you do not know the answer without testing. In general, students 4th grade and above should be performing experiments, not doing demonstrations.
* *See the next 2 pages for step-by-step instructions for each type of project.*
• **Important** – Pay attention to the difference between an experiment and a demonstration. Many people and books confuse these two categories. Below are two examples of project ideas relating to rainbows, one as a demonstration and the other as an experiment.
Demonstration: How are rainbows formed?
Experiment: Can you form a rainbow by using a liquid other than water?

4. COMBINE YOUR FAVORITE IDEAS INTO A PROJECT

For a Demonstration/Model:

1. Remember to write a journal entry every time you do any work on your project. List the date and how much time you worked for each entry. Be sure to take pictures as you go that can be used in your "Journal/Log book" or on your project board.
2. Decide if you want to construct a model. Be sure to leave enough time for this since some models can take a lot of time to create.
3. If you don't make a model, decide what you'll use instead, such as photographs, drawings or objects from home.
    1. February 17-20, 2016 • Palmer Events Center • www.sciencefest.austinenergy.com

4. Begin background research by taking notes from books, websites or articles that talk about your subject. These will be your "References." You will know you have completed your research when you can discuss your topic in your own words for about 5 minutes.
5. Once research is completed, begin organizing all the information into paragraphs. This will be the "Background/Research" section that you'll put on your project board.
6. You'll also need to have a "Written Explanation" section on your board in which you explain what your project is about.
7. Create a section called "Conclusions" in which you talk about what you learned and what you could improve upon with your model.
8. Don't forget to include "Acknowledgements" on your project board (names of the people who helped you with your project and how they helped).
9. Pay close attention to the layout of the project board. The order of information should make sense and be visually interesting. Be sure to include all the required elements, photos, and a log book. As a last step, add a creative "Title" and be sure to list the person who took the photos on the board.
10. Be sure you understand and are able to talk about what you've learned from your project.
11. Practice presenting your project to an adult.

For an Experiment:

1. Remember to write a journal entry every time you do any work on your project. List the date and how much time you worked for each entry. Be sure to take pictures as you go that can be used in your "Journal/Log Book" or on your project board.
2. You will need to identify the problem. The "Problem" is the question that your experiment is trying to answer. *The question must be something that you're able to test.*
3. Formulate a "Hypothesis." A hypothesis is a guess at what you think will happen when you test your experiment.
4. Find the "Definitions" of any important words that are written in your Problem Statement or your Hypothesis.
5. Begin background research by taking notes from books, websites or articles that talk about your subject. These will be your "References." You will know you have completed your research when you can discuss your topic in your own words for about 5 minutes.
6. Once research is completed, begin organizing all the information into paragraphs. This will be the "Background/Research" section that you'll put on your project board.
7. Make a list of the "Materials" that you will need to conduct your experiment.
8. Write up your "Procedure," or the steps that you will follow when doing your experiment. Be detailed so that someone reading your project board could perform your experiment, using just your instructions.
9. An experiment must consist of at least 2 groups. One group is the "Control" and the other is the "Variable." Both groups are identical, except for one specific element. The "Variable" is the specific element that is different; it is the very thing that you are trying to test. (An example experiment might be to test a stain remover to see if it removes stains any better than washing with no stain remover. The stained garments, your wash technique, and drying technique would be exactly the same for both groups, with one exception. In the Variable group, you would use a stain remover. In the Control Group, you would *not* use a stain remover.)

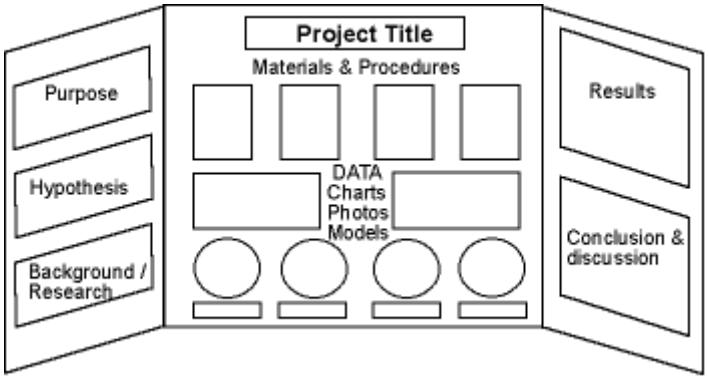
10. Use a timeline to plan how long it will take you to complete your experiment and create a project board. If you will need live subjects (people, plants, or animals), be sure to allow enough time. (Remember, plants take a while to grow.)
11. Perform your experiment. Record the "Results" which tells what happened. Remember that a good experiment will have results that you can clearly measure. Use a char t and/or a graph to clearly show your results on your project board.
12. After you find your Results, form a "Conclusion" paragraph which answers the question in the Problem Statement and talks about what happened in your experiment. Be sure to include ways to improve your experiment.
13. Don't forget to include "Acknowledgements" on your project board (names of the people who helped you with your project and how they helped).
14. Pay close attention to the layout of the project board. The order of information should make sense and be visually interesting. Be sure to include all the required elements, photos, and a log book. *An example of a project board layout is on the next page.*
15. As a last step, add a creative "Title."
16. Be sure you understand and are able to talk about what you've learned from your project.
17. Practice presenting your project to an adult.

Display Board Guidelines

The display should be eye-catching and creative; yet straightforward and well organized.

Your display board needs to communicate your work. You need to use a self-standing display. A standard three-panel display board (also known as a tri-fold) works well.

By looking at your display board, an observer should be able to clearly see your purpose and/or hypothesis, experimental data in the form of charts and/or graphs and a shortened version of the conclusion in your project paper. Arrange your graphs, charts, tables, photographs and/or diagrams neatly across your display board. You want to give your board a "professional" or "polished" appearance. Hand written words can give a messy look to your hard work.



** This is just an example of how a board could be arranged. All the elements that should be on your board are listed on the first and second page of this document.

Remember these tips:

- The real purpose of the display is to summarize the project. It should not contain any extra data or unnecessary graphics.
- The audience is seeing the project for the first time. Make sure everything is explained clearly.
- Required categories, such as question, hypothesis, procedure, materials, results, and conclusions, should be arranged in a logical sequence on the display board.
- Charts, graphs and tables should be clearly labeled, with units of measurement clearly indicated; all photos need to have credits of who took the pictures. Any illustrations or clip art needs to be documented.
- *Judges are really looking for a student's ability to tell them what they did and what they learned from their experiment.*
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2017 Science Fair Registration Form

****This form is due to your teacher no later than Jan. 9, 2017****

Name: _____

Grade: _____

Teacher: _____

Project Title: _____

Parent Email: _____

Project Type:

- ☐ **Demonstration, Model or Display**
- ☐ **Experiment**

Does your display require electricity?

- ☐ **Yes**
- ☐ **No**

Regional Science Fair for 3rd-6th grade is Feb. 18. If your student advances to Regional Science Fair, can you commit to go?

- ☐ **Yes**
- ☐ **No**

I have read the Elementary Science Fair packet and agree to abide by all of the rules and regulations. I understand that failure to abide by the rules and regulations could result in disqualification of the project.

_____ _____

Parent Signature **Date**