2020-2021

Chesapeake Math & IT Elementary

Kindergarten - Fifth grade

STEM Fair packet (1st semester)

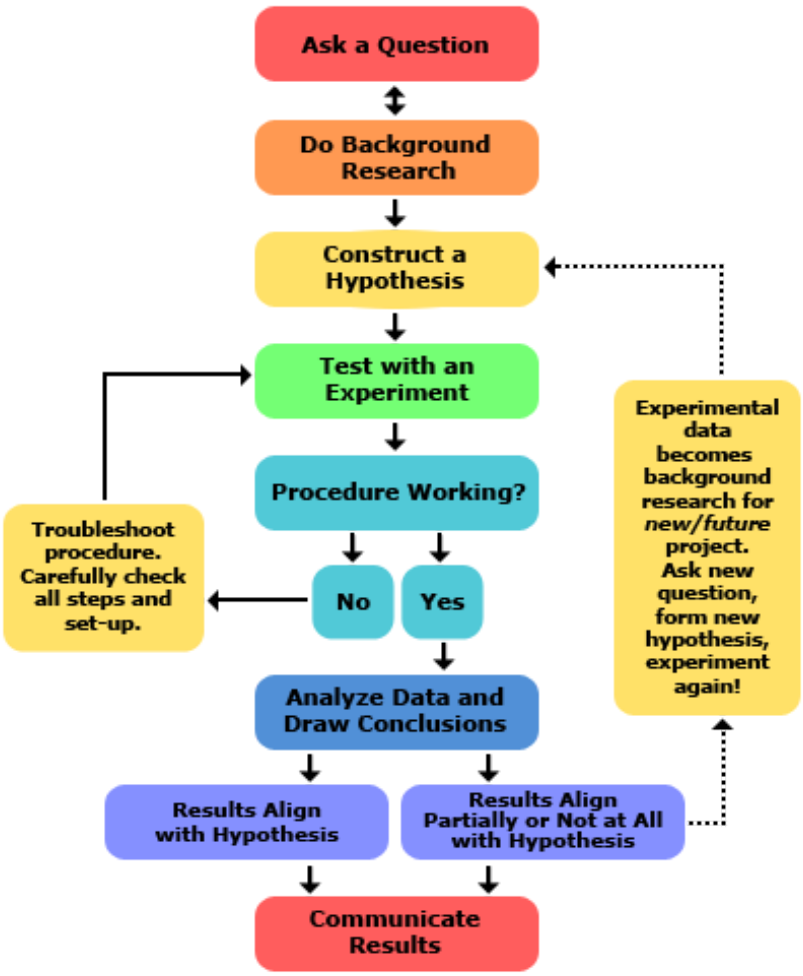
Table of Contents

WHAT IS THE CMIT VIRTUAL STEM FAIR?

*STEM Fair is a school wide project that includes the topics related to Science, Technology, Engineering, and Mathematics. It is **required for all** CMIT scholars. All teachers will be involved in supporting and evaluating parts of your project. This project will make a difference in your **second quarter report card**. In addition, upper elementary STEM Fair category winners will win amazing prizes.*

WHAT IS THE PROCESS AND WHAT SHOULD THE END PRODUCT LOOK LIKE?

- Science Experiment (Mandatory)



Experiment (K-5th grade)
1. Focus on a question/problem for your topic. 2. Use the Scientific Method to complete your investigation. 3. Collect Data. 4. Explain the data. 5. Draw and share conclusions.

Each scholar will record their presentation by creating a Google Presentation with voice over, iMovie, FlipGrid, Screen-cast-o-matic, screen-castify, or video recording.

Each scholar is to create **one** Google Slide Presentation with the components that would ordinarily be housed on a STEM Fair Presentation Board.

Items due to the teacher - Due dates; Google Classroom Assignments.

NOTE: scholars should be able explain projects independently.

STEM FAIR TIMELINE Upper Elementary 3rd-5th

*Can be presented on slides; Plan Your Slides – Plan to have 13 or less slides, including slides for the title, question, prediction, materials, procedures, variables, graphic representation of results, written explanation of results, conclusion and acknowledgements.

Component	Due Date	Expectations
Virtual STEAM Day for in school.	November 6, 2020	Complete STEAM challenges!
STEM FAIR Presentation to Parents	December 9, 2020	Parent University
Topic due to the teacher. Scholars should formulate a good question and hypothesis and submit it to the teacher for review. Scholars should begin their research and experiment, being careful to keep an accurate science log, complete with results and conclusions, pictures, data charts and graphs.	December 15, 2020	Parents will help scholars select a STEM topic. Parents should help the scholars create a good question for teacher review. Parents should help scholars work on their STEAM Fair project.
Scholars should complete their research papers* and their science experiments.	January 8, 2021	3rd, 4th, and 5th graders are expected to submit a research paper on January 8th, 2021.
Scholars should create their 'Backboard' Google Slide with the STEM Fair components. Scholars should prepare and record their 4-5 minute TedTalk on their project.	January 15, 2021	Parents should help scholars with their Google Slide and help them to practice, prepare, discuss and record their Ted Talk.
Completed projects are due; completed projects will include the Google Slide and the videotaped TedTalk presentation and the student journal.	**January 19, 2021**	Parents should ensure projects are submitted on time. NO LATE PROJECTS.
Projects will be presented in Science classes in order to determine the top five projects per homeroom.	**January 19-22, 2020**	Teachers and classmates will score the presentations and Google Slide.
Top projects will earn scholars an invitation to the CMIT South Elementary STEM Fair (Upper Elementary only).	**March 13th**	All participants will receive a certificate.
Upper Elementary Virtual STEM Fair **March 13th**	Scholars will present their Google Slide and 5 minute TedTalk Presentation on their STEM fair project. The Google Slide will allow people to have something to look at during presentations. Prizes will be awarded to the 1st, 2nd and 3rd place finishers per grade (9 total).	

STEM FAIR TIMELINE Lower elementary (K-2ND)

Component	Due Date	Expectations
Virtual STEAM Day for in school.	November 6, 2020	Complete STEAM challenges!
STEM FAIR Presentation to Parents	December 9, 2020	Parent University
Topic due to the teacher. Scholars should formulate a good question and hypothesis and submit it to the teacher for review. Scholars should begin their research and experiment, being careful to keep an accurate science log, complete with results and conclusions, pictures, data charts and graphs.	December 15, 2020	Parents will help scholars select a STEM topic. Parents should help the scholars create a good question for teacher review. Parents should help scholars work on their STEAM Fair project.
Scholars should create their 'Backboard' Google Slide with the STEM Fair components. Scholars should prepare a 3 minute video presentation on their project.	January 15, 2021	Parents should help scholars with their Google Slide and create a video presentation.
Completed projects are due; completed projects will include the Google Slide, the videotaped presentation and the student journal.	**January 19, 2021**	Parents should ensure projects are submitted on time. **Late projects will not be accepted.**
Projects will be presented in science classes to determine the top 5 projects.	**January 19-22, 2021**	The projects will be scored.
Class presidents from grades 3-5 will judge the top five projects from grades K-2.	**January 27, 2021**	1st, 2nd and 3rd place winners in each grade level; K-2 (9 total).
Class winning scholar projects will be compiled into an iMovie for release at during the week of March 8, 2021	Week of March 8, 2021 - **iMovie Release**	All participants will receive a certificate.
CMIT Elementary Virtual Science Fair	March 13, 2020 **Virtual Science Fair**	Virtual Science Fair for the school and parents.

Resources

Websites that may help you pick a topic and assist you with completing the project.

https://www.sciencebuddies.org/

https://sciencebob.com/science-fair-ideas/ideas/

https://www.winter.k12.wi.us/community/sciencefair/sciencefairideas.pdf

Htt p://www.education.com/science-fair/elementary-school/

Check to see if your project is safe: https://ruleswizard.societyforscience.org/

Ideas for lower elementary: https://www.icanteachmychild.com/science-fair-projects/
https://learning-center.homesciencetools.com/article/science-fair-projects-for-elementary/

PGCPS Science Fair Journal
https://ektron.pgcps.org/WorkArea/DownloadAsset.aspx?id=259421

Please focus on kid-friendly and age appropriate topics.

Examples
Experiments

- Which fruit juice has the most Vitamin C?
- Does salt impact how fast water freezes?
- Which liquid freezes faster?
- How can worms impact plant growth?

PROHIBITED TOPICS

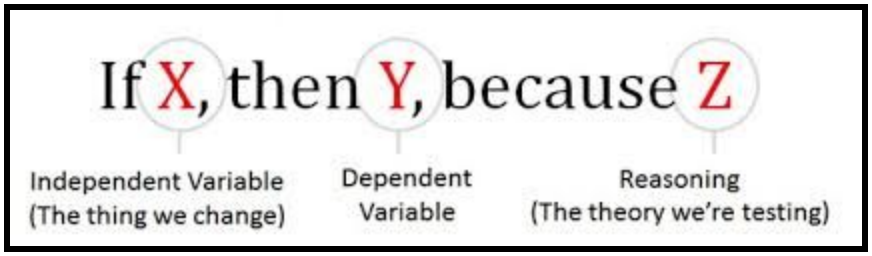
- **No** Projects involving **VERTEBRATES** (NO Fishes, amphibians, reptiles, birds, or mammals/humans).
- **No** Bacteria Projects
- Mold projects must have teacher approval for safety reasons.
- No household cleaners

STEM Fair Journal Pages

(The boxes will expand when you begin to type).

1. **QUESTION / PROBLEM** (In a sentence, phrase the question of your investigation. The question **must** lead to an investigation.)

Example: Does weight affect how fast a pendulum swings?
This is a good example because you begin your question with a very basic wondering.



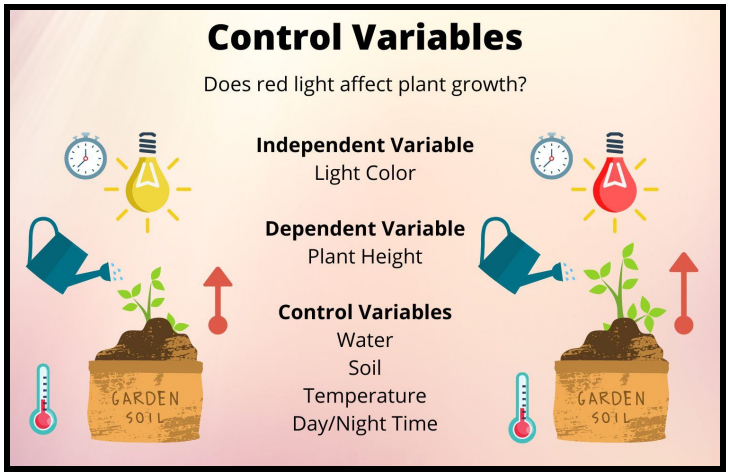
2. **HYPOTHESIS** (After doing some research, what is your predicted answer/solution to the question/problem? The hypothesis must be testable):

Metric Unit of Measure	
Measures of Length	
1 meter (m)	= 1000 millimeters (mm)
1 meter (m)	= 100 centimeters (cm)
1 Kilometer (km)	= 1000 meters
1 decimeter (dm)	= 1/10 meter
Measure of Weight	
1 gram (g)	= 1000 milligrams (mg)
1 kilogram (kg)	= 1000 grams
Liquid Measures	
1 liter (L)	= 1000 milliliters (mL)
1 deciliter (dL)	= 1/10 liter

3. **MATERIALS** (What materials will you need to test your hypothesis? Include the quantities in **metric** measurements.)

4. **PROCEDURES**

a) **DETAILED PROCEDURE**: (How are you planning to test your hypothesis? Explain your experimental design step by step; number your steps and use exact measures. Your procedure should be easily repeatable.



b) *VARIABLES*

Independent Variable: The quantity that you vary systematically. This variable is plotted on the x-axis. The successive increments in the independent variable are often consistent. In physics projects, time is frequently the independent variable.
Example: When measuring the speed of a runner over time, time is the independent variable. Speed is the dependent variable.

Dependent Variable: This quantity changes as a result of your manipulations and depends on the independent variable. The dependent variable is plotted on the y-axis and is what you are measuring.

Constant Variable (Control Variable) The control set-up as well as an experimental set-up are the things that must be constant. These things must be constant to get accurate results. Example: The location where you would put a plant if you wanted to see if worms impacted the growth of plants. The location should be the same (ex. Window).

INDEPENDENT

DEPENDENT

CONSTANT (CONTROL)

6. RESOURCES: (What are the books, magazines, and internet resources that you used and/or planning to use?)

7. DATA (Use titles and Labels)

	Trial 1	Trial 2	Trial 3	Average

8. RESULTS (Written Explanation of the Graphs and Charts)

9. CONCLUSION (Reflection of whether your hypothesis was correct and explain why the project is important, real world-applications.)

10. ACKNOWLEDGEMENTS

STEM Fair Research Paper Score Sheet

(Grades 3-5 only)

Component	Points Earned
Title and Table of Contents (5 points)	
Introduction (10 points) Brief introduction with overview of project includes problem statement, procedures, materials, and variables.	
Body of Research (10 points) Explanation of problem and rationale for hypothesis, includes background research, and the procedure.	
Discussion (10 points) Analysis of results: Raw data, Charts/Tables with labels.	
Conclusion (10 points) Reflection of whether your hypothesis was correct and explain why the project is important, real world-applications.	
Organization/Mechanics/Presentation (10 points) No grammatical, spelling or punctuation errors.	
References (MLA format)/Acknowledgements (5 points)	
Notes:	

Total Points Earned:_____ Total Points Available:___60_____ Grade (Percentage):_____

Oral Presentation Rubric

Category	Possible Points	Points Earned
Eye Contact – Scholar is not reading from the display board or anything held in hand and maintains eye contact with class the majority of the time.	2	
Loudness of Voice – Scholar is loud enough for all members of the classroom to hear.	2	
Preparation – There is evidence that the scholar practiced their presentation.	2	
Organization – Scholar is presenting information in a logical order.	2	
Enthusiasm – Scholar seems interested and excited about their topic.	2	
Tone - Scholar uses a conversational tone.	2	
Title – Scholar states their title.	1	
Question – Scholar states their question and explains why they chose this topic.	1	
Hypothesis – Scholar states their hypothesis.	1	
Materials – Scholar explains the materials they chose for their experiment.	1	
Procedures – Scholar summarizes how they did their experiment, being sure to mention how many times the experiment was repeated.	1	
Results – Scholar summarizes the results giving a few examples of numeric data collected.	1	
Conclusion – Scholar tells whether or not their prediction was correct and summarizes conclusions that could be made based on the data collected. Scholars should also explain anything they might do differently if they were to do this investigation again.	1	
Research Paper – Scholars should explain something they found interesting in their research. **(Grades 3-5 only)**	1	

Total Points Earned:_____ Total Points Available:___19 (Grades K-2) /20 (Grades 3-5)____Grade :_____

Should be creative in the form of a Google Slide or Prezi, and a video, animation, or iMovie (Grades K-2).

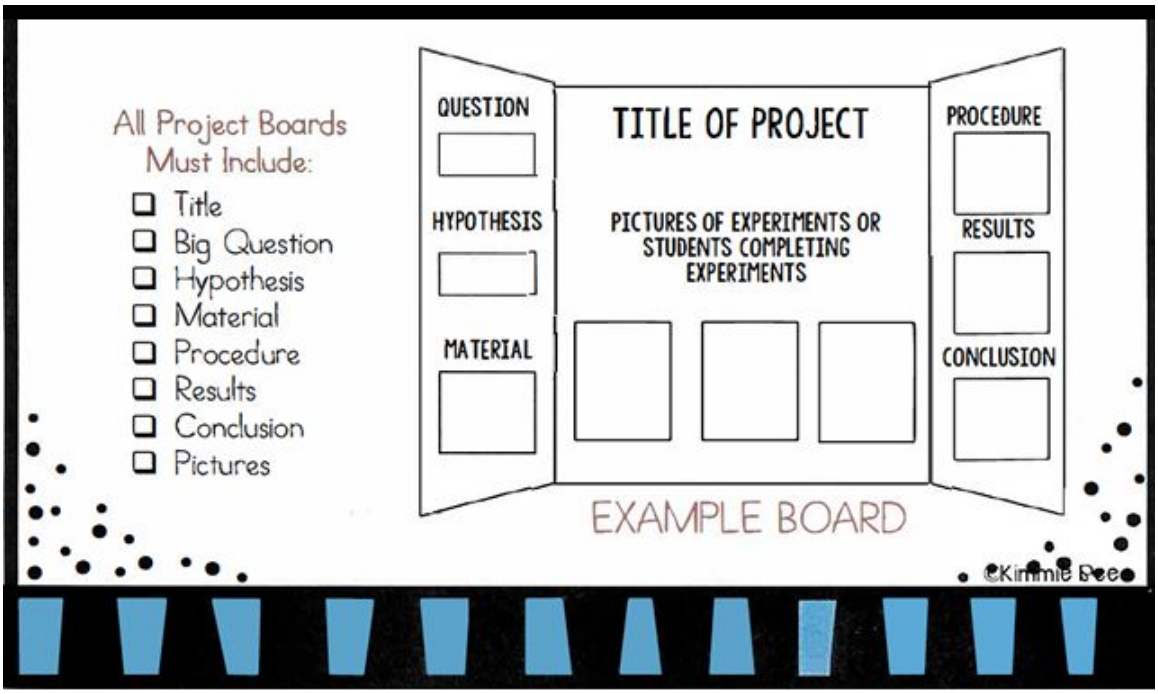
Should be creative in the form of a Google Slide or Prezi, and a videotaped Ted Talk of the experiment (Grades 3-5).

‘Presentation Board’ Google Slide Rubric

Category	Possible Points	Points Earned
Overall Appearance and Organization: • All parts of the project are included, clearly labeled and in sequential order (title, question, hypothesis, materials, procedures, results, conclusion) • Display board is neat and attractive.	● 5 ● 5 10 total	
Question: • Question led to an investigation, not a report, demonstration or model. • A creative approach to problem solving was used to formulate the question.	● 3 ● 2 5 total	
Hypothesis/Prediction: • Prediction must state a possible outcome of the experiment with an accompanying explanation. • Should show scholars’ background knowledge.	● 3 ● 2 5 total	
Materials/Procedures: • Materials and equipment are listed with specific amounts using METRIC units. • All steps to conduct the experiment are described and in order.	● 5 ● 5 10 total	
Variables/ Experimental Design: • Independent, dependent, and controlled variables are correctly identified and listed. • Adequate data were collected through repeated trials to justify the conclusion. • Sufficient sample size was used to support the conclusion (as necessitated by project).	● 5 ● 5 ● 5 15 total	
Results/Graphic Representation: • Data is presented in the form of a table with appropriate labels and titles. • An appropriate type of graph is accurately constructed (scale, labels and title) from the data on the table.	● 5 ● 5 10 total	
Results/Written Explanation: • Explanation analyzes and summarizes the data to note patterns and trends. • Explanation interprets the graph.	● 3 ● 2 5 total	
Conclusion: • Answers the original question being investigated. • Tells whether or not the hypothesis was correct, using specific data as a reference. • Additional questions to investigate are presented.	● 3 ● 5 ● 2 10 total	

Total Points Earned:_____ Total Points Available: **70** Grade (Percentage):_____

Example Board to help you organize your Google Slide.



CMIT South Elementary School Science Fair Packet revised by
Dr. Beverly Donovan, STEM Fair Coordinator
2020-2021 STEAM Committee (reviewed)
Last modified December 1, 2020.