Timeline for GPMS STEM Fair Project
(In order to keep all documents together, please place assignments in a 3-prong folder)

Date Due:
October 8, 2018  3 Questions (must be approved before proceeding to the next steps)
October 12, 2018  Testable Hypothesis and Variables (Quiz)
October 15, 2018  Materials and Procedures
October 16-28, 2018  Actively work on investigation
October 29, 2018  Data (table and graphs) and Analysis of Results (Quiz)
November 12, 2018  Conclusion and Abstract
December 17, 2018  Display Board (with pictures) and Research paper (Assessment)
                     Classroom Oral Presentations Begin
January–(TBD)  GPMS Judging (Day) and GPMS STEM Fair

**** Some classes operate on an A-Day/B-day schedule; your teacher will adjust the date accordingly.

Suggested Cites:

➢ Science Fair Central
➢ Kids zone
➢ Science Buddies
➢ Science Bob
➢ Science kids

Gwynn Park Middle School
Do I need the School Safety Review Board's pre-approval before I can begin my project?

Does your project involve asking friends or other people questions? experiments on yourself? experiments with other people in any way? (Human Subjects)

No → Yes

Does your project involve your pet? experiments on any other animals that have bones? (Vertebrate Animals)

No → Yes

Does your project involve
- Mold?
- Fire?
(potentially hazardous substances)

No → Yes

Does your project involve cultures isolated from the environment? the growth of bacteria? testing for bacteria? (potentially pathogenic agents or substances)

No → Yes

STOP! You need to think of another project to do.

Does your project involve
- dangerous activities such as being on a roof or lighting objects? (hazardous activities)
- explosives? radiation? (hazardous devices)
- controlled substances? tobacco products?

No → Yes

STOP! You need to think of another project to do.

Does your project involve
- any chemical such as household cleaning agents, solvents, metals or organic chemicals? (chemicals)
- sharp objects or potentially dangerous tools? use of oven?

No → Yes

You must have approval from the School Safety Review Board.

You do not need School Safety Review Board pre-approval.
GPMS STEM FAIR
JOURNAL

PROBLEM:

1. 

2. 

3. 

HYPOTHESIS:
Testable hypothesis in the “if....then... because “ format.

If (IV) then (DV) because.........
VARIABLES

Take time to identify your variables before you start your experiment because it will be helpful when writing your procedures. A variable is something that can change or be changed. There are three kinds of variables: independent, dependent and controlled variables.

In a well-designed investigation, there should be only one thing changed on purpose, called the independent or manipulated variable.

Remember the example question: Does soaking bean seeds before planting affect how fast they will grow?

In this example, the thing I am changing on purpose is the soaking the some of the bean seeds before planting them. Therefore, the soaking of the seeds before planting is the independent variable (manipulated variable).

What I think or hope will change during the experiment is called the dependent variable or responding variable.

In this example the thing I am hoping or thinking will change during the experiment is how fast the plant grows. Therefore, how fast the plant grows is the dependent variable (responding variable).

I must try to keep any other things that might be changed the same throughout the experiment. These things that I keep the same are called the controlled variables.

In this example the things I would keep the same are:
- Type of bean
- Amount of water for soaking the seeds
- Type of soil I plant the beans in
- Amount of soil I plant the beans in
- Amount of water and sunlight they get everyday
- Size containers I plant the beans

These are the variables I am controlling.
VARIABLES:

<table>
<thead>
<tr>
<th>Independent/Manipulative</th>
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<th>Dependent/Responding</th>
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<tr>
<th>Control/Constant</th>
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MATERIALS:

- Be Specific
- List exact measurements
- Use "SI" only

RESULTS:

Attached your TABLES, CHARTS/GRAPHS

DATA ANALYSIS:

This is the summary of the data.
See attachment
All **RESULTS** should include three parts: a **data chart**, an appropriate **graph** (line, pie or bar) of the data collected in the chart; and a **written explanation** of the chart information and the graph.

**Graphs**

When choosing a graph, be sure to use the most appropriate one.

**Line graphs** should be used to display continuous data. Experiments that have dependent variables that involve temperature, time, mass, height or distance will usually result in data that can be graphed on a line graph. On a line graph, the horizontal (x) axis is always the independent variable and the vertical (y) axis is always the dependent variable. Line graphs should also have:

- numbers (scale) in even intervals (1's, 2's, 5's, 10's, 100's, etc.)
- labels for the horizontal and vertical axes, and
- a title that reflects the information that is being graphed.

**Bar Graphs** are used to display data that separate or are distinct from other pieces of data. The data in a bar graph can be displayed either vertically or horizontally. A bar graph should include:

- numbers (scale) in even intervals (1's, 2's, 5's, 10's, 100's, etc.)
- labels for the horizontal and vertical axes, and
- a title that reflects the information that is being graphed.

Remember to find the **AVERAGE** or **MEAN** of your data before graphing.

A **Written Explanation** is also required for an experiment. Explanations should be at least a paragraph long and explain the data displayed in the chart and graph. It can include any trends that may occur in the data. **RESULTS** may also include photographs and diagrams that help to display and understand the data. A **WRITTEN EXPLANATION** is **NOT** the conclusion. It is simply a **summary** of what the data shows.
CONCLUSION

*Restate the hypothesis, include the summary of data, was it supported or not supported.*

Recommendations for future study or investigation...

ANY QUESTIONS OR CONCERNS SEE YOUR SCIENCE TEACHER!

Gwynn Park Middle School