Dear Parents,

Wrightwood Elementary School will be holding a Science, Technology, Engineering and Mathematics (STEM) Fair on Wednesday, April 1, 2020, during school hours and open to parents and family from 5:30 pm-6:30pm. Your child is invited to create either a science project or a technology and engineering project to be entered in the fair. The STEM fair project is intended to be completed at home. The projects will be displayed at school on the evening of the STEM Fair.

STEM Fairs provide an opportunity for children to be creative in science, to have pride in themselves and their work, and to experience the hands-on scientific method. STEM Fair Projects provide additional stimulation for students to actively apply their knowledge and learn methods of critical thinking through problem solving in math, engineering, technology and science. They allow parents an opportunity to participate in one aspect of the academic performance of their child. Finally, they provide an opportunity to integrate curriculum, i.e., Science, Math, English, History and study/research skills.

This packet provides you with all the information that is necessary to produce a STEM Fair Project by your child. Projects may be brought to school on March 31st and placed behind cafeteria stage if necessary. Projects must be picked up after end of STEM Fair. **Late entries or entries missing student name will not be judged.**

While this project is entirely optional, we encourage your child to participate in the STEM Fair as an additional science experience to enhance our students’ science skills and knowledge. We look forward to seeing your wonderful science fair projects at our STEM Fair.

Sincerely,

Wrightwood Elementary School PTG

✂︎——————————————————————————————————

STEMFAIRPARTICIPATIONREGISTRATION

**Please turn in this form no later than March 13th**

Yes,mychildplanstoenteraprojectintheSTEMFair

Child’sName\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Teacher/Grade\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ParentSignature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**My Child will submit a project in the category of:**

**Science \_\_\_\_\_\_\_\_\_ Technology and Engineering \_\_\_\_\_\_\_\_**

My child is doing this project with another student. Please list other student’s name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**April 1, 2020**

***7:20 am Set-up.*** Doors will open at 7:20am. Students will set up projects at designated table based on grade level. Projects may be placed behind cafeteria stage after school on March 31st if necessary. **Make sure your name and grade is on project or it will not be placed in the appropriate area to be judged.**

***Project judging will take place during the school day.*** Students will be pulled from the classroom to talk about project & answer any questions judges may have.

***5:30 - 6:30 Parents can come to the Cafeteria to see the projects and the results will be on the projects.***

First, Second & Third Place ribbons will be awarded at each grade level

If you have any questions or need any additional help, please contact Monica Ciccarelli @ 818-590-4191 or Mon61081@gmail.com

**Science Category**

**Using the Scientific Method**

We are encouraging the complete use of the Scientific Method. The following pages contain detailed instructions about how to create, conduct, and display a science experiment utilizing the Scientific Method.

**Scientific Method**

The Scientific Method is a systematic approach to conducting scientific investigations.

**Question:** Form a question about something you want to investigate

**Research:** Gather information about the topic before the experiment

**Hypothesis:** The prediction (educated guess) about what will happen

**Procedure:** The plan to conduct the experiment

**Results:** Data collected from the experiment

**Conclusion:** What was learned from the experiment

**Topic**

Before you can conduct an experiment, you need to find a topic of interest you would like to investigate. The first step in creating your project is to decide the topic. There are many areas of science to choose from. It is important to narrow down what it is you want to investigate. Some topics include: Astronomy, Biology, Botany, Chemistry, Computers, Ecology, Engineering, Geology, Medicine, and Zoology.

**Question**  *(also known as problem or topic)*

State what you want to learn more about in the form of a question.

**Research**

Before forming a hypothesis, research your topic to find out as much as you can.

* Books
* Libraries
* Parents
* Teachers
* Experts
* Scientists
* Government agencies
* Personal knowledge
* Web sites
* Business

**Hypothesis**

Next, state your hypothesis (educated guess), a statement of what you think will happen. You must be able to test your hypothesis to prove whether it is true or false.

**Procedure**

To make the experiment scientific, the hypothesis must be tested more than once.

**Materials**

List all the items you will use to conduct your experiment, including the quantities of each item.

**Experiment**

Write down the step-by-step order in which you will conduct your experiment. State the variable or variables that are important to the experiment. The *Experimental variable* is the one condition that you change during the experiment. It is what you are testing or comparing. *Controlled variables* are the conditions that need to remain the same during the experiment so that they do not affect the results.

**Results**

Record the data you collected during your experiment. Charts, graphs, pictures, and journals are ways to display the information that was gathered. Keep notes about all aspects of your project. This can be done by recording in a journal with the dates, times, and activity that was completed.

**Conclusions**

Was your hypothesis correct or incorrect? You do not have to be correct to have a successful experiment. What did you learn and what would you do differently next time?

**Sample Project**

**Title:**  Gatorade Growth

**Problem:** Do plants grow faster with energy drinks?

**Hypothesis:** I think that if I give a plant Gatorade, and another plant plain water, the plant with water will grow faster than the plant with Gatorade.

**Procedure:**

**Materials:**

\* Four potted plants \* Glue

\* Ruler \* Water

\* Dropper \* Gatorade

\* Measuring Cup \* Chipboard

 \* Construction Paper \* Camera

 \* Writing Paper

**Experiment:**

1. Put four potted plants in the sun for four weeks.
2. Label each pot 1-4
3. Each day, put 10 milliliters of water in pot 1 and pot 2. Then, put 10 milliliters of Gatorade in pots 3 and 4.
4. Each day, measure and record the height of each plant to the nearest centimeter.
5. Take pictures to visually record the plants’ progress
6. At the end of four weeks, see which plant grew the most

**Experimental Variable:**

Plain Water and Gatorade

**Data:**

Plain Water Plants

Date Plant 1 Plant 2

 Water Height Water Height

3/4 10 ml 7 cm 10 ml 7 cm

3/5 10 ml 7 cm 10 ml 8 cm

3/6 10 ml 8 cm 10 ml 8 cm

3/7 10 ml 9 cm 10 ml 10 cm

3/8 10 ml 10 cm 10 ml 10 cm

3/9 10 ml 11 cm 10 ml 12 cm

Gatorade Plants

Date Plant 3 Plant 4

 Water Height Water Height

3/4 10 ml 7 cm 10 ml 7 cm

3/5 10 ml 7 cm 10 ml 8 cm

3/6 10 ml 8 cm 10 ml 8 cm

3/7 10 ml 9 cm 10 ml 9 cm

3/8 10 ml 9 cm 10 ml 9 cm

3/9 10 ml 9 cm 10 ml 10 cm

**Results:**

Plants with water only : Plant 1 grew 4 cm, from 7 cm to 11 cm. Plant 2 grew 5 cm, from 7 cm to 12 cm.

Plants with Gatorade only: Plant 3 grew 2 cm, from 7 cm to 9 cm. Plant 4 grew 3 cm, from 7 cm to 10 cm.

**Conclusion:**

My hypothesis was correct. The plants with water grew better than the plants with Gatorade. I believe this was because the formulation of the energy drink was better suited for people. However, I believe that plants can benefit from energy drinks made especially for them.

**How to Display Your Project**

The project must be able to fit on a student’s desk (24 in long and 15 in deep). Science three-panel display boards are encouraged, although other means of display are acceptable. There is no height limit. The display boards can be purchased at Wal-Mart, Target and Michael’s Craft stores.

**Display Tips:**

* Check spelling and neatness
* Make it colorful with labels
* Include pictures, graphs, illustrations, charts, diagrams and models

**Sample Display Board Layout**

|  |  |  |
| --- | --- | --- |
| ProblemResearchHypothesis | **Project Title**MaterialsExperimentData | ResultsConclusion |

**Engineering and Technology Category**

This category is intended for the students that enjoy science but are more interested in the technological sciences. 1st, 2nd & 3rd place awards will be given in this category for each grade level. Students should provide a list of references if they used any for their project. Students should also include a brief written description explaining their project to include its purpose. The Sample poster board layout is listed below as well. They should also be prepared to present their project at the fair.

**Ideas for this category include:**

Computer Programming, 3D Modeling, Game Design, Website Design, Computer Graphics, Digital Video Production and Robotics.

**Judging Rubric for Engineering and Technology Category**

Students will be asked to run their programs for the judges and explain them orally. Judging will be based on this rubric.

|  |  |  |  |
| --- | --- | --- | --- |
| **Area** | **Minimal** | **Partial** | **Mastery** |
| Documentation - 10% Did student(s) include citations for sources and permissions for non-student produced materials? | NONE of the required documentation present. | SOME or most required permissions present. | ALL required permissions present OR none needed. |
| Complete and Functional - 15% Did student(s) complete the entire project? | Project is incomplete. | Project is partially complete. | Project is complete. |
| Creativity - 20% Did student(s) use a higher level of creativity throughout the design process and oral presentation? (Nervousness should NOT count against the student) | Minimal levels of creativity shown in the project design and oral presentation. | Students display lower levels of creativity in the design process and/or oral presentation.(Nervousness should NOT count against the student) | Student displays a high level of creativity throughout the entire design process. The oral presentation is unique, well-planned, and creative.(Nervousness should NOT count against the student) |
| Understanding - 25% Did student(s) demonstrate a solid understanding of the software for project development? | Student displayed little to no understanding of the software/medium used. | Choice of software/medium may have been inappropriate for the project. Student does not show a full understanding of the software used. | Mastery in the choice and use of software/medium to enhance the project. |
| Intended Purpose - 30% Did all elements of the project work together to serve the intended purpose? | No elements of the design fit the intended purpose of the project. | The Project is lacking important elements for a full realistic purpose. | Project is complete with elements for a finished product to serve its intended purpose. |

Sample board for the Engineering and Technology Category

|  |  |  |
| --- | --- | --- |
| Project Type:Materials/Programs/Math Used: | Project TitleCreation Process/Math Processes Involved: Pictures or drawings of the building process.Project Goals:What should it do? | Real World Applications:What did you learn? |

**Make Your Project a Success**

* **Start Early:** Don’t wait till the last week to start your project. Gathering materials and setting up experiments takes time.
* **Repeat the experiment:** Your experiment must be repeated at least once to make it scientific.
* **Keep records:** Record all your work in a journal. It’s easy to do, just record all the dates, times, and any important data. When it is time to write your report, all the information needed is in one place.
* **Make it your own:** Parents are encouraged to help and support as needed. However, the best learning will come from the effort put in by the student.
* **Be creative:** This is an opportunity for you to investigate something that interests you. Great discoveries have come from children dreaming up ideas that have never been tried before.
* **Neatness counts:** A great experiment presented in a sloppy manner, won't be well received. Take the time to check spelling, accuracy of the information presented and the neat, orderly manner in which your science display is presented.
* **Visual aids:** Graphs, charts, diagrams, pictures, samples and models are extremely helpful to display your science project.
* **Keep it safe: *Don't display anything that will be dangerous to any people viewing your work (i.e. ,chemicals, live creatures, live electrical items, sharp or breakable objects). Please do not use Animals in your experiments.***
* **Have fun:** You can learn a lot about science and have a good time, too!