Science Fair School Contract

I, _____ will submit an entry for the Jane S. Roberts Science Fair due November 7, 2025. I understand that this requirement must be fulfilled based on the criteria outlined in this guide.

I further understand that failure to comply with the rules set forth in this guide affect my final project grade.

Date _____ Homeroom Teacher _____

Student's Name _____

Student's Signature _____

Parent's Name _____

Parent's Signature _____

(Please sign and return this contract to your science teacher.)

Science Fair Student Checklist and Schedule

Jane S. Roberts K8 Center

2025-2026

Student Name: _____

Project Title: _____

Category: _____

WORKING PLAN		DUE DATE	TEACHER'S INITIALS	COMMENTS
STEP 1	Problem Statement	9/12/25		
STEP 2	Background Research / Bibliography	9/19/25		
STEP 3	Hypothesis	9/26/25		
STEP 4	Design Your Experiment	10/3/25		
STEP 5	Experiment and Collect Data	10/17/25		
STEP 6	Results and Conclusion	10/24/25		
STEP 7	Abstract and Application	11/4/25		
STEP 8	Final Display	11/7/25		
	Oral Presentations	11/12/25		

Grade: Working Plan___ Display___ Oral Presentation___

Final Grade___

Science Fair Rules and Guidelines

1. Only individual projects are allowed.
2. Only two types of projects may be entered into the District Fair, they are a scientific investigation or an invention.
3. Projects must fit in one of the 11 science fair project categories.
   (Physical Science, Behavioral Science, Botany, Chemistry, Earth and Space Science, Engineering, Environmental Science, Medicine and Health, Zoology, Mathematics, Inventions)
4. No mold growth, or bacteria projects are allowed.
5. No use of vertebrate animals is allowed except for human observational projects.
6. No use of prescription drugs, harmful, or illegal substances are allowed. Grocery items (i.e., baking soda, vinegar, salt, lemon juice, etc.) are appropriate.
7. Project display boards must follow safety guidelines listed in this handbook.
8. The classroom teacher or the science fair committee must approve projects.

All project idea proposals must be submitted to the classroom teacher. The proposal should contain a topic and problem statement for the project. Projects must follow MDCPS science fair rules and guidelines outlined in this handbook. The classroom teacher or the school's science fair committee will approve projects. Projects without prior approval, projects inconsistent with the prior approved proposal, or projects that have been substantially changed from what was previously approved will only be displayed at the teacher's discretion and cannot be submitted to the District science fair.

Choosing a category that interests you...

All great projects start with great questions, but before you get started on a great question you need to pick a subject or topic that you like. There are three different categories of the Science Fair to choose from. They are:

Life science: This category deals with all animal, plant and human body questions that you might have and want to do an experiment about. Remember that it is against Science Fair Rules to intentionally hurt an animal during an experiment. If you are dealing with animals, please let an adult assist you. It is okay to do experiment on plants, as long as they don't belong to someone else, like don't do an experiment on your mom's rose bushes unless you ask her first.

Life science also includes studying behaviors, so it's a perfect category to try taste tests, opinion surveys, animal behavior training (or even training behavior in humans...like baby brothers or sisters.)

Physical Science: If you like trying to figure out how things work, then this is the category for you! It includes topics about matter and structure, as well as electricity, magnetism, sound, light or anything else that you might question, "How does it work and what if I do this to it, will it still work?" *But remember, you always need to ask an adult first (and always make sure there is one of those adult guys with you when you try it.)*

Physical Science also includes the composition of matter and how it reacts to each other. These are the science experiments that may have bubbling and oozing going on, like figuring out what is an acid and what is a base. It is a perfect category to try to mix things together to see what will happen. *Again, if you are experimenting with possibly dangerous things, you need to recruit an adult to help you out.*

Earth and Space Sciences: This category is really awesome because it covers all sorts of topics that deal with the Earth or objects in space. This includes studying weather, Geology (which is the study of everything that makes up the Earth, like rocks, fossils, volcanoes, etc.), and the study of all that is in space, including the stars, our sun and our planets. Unfortunately this topic is also where most kids make a mistake and do a collection or model project instead of an "Experiment," so be careful!!!

Now It's Your Turn:
Write down your favorite Science Fair category and what it is you want to learn more about.

My favorite category is: _____
(Life Science, Physical Science, Earth and Space Science)

I want to do an experiment involving:

_____

_____

_____

_____

Science Fair project checklist

1. Is this do-able? • Cost: Can I afford to do this project? • Time: Do I have enough time to complete this project? • Resources: do I have the materials I need to complete my experiment?	Yes	No
2. Is it researchable? • Am I able to locate multiple resources for my experiment? (Books, articles, interviews, Internet, etc.)		
3. Does my experiment have an application? • Who will benefit from your results? • Is the data collected new to me; have I seen this done before too many times?		
4. Is the experiment new or different? • Is there a high been-there-done-that factor? • Can someone else guess the outcome before I even do this experiment?		
5. Is the experiment specific? • Does it deal with only one variable (it needs to be a controlled experiment)?		
6. Can I collect quantitative data in my experiment? • Can I use a graph for my results? • Can I analyze my data numerically (only metric units are allowed)?		

Step 1: Problem Statement

Now that you have picked out a topic 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:

What is the effect of _____ on _____?

sunlight	the growth of plants
temperature	the size of a balloon
oil	a ramp

How does the _____ affect _____?

color of light	the growth of plant
color of a material	its absorption of heat

Which/What _____ (verb) _____?

detergent	makes	the most bubbles
peanut butter	is	the crunchiest

Now it's your turn:

Create your Science Fair problem statement using only **one** of the styles above:

_____

_____

_____

_____

Step 2: Background Research/Bibliography

You need to collect information on your topic from various sources like books, newspapers, magazine articles, interviews, and the Internet.

HINT: You might need to spend time in the library!

What is the purpose of your project?

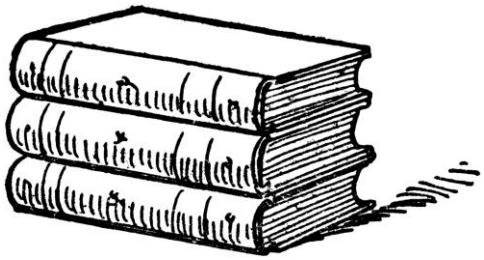
_____
_____
_____
_____

What did you find out about your topic?

_____
_____
_____
_____
_____
_____
_____
_____

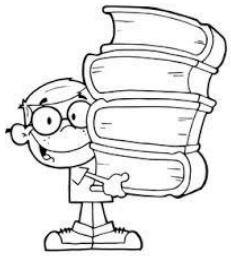
What information did you find that will help you design your investigation?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____



Step 2: Background Research/Bibliography

You need to keep a record of the information you read about your topic. You must write down the name of the source, the author, the publisher, and when it was published. It is also helpful to write down the page numbers. You should use a variety of sources. These sources will be your bibliography.



Use the lines below to complete your bibliography.
You can also visit www.citationmachine.net for help!

Choose at least THREE different sources.

Source 1: A Book

_____

Author's last name, First Initial (year published). Title of Book. City, State

_____

published in: Name of Publisher

Source 2: An Encyclopedia

_____

Author's last name, First Initial (year published). Topic. Name of Encyclopedia

_____

(volume # page number) State published in: Name of publisher

Source 3: Internet

_____

Give the title of the article and the Internet address

Source 4: A Magazine/Journal

_____

Author's last name, First Initial, (Date published). "Title of Article."

_____

Name of Magazine. Pages

Step 3: Hypothesis using "If...then...because"

An "If...then...because" statement in a hypothesis tells the reader what you believe will happen in a scientific investigation.

- IF... tells the readers what will be changed. This is the independent variable in the investigation.
- THEN... tells the reader what will happen because of the change. This is the dependent variable in the investigation.
- BECAUSE... tells the reader how you know this will occur. It should be based on background knowledge or prior experiences.

EXAMPLE:

IF leaves are exposed to low temperatures, then the leaves will change colors because plants stop making chlorophyll in colder temperatures.

Write your own Hypothesis on the lines below, and remember…

DO NOT WRITE IN FIRST PERSON!

First person includes: I, me, my, mine, we, us, ours

IF_____
_____
_____
_____THEN_____
_____
_____
_____BECAUSE_____
_____
_____

Step 4: Design Your Experiment

Every experiment must have variables.

- **Independent variable**: The one thing that is changed by the scientist doing the experiment.
- **Dependent variable**: The effect that is measured by the scientist in the experiment.
- **Constant variables**: All the things that stay the same in an experiment.

EXAMPLE: (from previous page)
Independent Variable: Temperature
Dependent Variable: Color change
Constant Variables: Same types of leaves, same amount of exposure time to temperature, same amount of sunlight

What is the *independent variable in your experiment?*

_____
_____
_____
_____

What is the *dependent variable* in your experiment?

_____
_____
_____
_____

What are the *constant variables* in your experiment?

_____
_____
_____
_____

Step 4: Design Your Experiment

The procedures should be a step-by-step list that anyone could follow to duplicate your experiment. As you conduct your experiment, you may become aware of additional steps needed. Make sure you include what you did and how you did it, including how you used your materials.

REMEMBER: DO NOT WRITE IN FIRST PERSON!
First person includes: I, me, my, mine, we, us, ours

Step:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Now that you have a precise step-by-step plan, you need to prepare a complete materials inventory. This list must include everything you will use. Tell the size, quantity, kind, and/or temperature of each item.

***REMEMBER: Materials must be in bullet form and in *METRIC UNITS!*

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

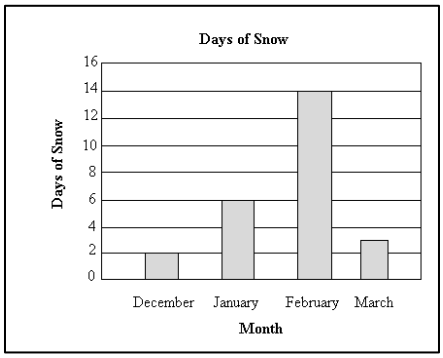
Step 5: Experiment and Collect Data

Precise record keeping is essential for accurate results. Before you begin, create a log sheet for each test you will perform.

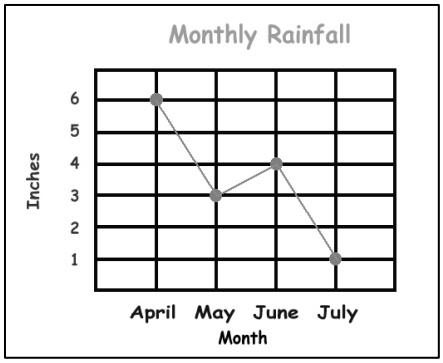
Step 5: Experiment and Collect Data

A graph is a way to <u>organize your data</u> if the results are given in numbers.

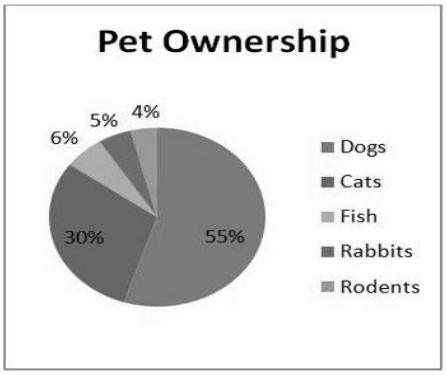
<u>Bar Graphs</u>: Bar graphs can ***<u>compare</u>*** your data.



<u>Line Graphs</u>: Line graphs are used to show ***<u>changes over time</u>***.



<u>Pie or Circle Graphs</u>: Circle graphs are used to show how parts are ***<u>compared to a whole</u>***.



<u>TAILS Graphing Guideline:</u>

Title: shows relationship between X and Y axis.

Axis: Independent variable on the X axis; dependent variable on the Y axis.

Intervals: Spaces between the numbers are the same.

Label: Each axis is labeled with proper units (cm, yards, seconds, days, etc).

Scale: 50% or more of the axis is used (don't cram all your data).

Step 6: Results & Conclusion

Compare your results with your hypothesis. Look again at your hypothesis and at the results of your experiment. State your **evidence** only.

Remember to only state facts rather than opinions. Make sure to include the **averages** of all the trials conducted in your experiment.

Example:

The average growth of the plants with no fertilizer was 3 cm. The average growth of the plants with 1 teaspoon of fertilizer was 3.3 cm. The average growth of the plants with 2 teaspoons of fertilizer was 9 cm.

Now it's your turn:

Step 6: Results & Conclusion

A conclusion is a summary of what your experiment shows and how your work can be used for more research. Your conclusion should begin with a statement on whether or not the results of the experiment did support or did not support the hypothesis.

EXAMPLE:

The hypothesis, "If leaves are exposed to lower temperatures, then the leaves will change color" was supported by the data. The data shows after two weeks of being exposed to lower temperatures, the leaves of the plant began to lose their color. The leaves changed from a bright green to a dull brownish color. The leaves of the plant that was exposed to higher temperatures kept their bright green colors. A possible explanation for the results of the experiment could be that plants stop making chlorophyll when the temperature is cold. Instead, those plants begin to break down chlorophyll into smaller molecules. As the chlorophyll goes away, other pigments start to show their colors. To improve or enhance this experiment, a scientist can use other types of leaves or try to take it a step further and figure out at what temperature do plants begin to stop making chlorophyll.

The hypothesis _____

_____

_____ was (supported or not supported) by the data.

The data shows _____

_____

_____.

A possible explanation for the results of the experiment could be _____

_____

_____.

To improve or enhance this experiment _____

_____

_____.

Step 7: Abstract & Application

The abstract is a short summary of your entire project. It must indicate the hypothesis, purpose, procedure, and results of your project.

The abstract should be written in paragraph form consisting of three to five paragraphs with a total of 250 words or less.

The hypothesis was _____
_____
_____
_____ The purpose of this experiment
_____
_____
_____The materials used were _____
_____
_____
_____
_____ The steps taken to complete the experiment were _____
_____
_____
_____
_____
_____ In conclusion _____
_____
_____
_____
_____

Step 7: Abstract & Application

In the application you should explain why this experiment was important. It must be relevant to real life situations. This is the "who cares" portion.

Example:
Leaves contain a pigment called Anthocyanin, which is responsible for the red color that shows when the temperature drops. Scientists are currently trying to figure out ways to use Anthocyanin as a source to fight skin cancer, which can be caused by harmful rays from the Sun. This experiment can help scientist figure out the best temperature to extract Anthocyanin from leaves.

Write your application on the lines below:

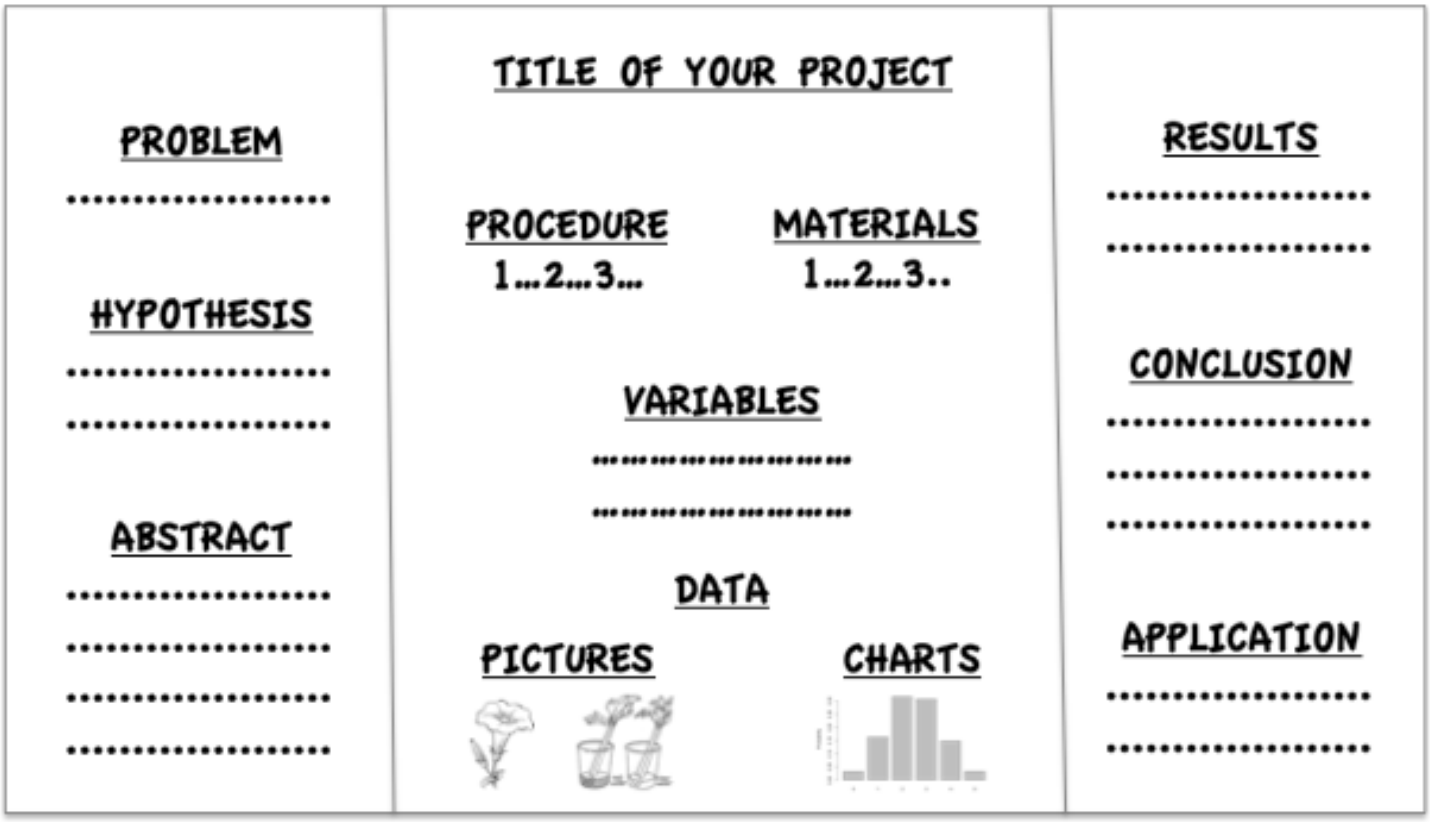
Step 8: Final Display

The back of your display board should contain all of the following information:

- First and Last Name.
- Science Teacher's Name and Room Number.
- Grade Level.

DO NOT write any of the information above on the front of your display.

THE FRONT OF YOUR DISPLAY BOARD SHOULD FOLLOW THE EXAMPLE BELOW:



PLEASE...NO PICTURES OF STUDENT'S FACE!

Display Size:
Height: 36 in
Width: 48 in (open)

Safety Requirements (DO's & DON'T'S)

- DO use the standard science board. (36 in x 48 in)
- DO follow the board display.
- DO place the project title, materials, procedure, variables, data, and pictures in the middle of the board.
- DO place the results, conclusion, and application on the right wing of the board.
- DO use photographs to display drawings and charts to prove your findings.
- DO use glue for your board display and presentation to secure your components.
- DO create a well-organized and creative board display.
- DO make sure your board can fold flat.
- DO put your name, science teacher's name, room number, and grade level on the back of the board.
- DO NOT USE FIRST PERSON.
- DO NOT display animals, vertebrate, invertebrate, living, or dead.
- DO NOT display specimens: no taxidermy specimens, parts, and no preserved animals, including embryos.
- DO NOT display sensitive photographs: no visual presentations of surgical techniques, dissections, necropsies, and/or other lab techniques.
- DO NOT display living or dead organism parts (human, animals, microbes, or plants).
- DO NOT display soil, waste materials or samples.
- DO NOT display food in any containers.
- DO NOT display sharp items: no syringes, needles, glass, or anything sharp.
- DO NOT display fire, flames, or flammable materials, tanks with combustible liquids or gasses.
- DO NOT display lasers.
- DO NOT use staples for your display.
- DO NOT write your name or your teacher's name on the front of your board.

Oral Presentation Tips and Guidelines

Student Appearance: Students should be neat and clean. The school uniform shirts should be tucked in and slacks should be accompanied with a belt if there are belt loops.

The Approach: This is one of the most important elements in public speaking. If the approach is poor it can diminish the impact of the speech. Good posture, a confident walk, and positive eye contact are all parts of the approach.

Eye Contact: Good eye contact is a must! It establishes a rapport with your audience. Avoid looking down at the ground, up at the ceiling, and at notes. Do not always look at the same person; your eyes should go back and forth over the whole audience.

Presenting: Give the title and purpose for your project. Explain why you chose the topic. Choose one or two discoveries you made about your experiment. Tell what your results were. Speak clearly and slowly enough for all to get the information you are telling them. Avoid rambling and giving too many details.

Posture and Gestures: These are very important. DO NOT SLOUCH! Stand straight, but not with your knees locked. The best rule for gestures is to let them naturally flow from your enthusiasm. Keep your hands out of your pockets and do not have them locked behind your back. Good preparation of the content and commitment to what you are saying is crucial here.

Delivery: One general rule: speak from down in the diaphragm and not up in the throat. Proper delivery will cause your voice to project and be forceful.

Preparation: Preparation and study are prerequisites for all speaking. Be familiar and knowledgeable about your project. A lack of preparation is ALWAYS APPARENT.

Rubric for Oral Presentations

Speakers will get 1 point for earning a yes in the category if they demonstrated the guidelines with success and 0 points if they failed to meet the requirement in the category.

- Personal appearance was neat: yes/no
- Speaking voice was loud and clear: yes/no
- Good posture: yes/no
- Good use of hand gestures: yes/no
- Avoided looking at notes: yes/no
- Good facial expressions: yes/no
- Eye contact made with class: yes/no
- Well prepared: yes/no
- Knowledge of the subject: yes/no
- Length of presentation (1-2 min): yes/no

9-10 points: A
7-8 points: B
5-6 points: C
3-4 points: D
1-2 points: F