

Compass Montessori STEAM Fair



Thank you for your interest in the 2019 STEAM (Science, Technology, Engineering, Art, Mathematics, and Maker) Expo! This packet has all of the info you need to sign up!

Compass Montessori STEAM Fair

Important Dates & Requirements

STEAM Fair Guidelines Sent Home	Friday, December 21 st
Begin Working on STEAM Fair/ Science Fair Projects	December 21 st -February 20 th
STEAM Fair Proposal Due (To Front Office) pages 2-3	Friday, January 11 th
STEAM Entry Forms Due to Front Office (page 6)	Friday, January 11 th
STEAM Fair Projects Due (Brought to school on this day)	Wednesday, February 20 th (Wheat Ridge) Thursday, February 21 st (Golden)
STEAM Fair Projects set-up (During school day) 8-8:30am	Wednesday, February 20 th (Wheat Ridge) Thursday, February 21 st (Golden)
STEAM Fair Projects Presented (During school day) 8:30am-11am	February 20 th (Wheat Ridge) February 21 st (Golden)
STEAM Fair Celebration and Judging 5-8pm	Wednesday, February 21 st (Golden)

STEAM Fair Requirements

All participating students must submit their proposals to the front office by **Friday, January 11, 2018**. Entry forms are required for STEAM Fair entry.

Entry forms must be submitted by **Friday, January 18, 2016** to The STEAM Fair Entry basket in the front office. Students may submit both the entry form and proposal forms on the same date. Entry forms are required for any student wishing to be in the judging portion of the STEAM Fair.

- Students must follow the requirements and due dates
- Project proposals must be completed in-full.
- Students can opt to complete a traditional science fair project or a STEAM project (options for both are included in this packet under examples).
- Students and parents should understand that a limited amount of time in school will be provided for these projects. The majority of the project should be completed at home.
- Presentation, trifold boards will be available for purchase in the office for \$1.00 per board in the front office

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Project Guidelines

Students in grades 1 – 12 can participate in the STEAM Fair. There are two types of projects that can be submitted for the our fair. Students can complete a traditional science fair project or a STEAM-based project. Students are encouraged to select a topic of interest and to be as creative as possible while following the project guidelines. More information can be found on pages 6 – 8.

Traditional Science Fair Projects

Traditional science fair projects should include a problem/question that can be answered through an experiment. Students must have a hypothesis/prediction for their experiment/project. Some examples of possible problems/questions for the traditional science fair project are:

- How does increasing the salt content of water affect the density of the water solution? • What effect do nutrients have on seed germination?
- How does acidity of water/soil affect plant growth?

Examples hypothesis: I think that as more salt is added to the solution, the density will increase more than the solution without any salt.

STEAM Fair Projects

STEAM Fair projects should also include a problem/question as well as a solution to the problem/question. The project should indicate what elements of STEAM were incorporated into the experiment as well as the project presentation. Some examples of STEAM-based projects are:

- In 2007 the United States Government enacted the Better Use of Light Bulbs Act (BULB) to increase the efficiency of light bulbs and reduce energy consumption in homes and businesses across the country. Your project should determine if using compact fluorescent lighting vs. incandescent lighting increases efficiency while reducing costs. The project should include a cost-saving analysis.
- Recently there has been a push to provide urban neighborhoods and communities with local, healthy, and sustainable sources of fruits and vegetables. Can these urban neighborhoods be built? What are options for providing continuous food sources? Design a neighborhood plan with solutions to provide residents with fresh fruit and vegetables. The project should include how the food sources will be divided among community members.

Example hypothesis: I think that urban neighborhoods that have dedicated land for community gardens with support from local businesses can provide a sustainable food supply of fruits and vegetables to residents.

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Project Proposal (Due Friday, January 11, 2018)

Name _____ Classroom: _____

Topic: _____

Problem/Question: _____

Hypothesis: _____

List of Materials Needed for Project: _____

What type of project will you complete? (Check the appropriate box)

_____ Traditional Science Project

_____ STEAM-based Project What components of STEAM will be included in the project?

_____ Science _____ Technology _____ Engineering _____ Art _____ Math _____ Maker Project

Where will you conduct your experimentation? (Check all that apply)

School

Community

Home

Other _____

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STEAM Fair Entry Form (Due Friday, January 11 to the front office)

*This form must be submitted for participation in the Fair for science and STEAM-based projects

Student Name _____ Grade Level _____

Teacher _____

1. Project Title _____

2. Problem/ Question _____

3. Hypothesis/ Prediction: _____

5. Type of Project:

Traditional Science Fair Project

STEAM-based Project

Maker Project

Parent Name (write out): _____

Parent Signature: _____

*Students who submit entry forms should make all attempts to attend the STEAM Fair on:

Wednesday February 20th (Wheat Ridge) or Thursday, February 21st (Golden)

and the STEAM Celebration at Golden from 5:00-8:00 pm on Thursday, February 21st

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Project Format

*Below is the suggested format for STEAM and Science Fair Projects. This information can be included in a **report-type format, Power-Point, or display board**. We encourage students to include examples and artifacts from their experiment/ project as part of the display. We also encourage the use of technology.

Title: Think of an interesting and catchy title for your project.

Purpose: Statement about something in the world you are curious about or why you wanted to learn about this or were curious about this topic.

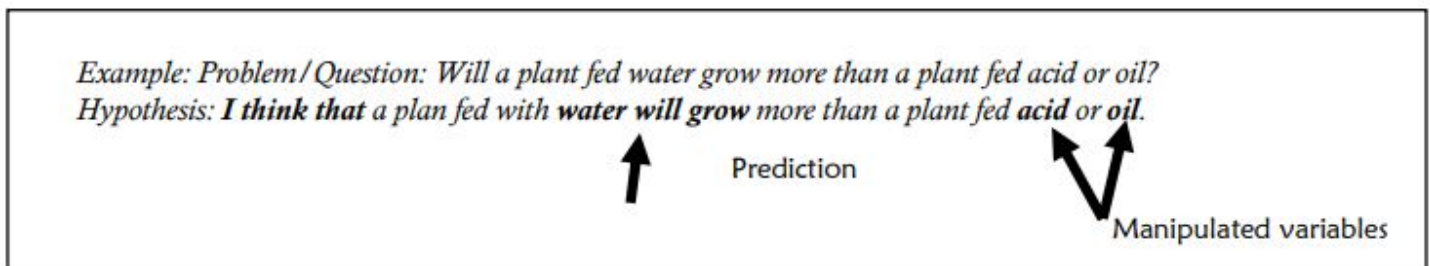
Problem/Question: Must be something that can be tested/ evaluated. Pick something that has one manipulated variable that **can be tested**.

Hypothesis/ Prediction: What is your educated guess about the outcome of your project.

- Restate the question entirely with a guess (ie: will or will not/ is or is not)
- Do not include reasoning because anything put into a hypothesis must be tested before the reason can be included.

4 Steps to a great hypothesis:

1. State your hypothesis with "I think that..."
2. Include all manipulated variables in your hypothesis (ie adding salt, acid, etc).
3. Use the future tense when writing out your hypothesis (ie will or will not)
4. Restate the question entirely. Do not change the meaning of the problem/ question.



Materials: A numbered detailed list of materials that would be needed to conduct the investigation. Include quantities, amounts, types (be specific).

Diagram: A detailed diagram of the project set-up with labeled variables, amounts, or times. Make sure to label your diagram!

Controlled Variables: Things that are kept the same to make the test fair. If they were not the same, it would be impossible to determine which variable affected the investigation. For STEAM projects, this could be time, space, etc.

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Manipulated Variables: What was changed on purpose to find an answer or make a comparison?

Procedures: List the steps in the investigation in sequential order. Directions someone else could follow to complete the investigation.

Data/ Results: Collect the data. Prepare the charts, journals, diagrams, photographs, or tablets that you may need. Students can represent the data as percentages, averages, graphs, etc.

Conclusion: Explain what happened (use your data). What was discovered? There are 4 steps to a successful conclusion:

1. Explain if the hypothesis was proved or disproved. "My hypothesis was proved/disproved because..."
2. Discovery – What did you find out?
3. Proof – Data accumulated must be presented from smallest values to largest values.
4. Ending – What conclusion can you make from the data?

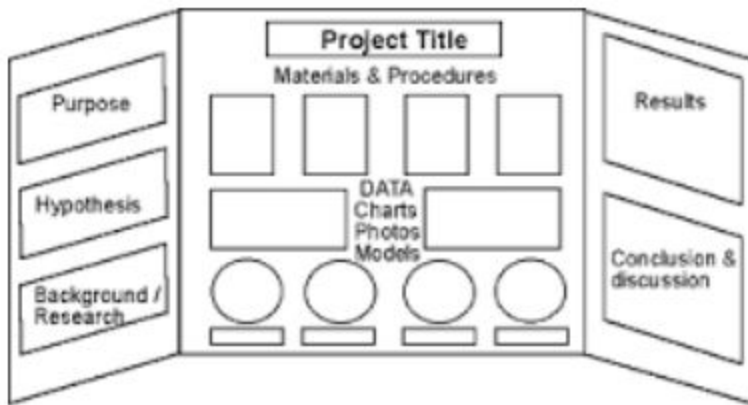
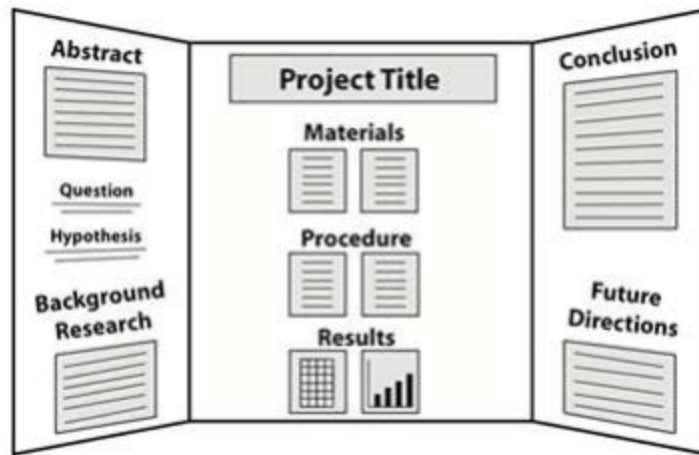
Note: A conclusion is not making observations about the data or speculations about the results. Instead, save that for the discussion. A conclusion is answering the question and using the data to prove what you are stating.

Discussion: (Use what you discovered to answer the questions. What did you learn?)

1. Analyze what you learned about your results and data
2. Discuss why or why not your hypothesis was proved or disproved.
3. Discuss experimental design flaws or changes that could have been made.
4. Can you make a prediction about real-world situations from what you learned?

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Project Display Examples: Boards can be purchased from a number of stores for between \$4-\$15. A limited number of boards will be provided by the school on a first come, first served basis.



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Science/STEAM Fair Rubric

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Project Design	Above Average		Fair – Needs Improvement	
1. Includes a thoroughly developed hypothesis	4	3	2	1
2. There is a purpose/benefit for society.	4	3	2	1
3. Presents a timely issue/concern with real solutions	4	3	2	1
4. Is organized well	4	3	2	1
5. Sequence of experiment is easy to follow	4	3	2	1
Total Points of 20				
Creativity	Above Average		Fair – Needs Improvement	
6. Project is thoughtfully and creatively presented	4	3	2	1
7. Project is original in approach	4	3	2	1
8. Originality in design and use of equipment	4	3	2	1
9. Project is neat, colorful, visually appealing	4	3	2	1
Total Points of 16				
Effectiveness	Above Average		Fair – Needs Improvement	
10. Accompanying report/literature is easy to understand	4	3	2	1
11. Explanation of project was clear and concise	4	3	2	1
12. Student was prepared to present information	4	3	2	1
13. Project format meets all requirements	4	3	2	1
Total Points of 16				
Scientific Content	Above Average		Fair – Needs Improvement	
14. Adequate sample size used for experiment	4	3	2	1
15. Conclusions accurately based on data	4	3	2	1
16. Resources used for evidence are adequately cited.	4	3	2	1
17. Data is clearly presented and relates to hypothesis/question	4	3	2	1
18. Complete list of details and how others could replicate the results with exact measurements is included.	4	3	2	1
19. Experiment was performed multiple times or multiple angles were considered for experiment/problem.	4	3	2	1
Total Points of 24				
Total Points of Possible: 76				

*This rubric should be used as project is developed and completed. This is the rubric that will be used for judging both STEAM and traditional science projects during the STEAM Fair.