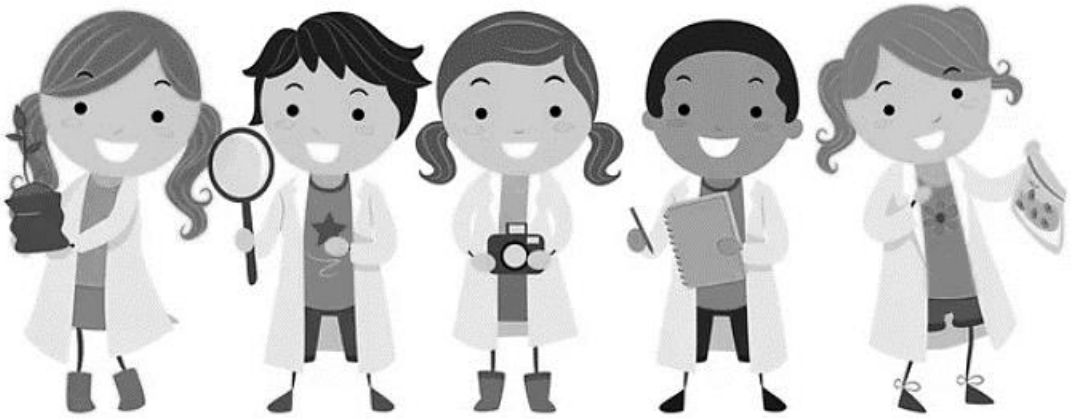
D158 Science Fair
Saturday, January 20, 2024
from
9:00 a.m. until 12:00 p.m.
at
Memorial Junior High School

Lansing School District 158
SCIENCE & ENGINEERING FAIR

2023-2024

3rd Grade – 6th Grade Science Project Guidebook



Name: _____

Grade: _____ Science Teacher: _____

In coordination with Lansing Elementary District 158 Science & Engineering Fair

Sponsored by District 158 & Memorial Junior High School

Edited 11/23

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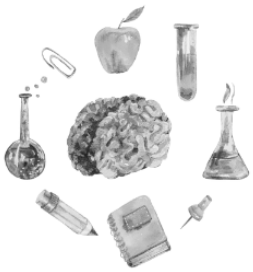


FUTURE SCIENTISTS & ENGINEERS

Enclosed you will find all the wonderful materials that you will need to keep a well-organized account of your journey to a solution, a fantastic invention or proof of how things behave in our world!

As you begin your project you may hit a bump or two, don't get discouraged. All you need to do is refer to this guide and talk to your teacher.

This guidebook should be used to help organize and stay on schedule. Your teacher will give you detailed instructions along the way to help you be successful. Are you ready for the fun to begin and meet the challenge of being a rock-star scientist for District 158? Of course, you are!

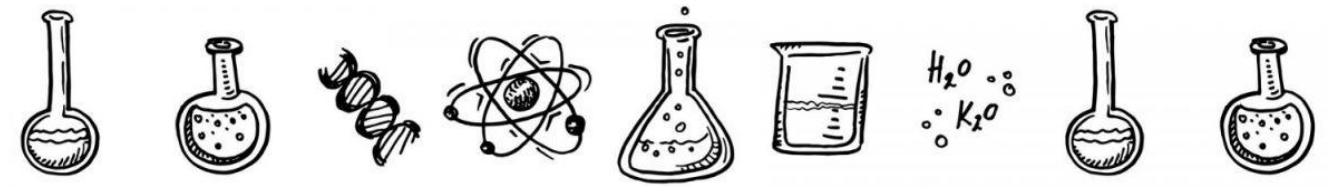
Alright…

Guidelines for Lansing Science & Engineering Fair

Students must design an experiment to investigate a question or problem, design and develop a new model, computer program, or solve a mathematical proof, etc. The experiment must be an inquiry-based experiment or a design engineering process created to solve a real world problem in which quantitative (number) data can be collected, analyzed, and/or interpreted. Students are to apply the knowledge they have gained from the Lansing Public Schools District 158 Science Curriculum.

Projects are encouraged but not limited to grade level curriculum. Projects should be related to the natural world. The experiment should not include growth of cultures (mold) or use of explosives. Experiments should also not cause undue stress, injury, or death to animals.

Tri-fold display boards are available for pick-up in each school office free of charge. Please call Reavis, Oak Glen, Coolidge, Memorial, or Lester Crawl ahead of time to reserve one for pick-up. If you have any other questions, please feel free to contact your child's teacher or school office. We are looking forward to a great year at the Science and Engineering Fair!



Project Guidelines

Conduct an Experiment
Follow the Scientific Method

Create a Visual Display
Use a trifold to create a display representing each part of the Scientific Method

Provide an Oral Presentation
Present your findings to the community at our Lansing Area Science Fair!

It would be a great idea to take pictures of your experiment or design and use them as a part of the final board display!

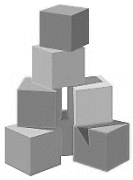
What is ***not*** permitted:

1. Animal experimentation that results in undue stress, injury or death.
2. No primary or secondary cultures taken directly or indirectly are allowed. (Sources from a reputable biological company are allowed.) = No Growing Mold
3. Explosives and other hazardous materials of ANY kind.

Demonstration vs. Experimentation

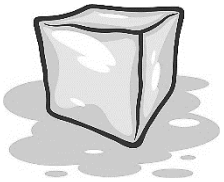
A scientific **demonstration** is like a magic show where scientists show and explain how things work. They perform different tricks or experiments to help us understand something. They already know what will happen because they have done it before. It's like when a magician shows you a trick and tells you how they did it.

On the other hand, a scientific **experiment** is like a fun game or a puzzle. Scientists do an experiment to find out what will happen. They don't know the answer yet, so they have to try different things to see what works. It's like when you play with your toys or build something with blocks to see what happens and then try some other arrangement to see if it still does the same thing. Scientists use experiments to learn new things and discover how the world works.



So, in a nutshell, a scientific demonstration is like a magic show where scientists already know what will happen, and they show it to us. A scientific experiment is like a fun game or puzzle where scientists try different things to find out what will happen and learn something new.

District 158 challenges students to complete a scientific experiment. Many science projects for littles tend to be demonstrations. Think about how you can change one variable of the test to create an experiment. For example, applying heat to ice will make it melt is a demonstration, whereas a test/experiment could be to see which method of melting ice (hair dryer, sunny spot, hot water) would melt the ice fastest and record the time.



As 3rd through 6th graders, you should be testing at least three different independent variables for each experiment and conducting each test three or more trials based on supply and time. If you have a project that can be conducted quickly, try to run multiple trials to show more accuracy. The more data, the more accurate. Make sure to ask the "why" and "how" behind each experiment and dig into the Science behind it all. How will the things you change create a response and how will that response be measured? ***Remember to measure something (speed, time, weight, distance, etc.) that can be entered and recorded in a data table.

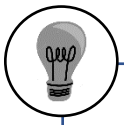
Do the Scientific Method

1. Make an Observation

There are tons of things happening around us all the time.
Focus your attention on something that makes you curious.
What's the purpose of your experiment?

2.Ask a Question

What would you like to know about it?
Why do you want to know it?



3.Form a Hypothesis

What do you think is the answer to your question?
Can you test it?
Make a prediction about what you think will happen.

4. Experiment

Design and perform a test (experiment) to prove your theory. Repeat test at least **three** times! Make sure to collect (numerical) data.

5.Analyze Data

Record your findings in a data table and bar/line graph. Take notes of patterns and make comparisons.

6.Draw a Conclusion

See if your data matches your prediction.
Was your prediction right?
What did you learn? Do you have new questions?

	**Due Dates for Experimental Design**	
Due Date	**Requirement**	**Parent's Signature**
	Question and Hypothesis	
	Experiment Design	
	Materials	
	Methods	
	Note Cards (30)	
	Journal/ Scientist Logs	
	Table and Graph (at least 3 trials)	
	Results	
	Error Analysis	
	Background Research	
	Conclusion	
	Future Studies	
	Reference List	
	Abstract	
	Special Thanks	
	Research Paper Rough Draft	
	Research Paper Peer Edited	
	Research Paper Final Draft	
	Backboard	
	Presentation	

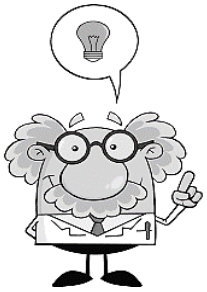
1. Make an Observation

When making an observation for a scientific experiment, it is important to encourage your child to look at something interesting or puzzling. It could be an everyday occurrence or a phenomenon they want to know more about. For example, they might observe that certain objects float in water while others sink.

What are some things you notice about the world around you? What do you see, hear, smell, feel? Do different things happen in different places? What are some activities you enjoy?

Ex: In the morning there is water on the grass. Sunflowers always face the sun.

Choosing a Science Fair Idea



- ❑ **Be creative!**
  Judges like new and interesting project ideas. Think of how many kids have already done projects on mold, growing plants, and food!
- ❑ **Choose a topic that interests you!**
  Keep in mind that you will be working on this project for over 4 months! You don't want to choose something that will bore you to research and test out. If you love sports, do a sports experiment. If you love food, do a food experiment. If you like learning about how the brain works, do a brain experiment. If you like music, do a music experiment! Students seem to score a lot better with judges when they really know their stuff and are excited to talk about it.
- ❑ **Choose a question that does not have a yes/no answer**.
  The whole point of doing an experiment is to test things out to see what works best, or what doesn't work at all. You might end up with a yes/no answer, but you have to find that out. This should not be a demonstration! This means no "Look at the volcano I built!" projects. Your science teacher will be able to approve/disapprove/ tweak your question. Consider: What are you MEASURING? You need a quantitative experiment, and not opinion based.
  - BAD –
    - 👎 Will Miracle Grow help plants grow?
  - BETTER –
    - 👍 What type of fertilizer helps plants grow the tallest?
    - 👍 Is Miracle Grow the best type of fertilizer for plants?
- ❑ **How much $ is this going to cost?**
  Do I need to buy special materials to do my project? How much is a tri-poster board? This stuff adds up! Make sure your parents are cool with it.
- ❑ **How long does this project take?**
  Am I going to have enough time to get all my data? Plants take a few weeks to grow. Can I go out and test enough people? Do I need to get people into a computer lab or to my house? Do I need little kids, big kids, or adults to test on? Do I have access to a computer?
- ❑ **Your project can't hurt or scare people or animals.**
  There are a lot of official rules when it comes to dealing with people, animals, and chemicals. Be sure to ask your science teacher if you have a question.
- ❑ **You are not a rocket scientist… yet**.
  Don't choose a project that is ridiculously hard or will require a lot of help from your parents. This is YOUR project. Sure, parents can help, but YOU should be doing the majority of the work on your own!

Good Websites to Check Out for Ideas

Keep in mind, if you are looking at these websites, so can all the other students that are competing in a science fair this year. Try to find a creative idea or tweak a project you find. Don't just lock in on an idea on their first search page, explore the possibilities out there!

- ✓ https://www.sciencebuddies.org/
- ✓ https://www.generationgenius.com/science-activities-for-kids/
- ✓ https://gosciencegirls.com/1000-science-fair-ideas-scifair-org/
- ✓ https://faculty.washington.edu/chudler/fair.html
- ✓ www.all-science-fair-projects.com
- ✓ www.sciencebob.com
- ✓ You can also use www.google.com or www.bing.com to find more science fair ideas. If you know you want to do a project on a certain topic, be sure to include that in your search.
    - Example: I want to do a project on music.
        - Go to www.yahoo.com
        - Type in "music science fair project" and a bunch of websites will pop up for you to look through.

- ✓ Visit www.ijas.org, the Official Science Fair website for the state of Illinois.

Where To Find Books with Ideas

- ✓ Your local library will have some Science Fair Idea Books.
- ✓ A bookstore.
- ✓ Ask your science teacher!
- ✓ Your school library

2. Ask a Question

Now that you have picked out a topic that you like and that you are interested in, it's time to write a question or identify a problem within that topic. To give you an idea of what we mean you can start off by filling in the question blanks with the following list of words:

The **effect** question:
What is the effect of _____ on _____?
How does _____ affect _____?

Research Your Topic

Spend some time learning more about your topic. Use reliable internet sources, books from the library, your science book, or other resources. Not only do you want to be an expert on your topic, but you want to teach others about your topic. Talk about it with your parent/guardian. Write down a paragraph describing the science behind your project with some background information.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Make sure you write down your sources! Where did you get your information from?

Background Research Paper Basics

Research the important things in your title.

Ex: “Which surface is better for sports performance? Astroturf or Grass?

I’d research:

- Sports- when were they started, why do people play them
- Astroturf- who invented it? When? Why? Who uses it?
- Grass- different types of grass, best conditions to grow it in, how grass relates to the sport you’re testing

Ex: “Does the amount of worms in the soil affect how plants grow?”

I’d research:

- Worms- what are they, what are their body parts, where do they live, what kind of soil do they like
- Soil- what are the different types, what are the different layers, where is the best soil, what about soils from the store
- Fertilizers- ingredients in them, safety
- Farmers and Gardener’s opinions on worms

Ex: “Are boys smarter than girls in math?”

I’d research:

- How people learn- all the different types of learning styles, how your age effects this
- The Brain- the parts of, boys/girls brain development
- Other studies/tests that are like your question
- Math- the history of, what people say about boys and girls in math classes

MY QUESTION: _____

For my paper, I am going to research:

1.

2.

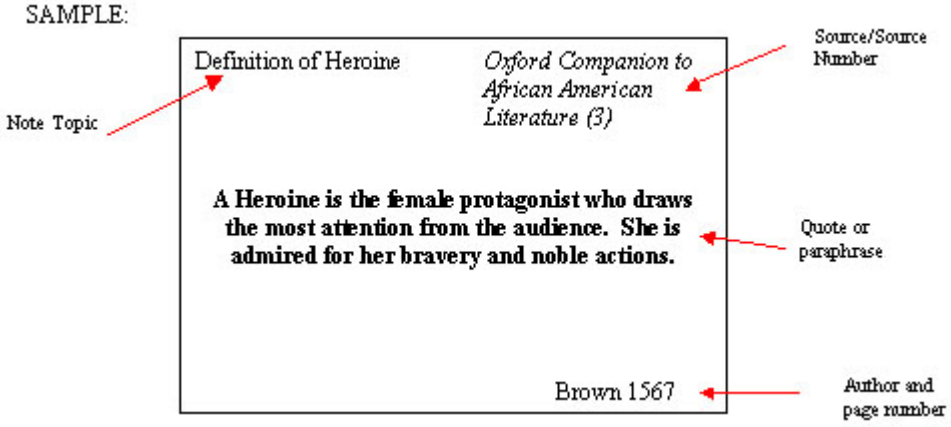
3.

4.

Research Note Cards

- ❑ You will need to research your topic.
- ❑ You need at least 2 internet sources and 1 book source.
- ❑ You need 30 notes cards. 10 cards for each source.
  - ➢ Book source = 10 cards
  - ➢ Website source #1 = 10 cards
  - ➢ Website source #2 = 10 cards
- ❑ Write one thought/idea on each note card.
- ❑ Number the note cards 1-10 by source

SAMPLE:



How to cite your sources

Book: _____

Author: _____

Publisher: _____

Place of Publication: _____

Copyright Date: _____ Edition: _____

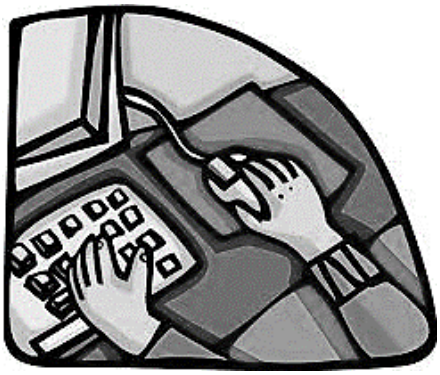
Page numbers: _____

Website URL: http://_____

Title of website: _____

Name of Author: _____

Date that you visited page: _____



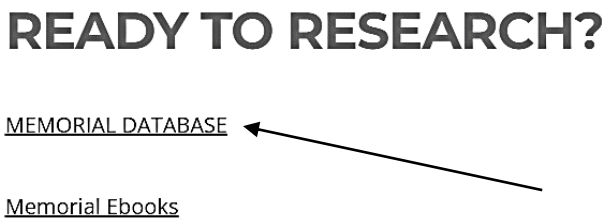
Help With Citations?

- http://www.citationmachine.net/apa/cite-a-book

This website will help make sure you have all the information you need for each resource and put it in the correct order for you!

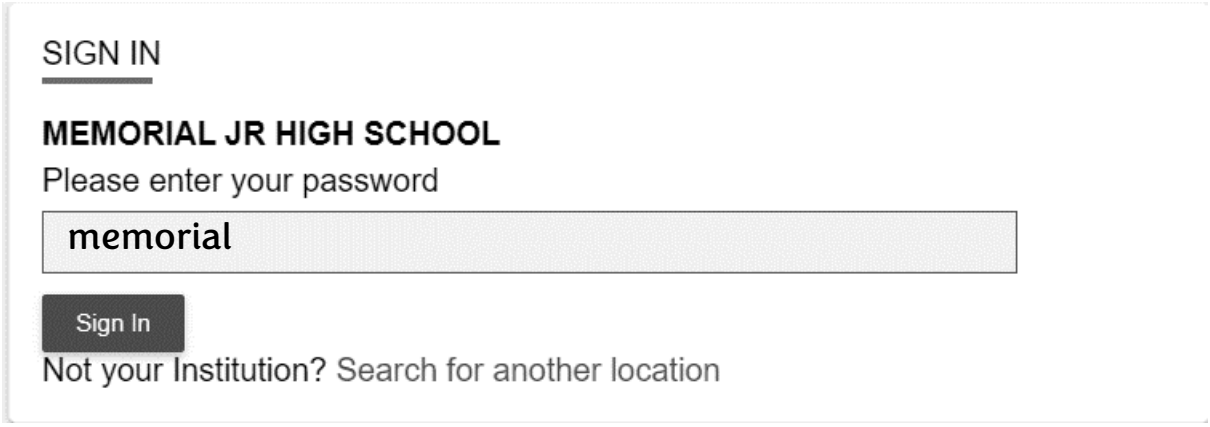
Research Database

Check out the District 158's Digital Research Database.
First go to Memorial's Homepage: https://www.d158.net/o/mjh
Then select Menu and select LRC
Scroll to the bottom until you see:



GALE

From there, it will bring you into the GALE database.



Once you are signed in you can begin searching. Look up key words from your project.

There are a number of books, news articles, magazine articles, videos, images and more that you can utilize to help with your background research paper. Remember to save your references for the reference list (ask your teacher how to easily find these on GALE).

Check out this video for more info: https://www.loom.com/share/aa77725281ad4fa98779534b0e51540d

Writing References

The correct style to use for citing references in the **Reference List** section is discussed in detail in the Publication Manual of the American Psychological Association, Fifth Edition, 2001, or later (APA style). Be careful to follow the punctuation, indentation, and format shown below.

- ✓ The Reference List must be double-spaced. 12 size font. Times New Roman or Arial.
- ✓ The Reference List should be alphabetized according to the first letter of each entry.
- ✓ Although the five-space indent style of citing is the suggested format, the hanging paragraph format is acceptable.
- ✓ Italics are preferred over the use of underlining.
- ✓ The abbreviation for Page(s), p. or pp., is not used except in references to newspapers.
- ✓ Electronic source references must provide the date the information was retrieved, and also the name and/or address of the source.

Examples:

- A Student's Guide to APA Formatting
- Purdue Online Writing Lab

Typical Book - One author:

Arnheim, R. (2001). *Art and visual perception*. Berkeley, CA: University of California Press.

Book - Multiple authors:

Festinger, L., Riecken, H., & Schachter, S. (2003). *When prophecy fails*. Minneapolis: University of Minnesota Press.

Websites:

Manuka Honey USA Home Page. (2006). Retrieved July 25, 2007, from Manuka Honey USA Website: http://www.manukahoneyusa.com

Goizueta, R.C. (1996, February 26). Annual report to share owners. Retrieved July 24, 2007, from Coca- Cola Company Website: http://www.cocacola.com/co/chairman.html

Direct Quotations of Sources

Quotations of less than 40 words should be incorporated in the text and enclosed with double quotation marks. Using the "author-date method" of citation, the quotation is followed with a reference to the author, the publication year, and the page number. These elements must be enclosed in parentheses, together or separately. A complete reference must appear in the reference list at the end of your paper if it is in your paper.

He stated, "The 'placebo effect,'...disappeared when behaviors were studied in this manner" (Smith, 2001, p.276), but he did not clarify which behaviors were studied.

Smith (2001) found that "the 'placebo effect,' which had been verified in previous studies, disappeared when [his own and others'] behaviors were studied in this manner" (p. 276).

Plagiarism

Take notes in your own words. Beware of the "copy and paste" trap!

When taking an idea from a source to support your paper's topic, make sure you give credit to the author. Otherwise, it is considered plagiarism.

There are two kinds of plagiarism:
1. using someone's ideas, words or images without giving them credit at all.
2. giving credit but paraphrasing (or simply re-wording) too closely, without giving credit

Here are some guidelines:
1. Give credit for all direct quotations.
3. Give credit for all ideas borrowed from a source.
4. Give credit when you paraphrase sentences, paragraphs or chapters. Avoid paraphrases that just change a few words.
5. Give credit when you use statistics or little-known facts.
6. You don't have to give credit for information that is *common knowledge* or information your readers easily could find elsewhere.

Writing A Scientific Paper

- DON'T use first person words like: "I", "ME", or "MY"
- DON'T use second person words like: "YOU", "YOUR", or "YOURS"
- DON'T talk about what you will be doing in your experiment
- DO use Times New Roman Size 12 font

The paper is research on the science behind your project and the main ideas of your topic. This means you will be reading information in articles, websites, and books that have to do with your experiment in some way. The information will include some history on your topic, explanation of how your products/materials work, other experiments similar to yours, etc.

- **INTRO PARAGRAPH**
  - Ease readers into your research. Don't start with the meaty goodness.
  - Get readers thinking about your topic. Start with a question, quote, unusual fact, statistic, or another type of attention grabber.
  - Introduce, but don't explain, some of the main ideas that will be included in your paper.

- **BODY PARAGRAPHS**
  - Discuss all the main ideas listed in your project.
  - Be sure to explain everything you can about these ideas so that the reader doesn't have any more questions.
  - Paragraphs should include an intro or conclusion sentence that ties into the paragraph before/after it so there is a nice flow in your paper.
  - If you can't explain something in your own words, put it in quotes and cite it.

- **CONCLUSION PARAGRAPH**
  - Sum up all your main ideas.
  - Reword pretty much everything in your intro paragraph.

3. Form a Hypothesis

Based on your research, decide what you think the outcome of the project will be and make a good guess as to what you think the answer to your question will be. Your hypothesis is your prediction about how the test will go. Also explain WHY you think that will be the outcome. Remember it's okay if you don't have the right answer; that is how scientists make discoveries. Make sure that your hypothesis is written in a complete sentence.

What do you think will happen? What are some possible outcomes?

Which outcome do you think is most likely to happen? This will be your hypothesis. Remember to write your sentence as an "if… then… because…" statement. (Example: **If** a sunflower plant is given water, orange juice, and Coca Cola, **then** the plant with the water will grow the most, **because** plants need water to go through photosynthesis which creates food for the plant.) Now it's your turn:

4. Experiment

Time to design your experiment. How will you test your hypothesis? Remember that your science project should be consistent and only one variable changes between comparison groups. Let's first identify what variables we are looking at:

> **Independent Variable:** The only thing you purposely change in your experiment
>
> **Dependent Variable**: What you measured (metric units)
>
> **Controlled Variables**: Everything in the experiment remains the same, such as the soil type, the size of the pot, the amount of after, etc.

Independent Variable:

_____

Dependent Variable:

_____

Controlled Variables:

_____

_____

_____

_____

_____

Materials

List all the materials needed to complete the experiment. Be as specific as possible, listing the type, size, amount, brand, etc.

Procedure (Method)

List the steps of your experiment. Remember to number each step clearly and explain everything in great detail. If another scientist was to repeat your experiment, they should be able to follow the same steps to get similar results. *Continue numbering your steps!

1.

2.

Conduct the Experiment

Scientists conduct an experiment many times in order to get the most accurate data, each test is called a trial. During your experiment, you need to collect data and observations for each trial. You will record these in your Observation Log. After you have completed each trial of your experiment, make sure you record your findings (numerical data). Make sure you are taking accurate measurements during the experiment. Measurements should be taken using the metric system (meters, grams, liters). Measurements could be temperature, distance, height, etc. Record your data in a data table, which will help you stay organized. When you record your observations, make sure you use your senses (sight, smell, touch, etc) and write down any observations you make throughout the entire experiment.

Observation Log

Results

Your project must consist of ALL three parts of results: table, graph, and written results. Make sure to calculate your measurements using metric systems (centimeters, meters, liters, etc.). You may display your data in a table and graph. Make sure your graph reflects the kind of data you have collected.

- A line graph demonstrates *changes over time*.
- A bar/picture graph demonstrates *a comparison between two or more things.*
- A circle/pie graph *compares parts to the whole.*

Graphs and tables should be neatly done. Use computer generated graphs. Remember your data is a quantitative display of what you have done. Make sure to also include your written results explaining your table and graph in words.

Table

	Trial 1	Trial 2	Trial 3	Average
Independent Variable 1	*measurement*	*measurement*	*measurement*	Add three trials of independent variable #1 and divide by three
Independent Variable 2	*measurement*	*measurement*	*measurement*	Add three trials of independent variable #2 and divide by three
Independent Variable 3	*measurement*	*measurement*	*measurement*	Add three trials of independent variable #3 and divide by three

Example:

	Trial 1	Trial 2	Trial 3	Average
Electrolyte Water	14 cm	16 cm	13 cm	14.3 cm
Gatorade	12 cm	11 cm	13 cm	12 cm
Tap Water	13 cm	14 cm	15 cm	14 cm

Written Results

Make sure to record your results written out as well. It should be written in this way: In trial 1, independent variable 1 was _ measured, independent variable #2 was _ measurement, and independent variable #3 was _ measurement. In trial 2, independent variable #1 was _ measured, … You would tell me how each variable changed the dependent variable. Always keep the independent variables in the same order as your table.

Example: In trial one, the plant grown with electrolyte water grew 14 centimeters, the plant given Gatorade grew 12 centimeters, and the plant grown with tap water grew 13 centimeters. In trial two, the plant grown with electrolyte water grew 16 centimeters, the plant given Gatorade grew 11 centimeters, and the plant grown with tap water grew 14 centimeters. In trial 3, the plant grown with electrolyte water grew 13 centimeters, the plant given Gatorade grew 13 centimeters, and the plant grown with tap water grew 15 centimeters.

The table below can be used as a guide to record your trials during your experiment. You may find it useful to make a different type of table. You will record your results and analyze the data at a later point when you write your conclusion. You must conduct at least 3 trials. You will put the independent variables in the first column and the dependent variable measurements under each trial.

	TRIAL 1	TRIAL 2	TRIAL 3	TRIAL 4	TRIAL 5	AVERAGE
#1						
#2						
#3						

Remember to conduct the experiment at least three times (trials)!

Using words, explain what happened in your experiment for each trial in a paragraph form.

In trial 1,

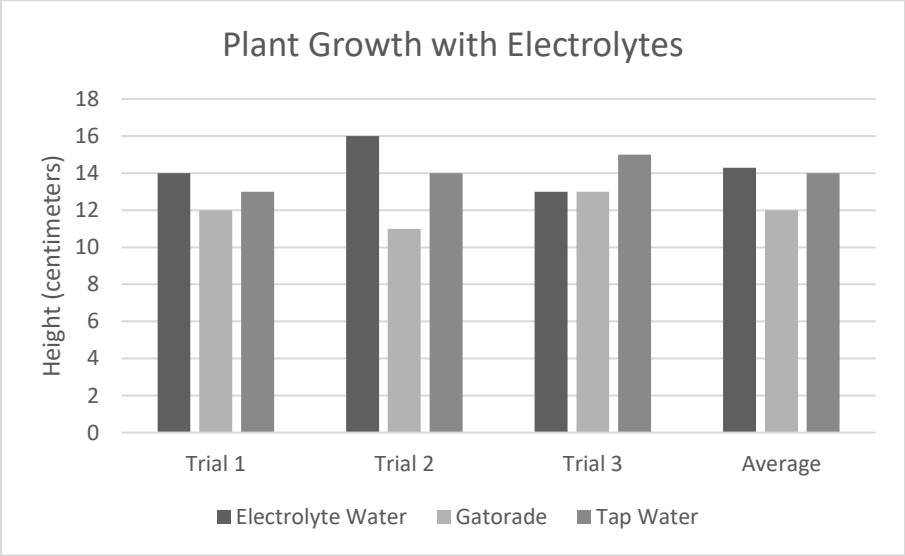
5. Analyze Data

Keys To Making a Good Graph

The purpose of making a graph is to organize your data. Graphs should be pleasing to the eyes and easy for others to understand. Readers should be able to understand the results of your experiment by observing your graphs and tables.

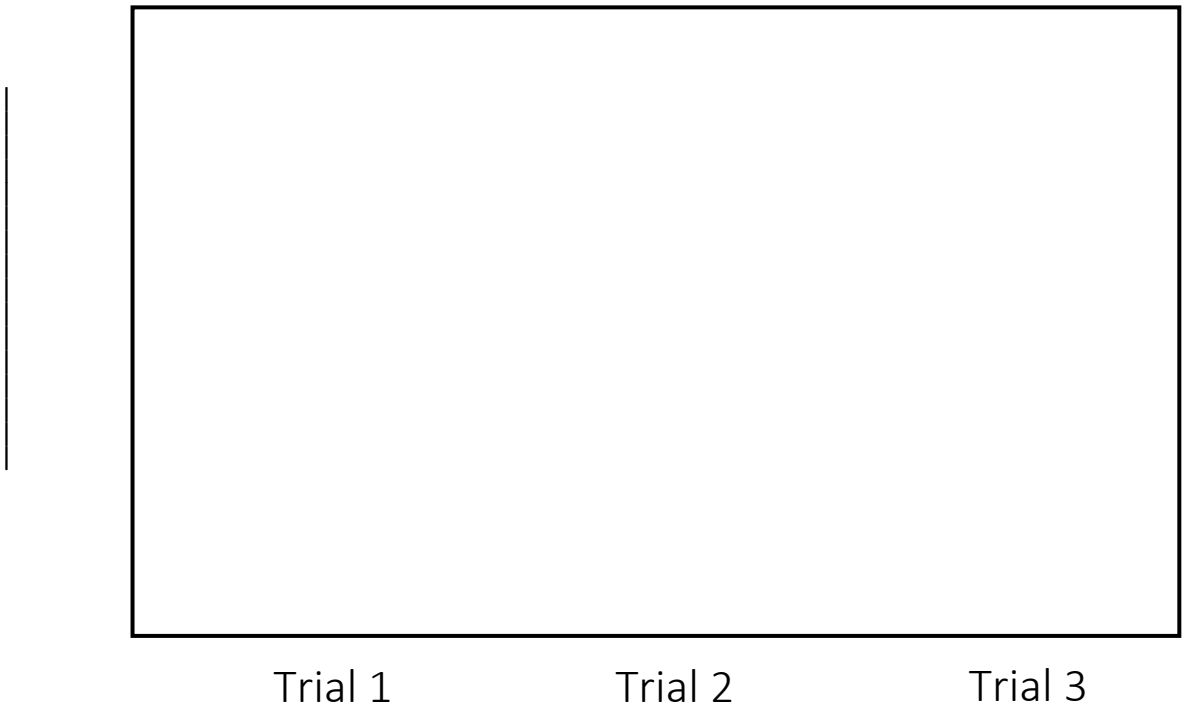
DO	DON'T
Make on the computer – Use Excel	Make by hand
Choose a color scheme that goes along with the rest of your poster	Make it rainbow colors Make it black and white
Make it easy to read	Have a million bars on there
Choose fonts that are easy to read (Times New Roman)	Choose fancy fonts
Include labels	Forget your labels!
Include a title	Forget a title!

Example:



You will need to make a graph that best represents your data. Use this paper to sketch what your final graph should look like. You will create a computer-generated graph for your research report and display board. Remember to give your graph a title and label each axis.

Title: _____



6. Conclusion

Now it's time to review your data and observations and explain what happened in your experiment. You will determine how the results helps you answer your project question. Make sure you write your answers in complete sentences using the question to begin your answer. Make sure to include if your hypothesis was supported or wrong, and why you think the results were what they were.

Did your results support or contradict your hypothesis?

What data tells you this?

Was there any unexpected data or anything that went wrong?

How would you change or improve your project if you were to do it again?

Display Board

A few tips:
The student should construct the display with the help of the parent, teacher or sponsor providing guidance.

- The title should be brief and captivating.
- Lettering should be neat and easily visible.
- Displays should be **neat and presentable**.
- The abstract, safety sheet, and any endorsements must be placed on the front of the display board. They may be reduced to 75% of standard paper and stacked/stapled.
- No pencil or drawing – everything must be typed on the display board.
- CHECK YOUR SPELLING!

Creating Your Board

Make a small sketch of where everything will go. Lay it out before you glue anything down to make sure it looks good. Design what the "center" of your board will be. This is where everyone will look first. Will it be the title or pictures? Everything else should be placed around this. When you set up your board, put things together in an order that makes sense.
Logically, your hypothesis should come before your conclusion.

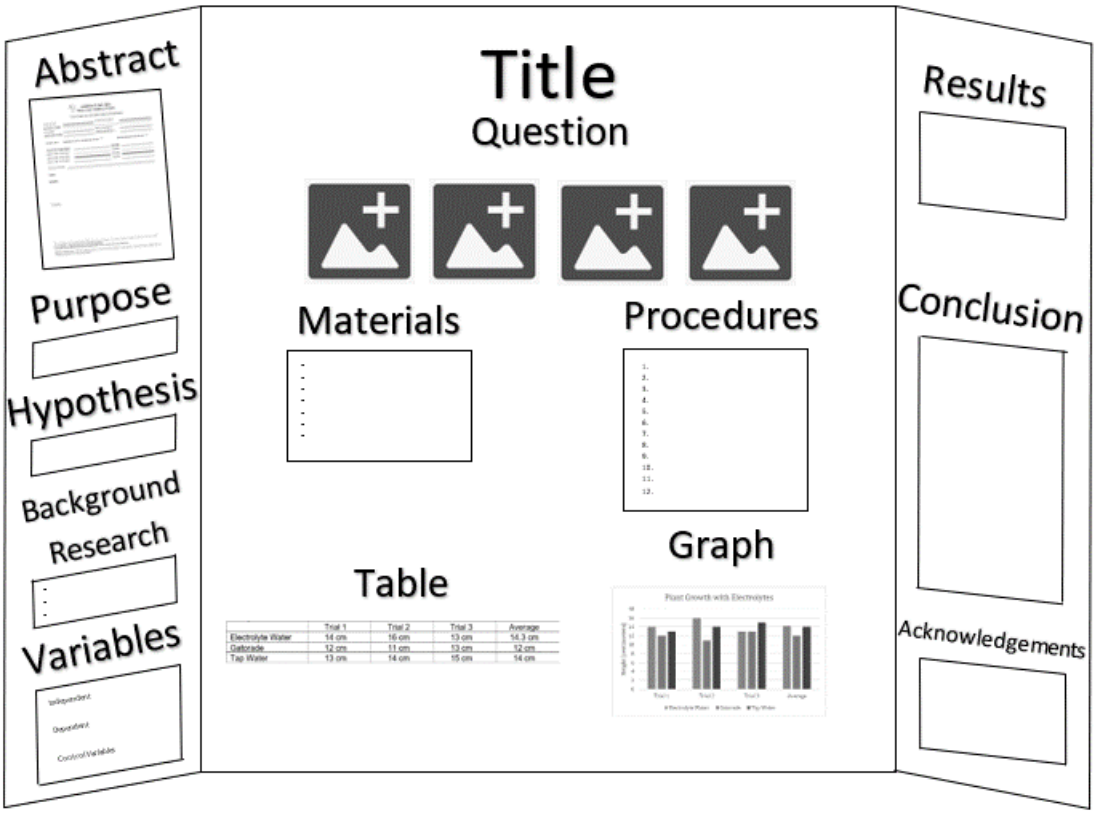
You should have the following components on your board:

Left Panel	Center Panel	Right Panel
Abstract/Safety Sheet Problem/Purpose Hypothesis Background Research Summary Variables	Title Illustrations/Photos Materials Procedure Results - Tables Results - Graphs	Results (Written Results) Conclusion/ Error Analysis Acknowledgements

Colors and Text

You can use the labels that come with your board or create your own.
Labels created on the computer can be very effective. Try using a different font or color for each of the labels. Use colors that are appealing. They should contrast with your board color. Type your text or print it neatly. Use stencils or pre-made letters if you prefer. Make your lettering large enough for everyone to see. If you print it, use pencil first and draw guidelines to make sure you erase your guidelines.

Display Board



You are required to create a display board. Boards should not exceed the following dimensions: 76 cm thick, 122 cm wide and 152 cm high. Check with the front office to see if they have any Science Fair Backboards. Otherwise, boards can be purchased from a local store, such as the Dollar Store, Walmart, Michael's, Hobby Lobby, and others.

DO NOT bring items from your project to display!

Pictures of your experiment ONLY.

Poster Do’s and Don'ts

DO	DON’T
Lay things out on your poster before you glue them down	Rush to start gluing things down
Use a glue stick or double stick tape	Use liquid glue
A matching color scheme	Rainbow colors
Back up pictures and words with colored paper	Do white paper on a whiteboard
Real pictures of you doing experiment	Random pictures from the internet
Attach everything straight	Angle things on diagonals or have things hanging off your board
Print everything off of a computer	Write anything down by hand
Neatness	Smudges
If you use fancy scissors, only use 1 type	Use many types of fancy scissors
Make your graph look nice and neat	Have too many lines or colors on your graph
Use stickers or computer letters for title	Use markers to write title
MAKE IT POP	LET IT FADE INTO THE DISTANCE
DRAW PEOPLE IN	TURN PEOPLE AWAY

Oral Presentation

- Practice your presentation in front of a mirror, your family, or your friends and ask for feedback!
- Maintain eye contact with your audience! Don't spend the whole time looking at your board or notes – your audience will be a lot more interested if you are speaking directly to them!
- Speak LOUDLY, CLEARLY, and SLOWLY so that you can be understood by the judges.

1. Introduction
   State your name, grade, and school.

2. Acknowledgements
   Discuss any work done in the past that contributed to your project and give credit to anyone who has helped you.

3. Purpose
   State how you became interested in the project, what you are investigating or the need your project addresses. Make sure you make a prediction about the outcome. Identify the independent, dependent, and control variables.

4. Background Information
   Give a summary of your background research in order to familiarize the judges with the scope of your study.

5. Materials & Procedure
   Share the materials needed to conduct experiment. Summarize your experimental procedure and/or design process. Be sure to use your visual aids: pictures of you conducting the experiment. Explain how your apparatus was used and tell the judges if you constructed it yourself. Be sure to discuss how you avoided experimental error if applicable.

6. Results (Data and Conclusion)
   Explain both your controls and your experimental variables or prototypes. Use appropriate metric units when discussing data. Point to your table and graph when you refer to them. State in a concise and logical order the conclusion you can draw from your data and observations.

7. Discussion
   Discuss how you plan to continue your project if applicable. Be sure to explain what knowledge you gained conducting the experiment or design and what you would do differently if you advanced to regionals. Also discuss any errors that could have caused the data to result as they did (what are human flaws when calculating the data).

8. Any Questions
   When you are finished ask the judges if they had any questions they would like to ask. If they do, think before you answer and speak slowly! If you are not sure, state "I am not sure, but I think..." make sure it is a logical thought.

D158 Science Project Scoring Rubric 2024

Student 1 Name: _____

Student 2 Name: _____

Project Title: _____

Grading for this portion: 1= Below Minimal Criteria ~ 10 = Excellent/Thorough Understanding

Visual Display Board: 1 2 3 4 5 6 7 8 9 10

What to look for – Relative to Age

- Neat and Well Organized
- Nothing Hand-Drawn
- Visual Appealing (Use of Color, Readable Font, Visible Text)
- Photos of Student(s) doing the Experiment

Oral Presentation: 1 2 3 4 5 6 7 8 9 10

What to look for – Relative to Age

- Articulate Speaking
- Clarity
- Eye Contact
- Shows interest in his/her project

Scientific Approach: 1 2 3 4 5 6 7 8 9 10

What to look for – Relative to Age

- Exhibits an understanding of the Scientific Method
- Has a Hypothesis ("If…, then…" statement)
- Use of tables and graphs to analyze data
- Explains the Scientific reasoning behind the conclusion

Background Research Report: 1 2 3 4 5 6 7 8 9 10

What to look for – Relative to Age

- Content – Pertains to the variables and the Science concept behind the project
- Appropriate length
- Organized and Neat
- In-text Citations (APA style)
- Reference List (APA style)

Science Knowledge (Students earn 2 points for answering each question)

- What is your independent variable (what did you change)? 2 0
- What is your dependent variable (what did you measure)? 2 0
- What were your controlled variables (what stayed the same for all trials)? 2 0
- Why did you choose this project and what did you learn from it? 2 0
- Did your research match your conclusion? 2 0

Total Score: _____

Judge's Comments:

D158 Science Project Scoring Rubric 2024

Student 1 Name: _____

Student 2 Name: _____

Project Title: _____

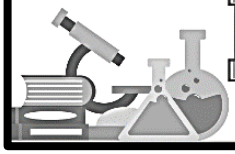
Grading for this portion: 1= Below Minimal Criteria ~ 5 = Excellent/Thorough Understanding

Overall Oral Presentation of Knowledge: Students should • Demonstrate knowledge of project and communicate clearly • Give the audience that "I know what I'm talking about" feeling	1 2 3 4 5
Ask/Identify: Student had a problem to solve. Has ideas on how to solve the problem and identifies the criteria, constraints, and intent of the problem.	1 2 3 4 5
Imagine: Student brainstorms a clear, focused idea. Ideas are aligned to the problem.	1 2 3 4 5
Design & Create Plan: Student designs a plan and builds a working model that aligns with criteria, constraints, and intent of the problem.	1 2 3 4 5
Testing: Student tests the working model's effectiveness to solve the problem.	1 2 3 4 5
Data & Analysis: Testing data organized through charts, tables, and graphs. Students also have written results.	1 2 3 4 5
Validation & Verification: References problem/objective and uses data or research to support their final design.	1 2 3 4 5
Redesign: Student describes steps they would or did take to improve their design.	1 2 3 4 5
Background Research Report: • Content – Pertains to the variables and the Science concept behind the project • Appropriate length • Organized and Neat • In-text Citations (APA style) • Reference List (APA style)	1 2 3 4 5
Visual Display Board: • Neat and Well Organized • Nothing Hand-Drawn • Visual Appealing (Use of Color, Readable Font, Visible Text) • Photos of Student(s) doing the Experiment	1 2 3 4 5

Total Score: _____

Judge's Comments:

SCIENCE FAIR PERMISSION



Saturday, January 20, 2024
from
9:00 a.m. until 12:00 p.m.
at
Memorial Junior High School

Please return to your Science teacher by December 20th, 2023

Please Print the following information:

Student's Name: _____

Science Teacher: _____ Grade: _____

School: _____

Project Title: _____

Partner's Name (if applicable): _____

Project Description: _____

_____

STUDENT PERMISSION AND RELEASE FORM DISTRICT #158

I hereby give permission for _____ to participate in the School District 158 Science & Engineering Fair. I agree to not hold School District 158 responsible for any accidents or injuries resulting from participation in the fair. I allow for my child's project to be viewed by D158 staff and volunteer judges. I allow District 158 and Illinois Junior Academy of Science (pending moving forward to Regionals and State Science Fair) to post pictures or videos that include my child, their name, entry/project name, school, and award received, as well as, permission to utilize this information for publications made on www.d158.net.

Parent/Guardian Signature: _____

Date: _____