

Inquiry Process

Science Fair Agenda

What do you want to do for an experiment?

- Discuss with your mentor what you want your project to be.
- What will make for an interesting but safe project?



Is your question testable?

- Make sure that you will have a testable question.
- Will you be able to collect data on your project?
- Will you have something to measure and compare?
- Make sure your question **doesn't** have just a yes or no answer. (For instance: Does vinegar and baking soda make carbon dioxide when mixed?)

Develop a hypothesis

- What do you predict will be the result of your experiment.
- Based on what you already know, what is your best guess as to what will happen?
- If . . . (Manipulated Variable) Then . . . (Responding Variable) Because . . . (Reasoning)

Record all of your Materials needed

- Make sure that you write down everything that you need in order to complete your experiment.
- Don't forget to label things that you already have at home and can bring to school for your experiment.
- Write down what your best guess is as to how much your materials will cost.
- You have a budget of \$5.00.

Labeled Diagram

- Draw a labeled diagram of what your experiment will look like once it is set up.
 - Don't forget to label all of the parts.
 - This is a good time to confirm that you have all of the materials you need listed on your materials list.

Procedures

- This is a step-by-step list of what you need to do in order to conduct your experiment.
- You must include how often you will be collecting data and what you will be measuring.

Define Variables

- Which variables are controlled?
 - This means the parts of the project that stay the same.
 - There will be many of these.
- What is your manipulated variable?
 - This is the one thing that you are changing.
 - It will be included in the “If” part of your hypothesis.
- What is your responding variable?
 - This is what happens because of the change you made.
 - This is also what you are measuring.
 - It will be included in the “Then” part of your hypothesis.

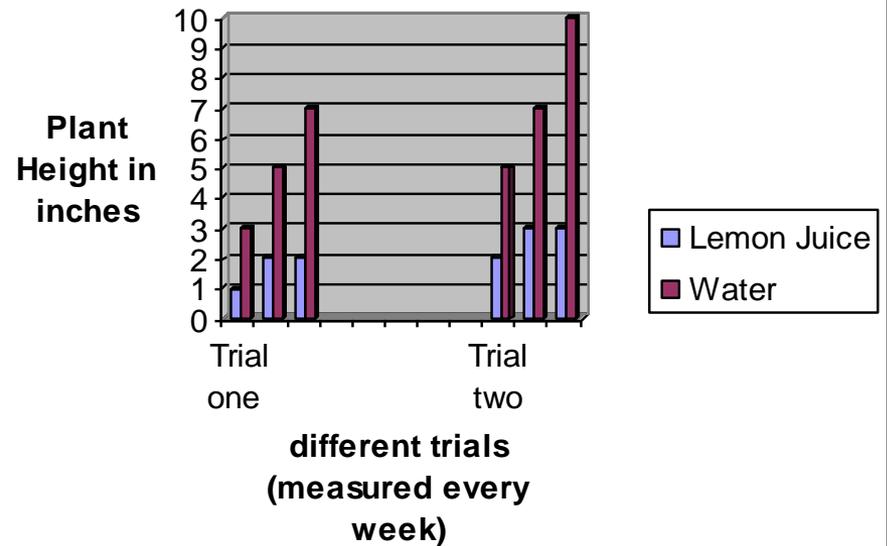
Data Table

- Make a data table with the correct labels on both the x and y axis.
- Record results here.
- For example: You might have two plants that you will be watering with different liquids. You want to measure which liquid makes the plant grow taller. You will have one axis labeled with plant height. You will have one axis labeled with liquid type.

Data Table example

	Lemon Juice	Water
Trial one	1	3
	2	5
	2	7
Trial two	2	5
	3	7
	3	10

Affect of different liquids on plant height



Conclusion

- Your conclusion should explain what your results mean.
 - You must have a conclusive statement.
 - My hypothesis was right/wrong.
 - You must have supporting data
 - Show the data that led you to say whether your hypothesis was right or wrong.
 - You must compare high and low data points.
 - Compare your results to show the difference between the part of your project that was manipulated and the part of your project that was not.

Inquiry Process Overview

- Question: (What are you trying to find out?)
- Hypothesis: (What do you think will happen?)
- Materials: (What do you need to set up your investigation? Include a labeled diagram.)
- Procedure: (What steps do you need to take to do your investigation?)
- Results: (What happened? Show your results in a data table)
- Conclusion: (What does your data mean?)
 - You must have a conclusive statement (ie. My hypothesis was correct/incorrect.)
 - You must have supporting data (Show results that support your conclusive statement.)
 - You must compare high and low data points (Explain how your results compare to each other.)