Science Project 12-Week Timetable

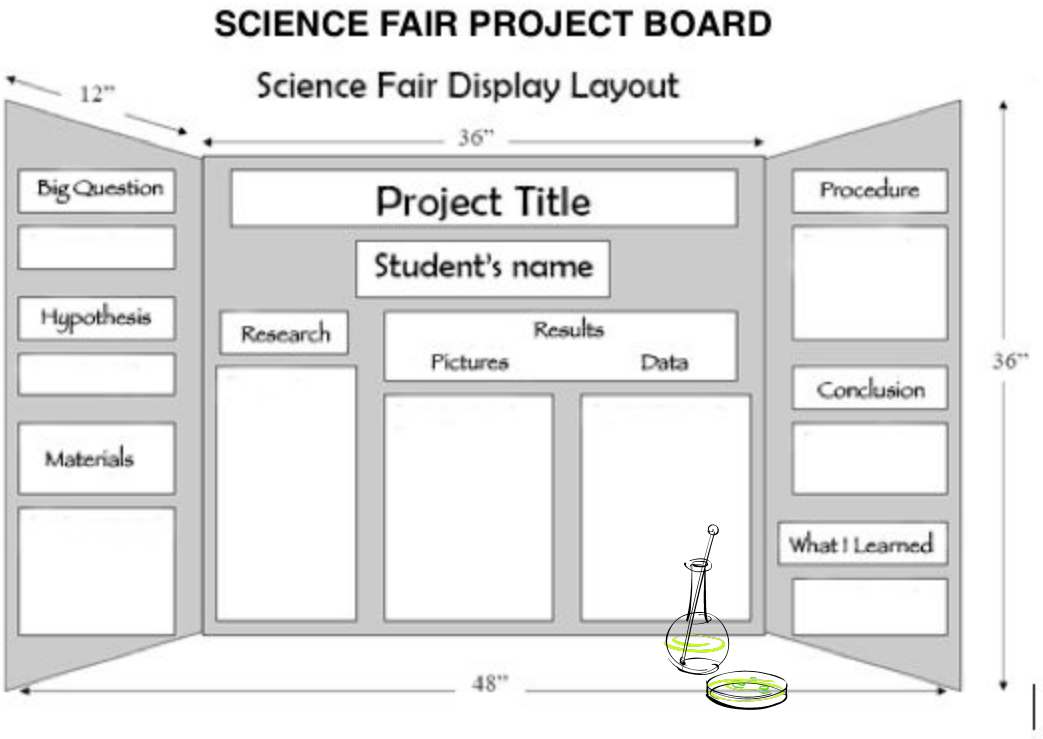
Place a Check if Completed	Timeline	Suggested Tasks
	Jan. 2-Jan. 15 ***Checkpoint 1 Due Date: January 15th***	• Choose a topic/problem to investigate. • Make a list of resources. (Use the library, websites, experts in the field, etc.) • ***Checkpoint 1: Students cannot move on to the next step until their teacher has approved the topic.***
	January 16-Feb. 3 ***Checkpoint 2 Due Date: Feb 4***	• Select the resources you will use to gather background information and begin summarizing the information on the Design Template. • Sketch or write down preliminary designs for your experiment and your final display. • Finish summarizing the background information in the Design Template. • Create a hypothesis that you will test in your experiment • Plan out (in writing) your experimental design using the Design Template. This will include a hypothesis, identifying variables, writing a procedure, designing a data table, etc. • Decide what materials you will use in the experiment. Teacher approval point. • ***Checkpoint 2: Students cannot move on to the next step until their teacher has approved the procedure.***
	Feb. 4-Feb. 16	• Collect or buy materials for your experiment. • Set up your experiment (using your materials). • Start your experiment. • Collect data/make observations including evidence. (Ex. Quantitative or qualitative data including measurements, photographs, drawings, maps, etc.)
	February 16-March 2nd	• Analyze your data through graphs or other visual aids. • Write your conclusion statement.
	March 2-March 9th	• Plan the layout of the display board. • Begin typing the information about the experiment that will be included on the display board. (See the attached list for what should be included on board.) • Construct "final copies" of graphs, charts, diagrams, etc. • Prepare the signs, titles and labels for the display board. • Decide what other materials you should include in your display such as samples or equipment from your experiment. (These items can be placed in front of your board during the Science/Technology Fair.) • Proofread all of your work. • Mount all information including; titles, graphs, pictures and aspects of your experiment, on your display board. • Practice your responses to the oral discussion questions with a friend or family member.
	March 9-March 12th	• Set up display at home and check for any flaws. • While standing in front of your display, practice your responses to the oral discussion questions with a friend or family member.
	March 12th	• Carefully bring your display to LMK on **March 12th at 2:40pm.** • Return to LMK at 6pm with family and friends. • Don't forget to dress professionally and be prepared to answer questions about your project.

Materials Budget

	Item	Amount Needed	Cost of Item
Experiment Materials			
Display Materials	Tri-Fold Display Board	1	No cost
Total Costs (This cannot be more than $15.00 unless otherwise approved by your teacher.)			

Science Presentation Display Board Guide

Use the board diagram below to ensure you include all of the main parts of the experiment when designing your display board. Also refer to the rubric to check your understanding on how your board will be judged.



Louis M. Klein Middle School
Science and Technology Fair

Borrowing Materials Form

Student Name_____ Homebase Section_____

Science/Technology Teacher_____

Materials Borrowed:

_____
_____
_____
_____
_____

Materials to be returned by_____.

Student Signature_____ Date_____

The Scientific Method Reference Sheet

**Remember, we have already learned about the Scientific Method in class so you can refer to your notes and handouts on the Scientific Method that you have in your binder.

The 6 Steps in the Scientific Method

1. State the Question/Problem

The question you are asking must be testable by conducting a controlled experiment. The question should be related to something you do not already know the answer to.

For Example: What effect does the amount of water have on the height of a radish plant?

2. Gather Information

Conduct research using the internet or library to gather information, from credible sources, about the topic that will help you form your hypothesis.

3. Develop a Hypothesis

Create a statement (prediction) that provides a possible answer to your scientific question. The hypothesis must be testable and should be based on the research you have done.

4. Design an Experiment

Determine the variables for your experiment. You must pick an independent variable (manipulated variable), a dependent variable (responding variable), as well as constants (factors you will keep the same). In some situations, a control and an experimental group(s) may be necessary for comparison purposes.

Independent Variable – What will you *change* in the experiment?

Dependent Variable – What will you *measure* in the experiment as a result of the change?

Constants – What will remain the same throughout the experiment? *Remember, this is what will keep your experiment controlled and therefore valid!*

Write a detailed procedure that outlines the steps and what data will be collected in order to conduct your experiment. Remember, another student (scientist) should be able to replicate the experiment exactly based on your written experimental procedure.

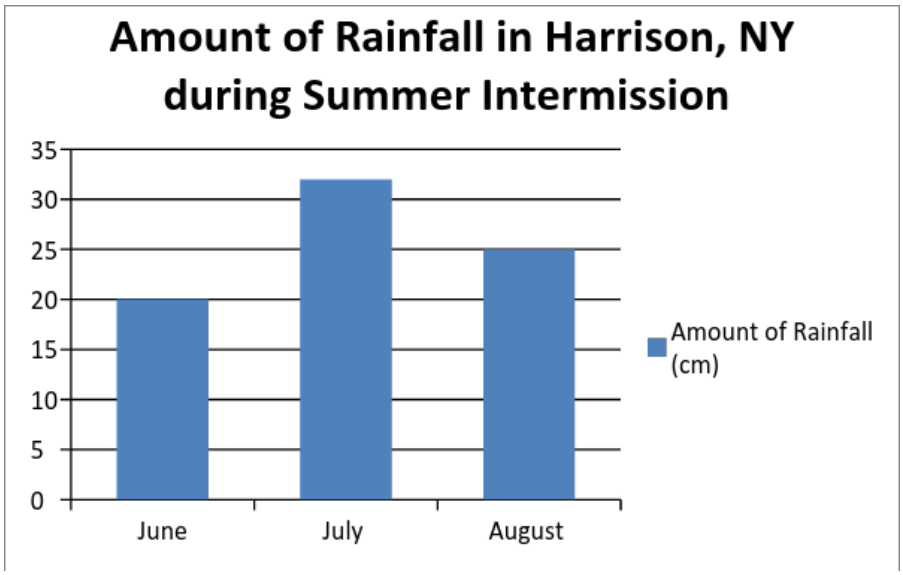
5. Record and Analyze Information

a) Create data table(s) to collect your data in an organized way. The data you collect may be qualitative or quantitative.
b) Choose and create an appropriate graph or visual representation to display the data.
c) Interpret and analyze the data. Once all data has been collected, begin to think about what the data reveals, and what relationships can be seen. Does this information support your hypothesis?

Example: Data Table Design

Month	Amount of Rainfall (cm)
June	20
July	32
August	25

Example: Analysis: Bar Graph of Data



6. Write a Conclusion

The first line of your conclusion should be a restatement of your hypothesis. Then, state whether or not you accept or reject your hypothesis. Use your data to show how you came to this conclusion.

Science Experimental Design Template

Use this template as you conduct your experiment. Each main bullet represents a step in the scientific method. Fill in each one as a guide for your experiment

Step 1: State the Problem:

_____

_____

_____

Step 2: Gather Information
(Use credible sources to find background information.):

Title and Author of Source	Most Important Information Learned
1)	
2)	
3)	

Step 3: Form a Hypothesis:

_____

_____

_____

Step 4: Design the Experiment:

Determine the variables.

Independent Variable:

_____

Dependent Variable:

_____

Constants:

_____

_____

Materials List:

_____
_____
_____
_____
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Experimental Procedure:

1.

_____
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2.

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12.

13.

14.

(CHECK POINT 2) Teacher Approval

Teacher Signature_____

You may begin your experiment but don't forget to create your data table first.

Data Table:

(Add Data Table here.)

Data Analysis:

(Add graphs, pictures and/or written analysis here.)

Conclusion:

	1	2	3
Originality of Project	Project repeats something student has done before.	Project topic is very close to something student has done before, with minor changes.	Project is something student has not done before.
Literary Research	Background research does not have to do with topic, or no research was done.	Student does very little background research, or does not use multiple sources.	Student does an appropriate amount of background research from multiple sources.
Hypothesis	Hypothesis does not relate to scientific question or is not present.	Hypothesis is only somewhat related to scientific question.	Hypothesis predicts an answer to a scientific question.
Variables	Student identifies 0 or 1 of the following: independent, dependent & constants.	Student identifies only 2 of the following: independent, dependent & constants.	Student identifies all 3 of the following: independent, dependent & constants.
Procedure	Procedure is not present or not related to the hypothesis.	Procedure is not totally clear, is missing some components, or does not directly test the hypothesis.	Procedure is clearly written, outlines an appropriate way to test the hypothesis, and includes appropriate materials.
Data	Data is irrelevant, unclear, or not present.	Data is relevant to the hypothesis being tested, but is not clearly organized.	Data is relevant to the hypothesis being tested and is organized in a clear way.
Analysis of the Data	Student makes little to no attempt to analyze the data taken.	Student analyzes the data, but the evaluation is weak.	Student makes a reasonable analysis of the data, showing a clear understanding.
Conclusion	Student does not state whether the data supports the hypothesis.	Student incorrectly states whether or not the data supports the hypothesis, or does not provide evidence.	Student correctly states, using evidence, whether or not the data supports the hypothesis.

Display Board	Display board is not organized and neat, causing confusion for the readers.	Display board is somewhat unorganized and untidy, causing some confusion for the readers.	Display board is well-organized and neat, so that readers may follow the work and interpret its meaning.

Preparing for **Science Fair Judging**— Practice Makes Perfect!

If you can communicate your science fair project well, audience members will understand your project better!

- Write up a short "speech" (about 2–5 minutes long) summarizing your science fair project. You will give this speech when you first meet the judges. (Remember to talk about why your project turns out the way it does.)
- Practice explaining your science fair project to others and pretend they are judges.
- Practice explaining your science fair project in simple terms so everyone can understand it.

Presenting Yourself during the Science Fair Judging Period-Be Professional!

- Always dress nicely for the science fair judging.
- Make good use of your display board. Point to diagrams and graphs when you are discussing them.
- Always be positive and enthusiastic!
- Be confident with your answers; do not mumble.
- If you have no idea what the judge is asking, or do not know the answer to their question, it is okay to say "I do not know."
- Treat each person who visits you like a judge.
- *After* the science fair, ask for feedback from the judges to improve your project.

Sample Judging Questions

1. Where did you get this idea?
2. Are there any famous scientists that inspired you to research this topic?
3. How long did it take you to run the experiment?
4. Did you run into any problems while doing your experiment? What did you do to overcome them?
5. Did anyone help you? What did they do to help?
6. What does your data tell you?
7. What are the three most interesting things you learned when doing this project?
8. Did you get the results you expected?
9. What would you do differently next time?
10. Why was this research important?
11. What further research do you plan on doing, or what could be done?
12. What would you do next?
13. Do you have any questions for me?