SPANISH LAKE ELEMENTARY SCIENCE FAIR PARENT NIGHT OCTOBER 19, 2021

Mrs. Nayeli Quintana

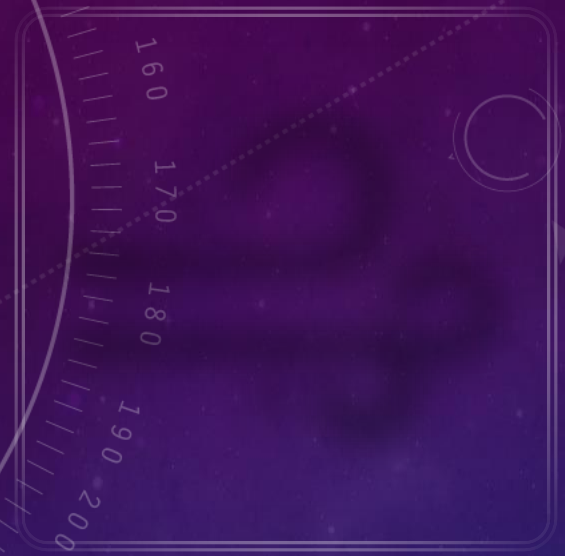
Science Coach

TAKE NOTE!

- ALL 3rd-5th grade students are required to complete an individual Science Fair Project
- SLE's Science Fair officially started yesterday, October 18th and will run until December 3rd
- Different teachers and/or grade levels may have different deadlines, please be aware of your child's specific deadlines
- Projects will be completed and submitted in the form of a PPT on OneDrive

TITLE

- The title may be the problem statement, HOWEVER, a short and catchy title draws more attention.
- Make sure it relates to the project.



WHO WILL WIN*D*?

SAMPLE STUDENT

MRS.QUINTANA

SECTION 510

PROBLEM STATEMENT

- A well written problem statement is TESTABLE, MEASUREABLE, and SPECIFIC.
- The problem statement is written in the form of a question.

PROBLEM STATEMENT

- Which aerodynamic blade design will cause a wind turbine to generate more spins, a flat blade or curved blade?

HYPOTHESIS

- The hypothesis is an educated guess as to what you believe will happen.
- A hypothesis is written in the form of "If_____, then _____."
- The hypothesis is never right or wrong, it is either PROVEN or DENIED by the experiment.

HYPOTHESIS

- If a pinwheel is designed with curved blades, then it will generate more spins caused by wind energy than if designed with flat blades.

MATERIALS

- Materials are written as a list
- All items used in the experiment must be listed
- The materials list must be specific in quantity, size, brand, etc.
- All quantities MUST be written in Metric units, customary units must be converted before listing.

MATERIALS

- (2) 195 mm white plastic straws
- (2) size 1 paper clips
- (1) small Play-Doh pack
- (2) 220 mm x 220 mm sized construction paper
- Scissors
- Tape
- Fan

PROCEDURES

- Procedures are numbered and written in sequential order.
- A verb is to be used at the beginning of each sentience.
- The last procedural step must reflect repeating the experiment two more times to show a total of three trials.

PROCEDURES

Cut	1.) Cut two 220mm x 220 mm squares from construction paper.
Cut in	2.) Cut in triangles to leave five blades on each square.
Curve	3.) Curve the five edges of one pinwheel design and leave the other one as is.
Attach	4.) Attach a paper clip to the center of each pinwheel square and pierce it through the top of a straw.
Insert	5.) Insert the straw bottom into a small ball of Play-Doh to hold the unit in place.
Set	6.) Set a timer for one minute.
Blow	7.) Blow air from a blow dryer set to low power on top of the pinwheels and record the number of spins in a minute.
Record	8.) Record the data.
Repeat	9.) Repeat the experiment two more times with each of the pinwheels.

VARIABLES

- There are THREE types of variables; the INDEPENDENT variable, the DEPENDENT variable, and the CONTROLLED/CONSTANT variable.
- **Independent Variable**-The ONE thing you change in the experiment, what you are testing.
- **Dependent Variable-** The outcome because of what you change on purpose.
- **Controlled/CONSTANT Variable-** The things that you maintain the same in the experiment.

VARIABLES

Independent Variable- The design of the blade.

Dependent Variable- The amount of times the pinwheel will turn in one minute.

Controlled Variable- Same straws, same Play-Doh, same paper clips, and same construction paper.

DATA

- Data must be represented in three different forms.
- Pictures, tables, graphs, etc. depending on your experiment.
- When using pictures to represent data DO NOT include identifying features of students. Student faces are PROHIBITED.

DATA
PINWHEELS AT WORK

Curved Blade Design

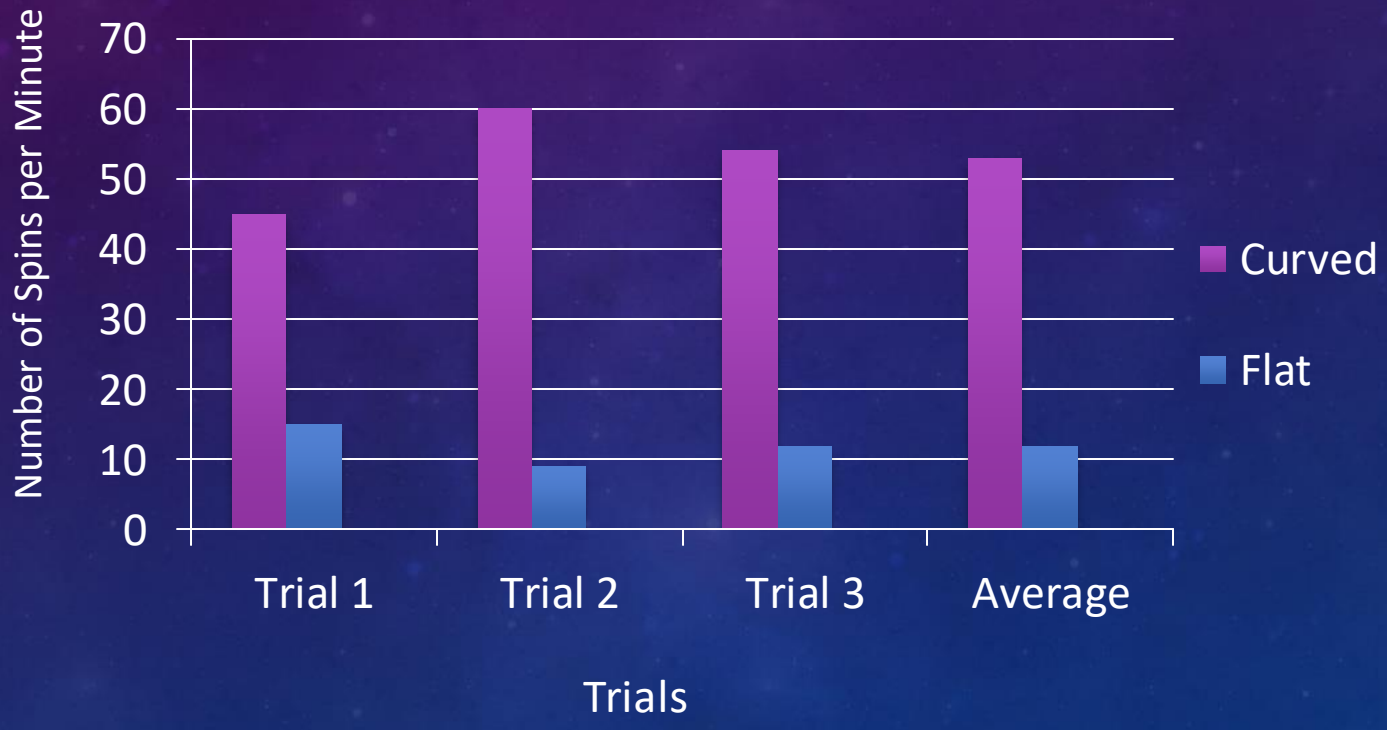
-VS-

Flat Blade Design

DATA

Curved Blade	Flat Blade
Trial 1-45 spins	Trial 1-15 spins
Trial 2-60 spins	Trial 2-9 spins
Trial 3-54 spins	Trial 3-12 spins
Average-53 spins	Average-12 spins

DATA
CURVED –VS- FLAT BLADES



RESULTS

- When writing the results of the experiment, simply translate your collected data into words.
- Results are written in paragraph form stating the results of each trial and the average for all three trials.

RESULTS

- The curved blade was tested three times for a period of one minute. During the first trial, the curved blade spun 45 times, 60 times during the second trial, and 54 times during the third trial for an average of 53 spins in one minute. The flat blade was also tested three times for a period of one minute. During the first trial, the flat blade spun 15 times, 9 times during the second trial, and 12 times during the third trial for an average of 12 spins in one minute.

CONCLUSION

- Start the conclusion by stating whether the results supported or denied the hypothesis.
- Restate the overall results.
- Tell what could have affected the results.
- State what will be done next time to further enhance the experiment.

CONCLUSION

- The results supported the hypothesis. After conducting three trials with a curved and flat blade on a designed pinwheel, the curved blade on the pinwheel generated more spins caused by wind energy than the flat blade. The curved blade created air pockets that caused the blade to turn more times than the flat one. The construction paper used could have affected the results since it wasn't very sturdy. Next time, I will use a sturdier paper product like cardstock or paper plates.

APPLICATION

- The application is probably the most important component of the Science Fair project.
- Tell how this experiment and its results can be helpful to others, it is the reason why the problem is investigated.

APPLICATION

- This experiment is important and useful to others in many ways. It is important because we need to find better ways to take advantage of natural resources readily available to us. Since wind energy is renewable and always available, it is useful to know ways that we could design blades to get the full usefulness of the wind. This experiment could help people all over the world understand how to better take full advantage of our free-flowing natural resources such as wind.

ABSTRACT

- The abstract is a 250 words or less summary of the entire project.
- The abstract must include;

  -the purpose of the experiment

  -what was hypothesized

  -what materials that were used

  -what procedures were followed

  -the overall results

  -what could have affected the results

  -if the hypothesis was confirmed or denied

  -what will be done in the future

ABSTRACT

- The purpose of this experiment was to find out which blade design, curved or flat, generated more spins on a pinwheel. It was hypothesized that the curved blade design would generate more spins than the flat blade design. Construction paper was used to create pinwheel blades that were attached to a plastic straw with a paper clip being held down by Play-Doh . A paper pinwheel was designed with curved blades and one with flat blades. A blow dryer set to low power was used to generate wind energy for one minute on each of the pinwheels for three trials. In each case, the curved blade generated more spins than the flat blade. The sturdiness of the construction paper may have affected the results. It would be interesting to find out if the results would be the same if a different type of paper product was used like cardstock or paper plates. The hypothesis was confirmed. In the future, other pinwheel designs will be tested using sturdier paper products to see if the curved blade continues to generate more spins.

BIBLIOGRAPHY

- The bibliography must be written in a specific format depending on what sources were used to help with the experiment.
- Sources may be the internet, books, articles, and interviews.
- Please refer to page 12 in the Science Fair Handbook for specifics.
- DO NOT write google.com!!!

BIBLIOGRAPHY

- Science Buddies. (2014, September 2). *Make the Wind Work for You!*. Retrieved October 10, 2014 from http://www.sciencebuddies.org/science-fair-projects/project_ideas_Aero_p040.shtml
- Layton, J. (2008). How Wind Power Works. *HowStuffWorks, Inc*. Retrieved October 10, 2014 from http://science.howstuffworks.com/wind-powe3.htm
- Parker, Steve. The Science of Air. Chicago: Heinemann Library, 2005.

ADDITIONAL INFORMATION

nelyquintana@dadeschools.net

Thank You!