

Group Member(s) \_\_\_\_\_

Block \_\_\_\_\_

## **2018 5<sup>th</sup> Grade Science Fair Project**

It's Science Season here at CVES and we're all pretty excited. In 5<sup>th</sup> grade, we have an all- grade level science fair during the day on Thursday, March 15 which is required. The all-school science fair which is held the evening of March 15, will be optional but strongly encouraged as I will be giving out extra credit to these students that participate in the evening fair. **We will be working on the student's project in class but there will be times where work will have to be completed at home, such as the experiment itself.**

As stated in our Washington State K-12 Science Standards, "Science is an active process that involves thinking in systems, asking and answering questions through investigations, and applying science and technology to solve real-world problems." So, what better way to learn about science than to "do" it?" This project requires **parental approval**. Once your student has explained the project with you and you are **aware of the commitment involved** please sign the attached document that has the student's project proposal. If you have any questions or concerns regarding this project, feel free to contact me via email, [norgardb@svsd410.org](mailto:norgardb@svsd410.org) You can also visit the 5<sup>th</sup> grade Science Fair website at: <http://cves5th.weebly.com/science-fair.html>

I'm expecting a high level, 5<sup>th</sup> grade project that provides the students with a challenge, in which a lot of work and investigation is required. The students will need to conduct an **investigation**, not create a demonstration, there is a big difference and we have spoken about this in class at length. The science project will be graded and used for a large portion of the trimester 3 grade for science. I have attached the rubric that I will be using for grading.

The students will initially complete a Project Proposal (attached to the back of this document) that will be signed by both their parents and by their teacher before proceeded on in the investigation. This will allow the students to fully appreciate what it will take to complete the investigation. See the **Guidelines for Time Management** listed below to ensure they are progressing in a timely manner.

The most important thing for the students to remember is that this is their project. That means that your student is responsible for the work, however parents and teachers are there to give them support and help along the way. Your support is greatly appreciated.

**Be creative and have FUN!**

## Guidelines for Time Management

Due Date	Section Assignment
<b>** Friday, February 16</b>	<b>Parent Signature &amp; Teacher Authorization</b>
	<b>Project Proposal</b>
	Question
	Hypothesis & Variables
	Materials & Procedures
<b>**February 17 – March 4</b>	<b>Conduct Experiment (At Home)</b>
<b>**March 5 - 9</b>	<b>In Class Work</b>
<b>**Monday, March 12</b>	Assembly of Display Boards in Class
<b>**Wednesday, March 14</b>	5 <sup>th</sup> Grade Science Fair Projects Due
<b>**Thursday, March 15</b>	Class & School Science Fair

**\*\*The following are to be used as a guideline and a rough draft for completing the project with all the required information\*\***

### Title

Your title should be something catchy that has to do with your project. For example: if you are doing a project on electricity, your title could be “Making Sparks,” or if it is on batteries, it could be “All Powered Up.”

Please write your title below. Remember all words are important in a title, so don't forget your capitals.

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### Introduction

Explain the purpose for conducting the experiment. Make sure to include research/background information. This is the “who cares?” section. In other words, why are you doing this project? What are you trying to find out? Why might this project be interesting to you or others?

**Example Purpose** (written in the form of a statement):

The purpose of this experiment was to find out which color babies prefer. The information from this experiment might be helpful for people who design toys and clothes for babies.

Write the purpose of your experiment below.

The purpose of this experiment \_\_\_\_\_.

The information from this experiment might be helpful for \_\_\_\_\_.

\_\_\_\_\_.

### Question

This is where you should ask, “What do I want to know?” and will help you when writing your purpose.

**Example Question** (written in the form of a question):

Which color do babies prefer most?

Write your question:

### Hypothesis

The hypothesis is an educated guess that tries to answer a question or solve a problem that you are trying to find out more about. The hypothesis is done after you do your research about the topic and **before you do any experimenting.**

**Remember: If you already know the answer, you shouldn't be doing this project!** Your hypothesis is an “I think ....because....” statement.

**The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them. ~William Lawrence Bragg**

### Example of a Hypothesis

I **think** babies will prefer the color blue **because** my little sister has all blue toys and really likes to play with them.

Write your hypothesis below.

I **think** \_\_\_\_\_ **because** \_\_\_\_\_

\_\_\_\_\_.

### Materials

For this section, you need to list out what you used in your experiment (this should be the same list as the one found in the “Materials and Equipment” section of your project). The more specific you are the better? Don't just write “plants, write “Three string bean plants.” Also, don't forget to include measurements. Rather than listing “milk,” list “1/2 cup milk.” You can think of this

section as a recipe that someone else can follow if he/she wants to do your experiment too.

Example of a Material list:

Bad Material List	Good Material List
<ul style="list-style-type: none"><li>• Water</li><li>• Watch</li><li>• Ruler</li><li>• Dirt</li></ul>	<ul style="list-style-type: none"><li>• 20 Liters of Water</li><li>• Stop watch with second hand</li><li>• Metric ruler with millimeters listed</li><li>• 3 cubic meters of potting soil</li></ul>

Please complete the material list below.

Material List
<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>

### Diagram

A diagram of the investigation set-up with labeled variables, amounts, times, #s of etc. can be as simple as a stick figure drawing or as sophisticated as actual photos. You must include a description of the variables.

- **Controlled Variable:** things that are kept the same to make the test fair. If they were not the same the test could be influenced.
- **Manipulated Variable:** the one thing that was changed on purpose used for comparison during the investigation.
- **Responding Variable:** the data that is being recorded, or what you are finding

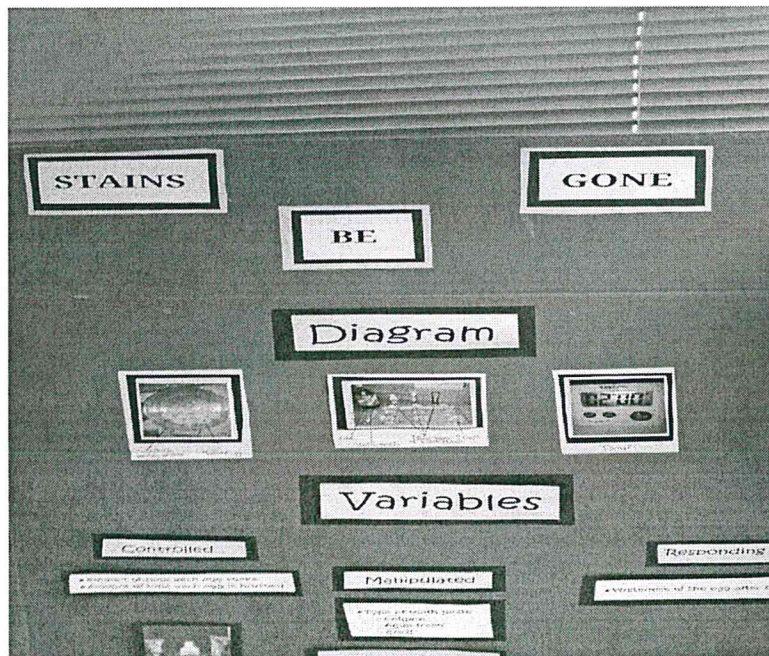
**Sample Variables**

Controlled	Manipulated	Responding
<ul style="list-style-type: none"> <li>• Same size pieces of colored paper</li> <li>• Same high chair to hold baby</li> </ul>	<ul style="list-style-type: none"> <li>• Color of paper</li> </ul>	<ul style="list-style-type: none"> <li>• Time the baby looks at the paper</li> </ul>

Please complete the chart below.

Controlled	Manipulated	Responding

Another Example of a Diagram with the Variables listed.

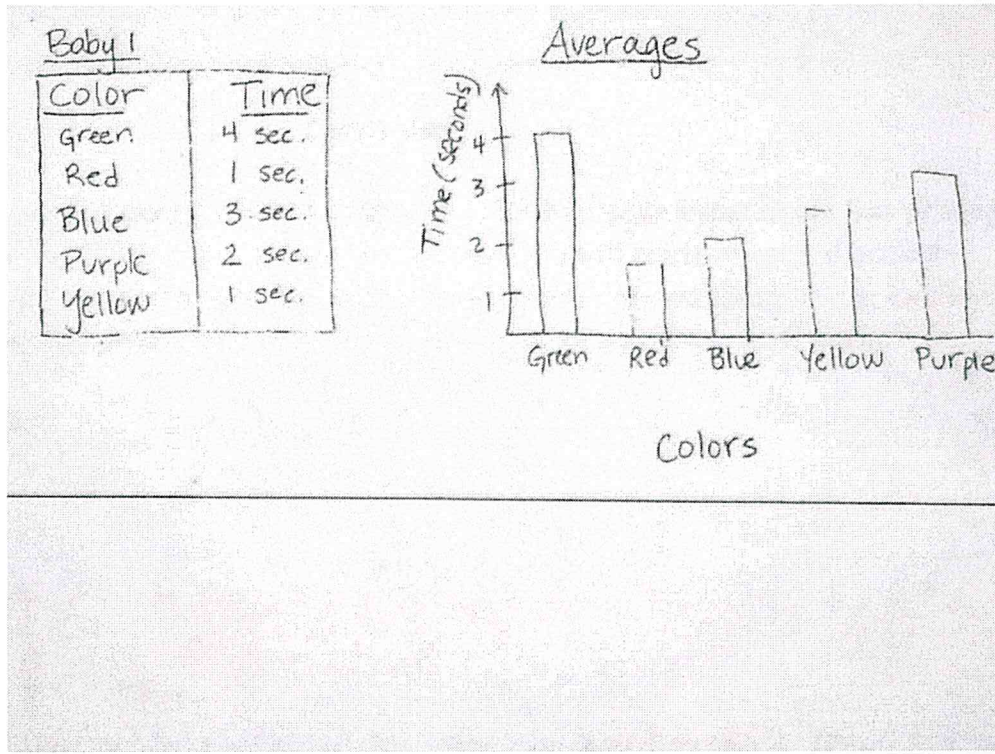




## Data

This section should include any tables, other data, or pictures that you drew or took while conducting the experiment. If you are using pictures, you need to make sure to include a caption explaining what each picture shows.

### Examples of Data



Please include your data in the space provided below.

## Conclusion

Your conclusion should use the following format:

1. Write their prediction
  - a. For example, "I predicted that...."
2. High Data
3. Low Data
4. Comparative language. Compare the high and low data
  - a. This is where you do some math
5. Conclusion.
  - a. I know my prediction was right or wrong because...

Please complete the conclusion below.

## Conclusion



## Display Board (Tri-Fold)

Your display board is where you get to show off your experiment and what you learned! **This will be completed at school and at home.** Remember to think about the order in which you did your project when planning out how to arrange your board; don't paste the results on your board first before the hypothesis. Also, consider what will make your display attractive! Here are some ideas that might help: use colored mats behind your report sections to make them stand out; add photographs or illustrations of your experiment; enlarge your data tables and/or graphs so they are easier to read. Remember that lots of people (in our class or at the Science Fair) will be looking at what you did, so make it something you will be proud of!

**\*\*You will be responsible for supplying your own Tri-Fold Board\*\***

**AS AN EXTENSION**, not a requirement, you may include:

### Discussion

In this section, use what you discovered to answer questions like the following or others you may have.

1. Apply what was discovered to make predictions about real world situations.
2. Take away part of the system or change something in the system and predict what would happen and use your data to support your answer.
3. Design a new investigation that is similar but with a different manipulated variable
4. Discuss why or why not your reasoning was proven or disproven
5. Discuss experimental design flaws and changes that could be made

### Sample Discussion

In my experiment, one design flaw might have been that I showed all the babies the green paper first. By the time I got to the blue, they might not have been interested anymore. If I were to do the experiment again, I would make sure I changed the order in which I showed the colors. Next, if I were to do a different experiment, I would want to find out whether babies prefer their toys to be all one color or many different colors!

## Science Project Proposal

Members: \_\_\_\_\_

Block: \_\_\_\_\_

<u>Question:</u>	
<u>Hypothesis:</u>	
<u>Variables:</u>	<u>Controlled:</u>  <u>Manipulated:</u>  <u>Responding:</u>

<u>Materials:</u>	
<u>Procedures:</u>	

Parent: \_\_\_\_\_

Teacher: \_\_\_\_\_

## Science Fair Project Scoring Rubric

Name(s):

Project Title:

Question:

Display Board		Rating				
Criterion	Description	None	Very Limited	Incomplete	Complete	Superior
Introduction	Explains purpose for conducting experiment, includes research/background information	0	1	2	3	4
Question	Presents a testable question that can be answered with an experiment	0	1	2	3	4
Hypothesis	Clearly states hypothesis <u>and</u> reason(s) to support it. E.g., "When condition X, then Y because..." "Condition X will result in Y because..."	0	1	2	3	4
Variables	Correctly identifies independent (manipulated), dependent (responding) and controls (what was kept constant) <i>*has 1 independent variable</i>	0	1	2	3	4
Materials	Detailed list of all materials used	0	1	2	3	4
Procedure	Step-by-step, clear, detailed instructions; experiment could be easily reproduced	0	1	2	3	4
Data	Neat, organized, labeled; <u>3 or more trials shown</u>	0	1	2	3	4
Conclusion	Explains whether hypothesis was proven or disproven <u>based on data</u> .	0	1	2	3	4
Visual Appeal	Display catches audience attention; creative display of information; neat, orderly	0	1	2	3	4
Skill Level	Project suitable for grade level, shows clear understanding of science concepts	0	1	2	3	4
Project Creativity	Shows originality; unique research question/topic; student-designed/implemented	0	1	2	3	4

VERBAL PRESENTATION		RATING				
Criterion	Description	None	Very Limited	Incomplete	Thorough	Superior
Project Description and conclusion	Student explains steps of scientific method easily and thoroughly without simply reading their project board. Student clearly explains how their <b>data</b> proves or disproves their hypothesis	0	1	2	3	4
Discussion	Examples: Student explains real-world application of results, discusses improvements to their project design or creates a new experiment based off this project	0	1	2	3	4
Overall Presentation	evidence of preparation, shares without being prompted, presentation flows logically, showed understanding of science concepts, can answer basic questions	0	1	2	3	4

Other 5 <sup>th</sup> Grade Requirements		RATING				
Criterion	Description	None	Very Limited	Incomplete	Thorough	Superior
Name(s) and Grade	Your name and grade are neatly, appropriately displayed on your Tri-fold	0	1	2	3	
On Time	All checkpoints met and completed parts turned in on time: <b>March 31: Project/Question approved by teacher</b> <b>April 3-7: Bring tri-fold to work on in school</b> <b>April 19: Project due at school (complete)</b> <b>April 20: Present in class</b>	0	1	2	3	
Effort	It is clear that you did your best work, found ways to work around any problems, and worked hard to communicate your results in an easily viewable/understandable way	0	1	2	3	4

Total points: /66

Questions?

[www.cves5th.weebly.com/sciencefair.html](http://www.cves5th.weebly.com/sciencefair.html)

The following information should be displayed on your tri-fold:

- Your Name, Grade
- Title
- Introduction
- Question
- Hypothesis
- Variables
- Materials
- Procedure
- Data
- Conclusion