Dear Families,

ALL OSS students are welcome to participate in the OSS STEM Fair. Students in K-2nd grade are encouraged to participate but it is not mandatory. Students in 3rd grade and higher are **required** to participate in the STEM Fair. A STEM Fair project challenges a student to solve a question using the scientific method or engineering process. It is a great way to excite children about science, teach them to think like scientists, develop their organizational skills, and enhance their writing and oral presentation skills. Students may do a science, technology, engineering, or math project.

We will be talking about the STEM Fair in class, but the bulk of the work will be completed at home. We hope that you will offer your child support and encouragement while monitoring his/her progress in the coming weeks and months. The OSS STEM Fair is meant to be educational as well as *fun*. **The main goal is for the students to be inspired to explore the world around them and have FUN while learning about science, technology, engineering, and math.** At the same time, we ask that you keep in mind that the project is your child's responsibility. By limiting your involvement, your child will receive the full educational benefits of the STEM Fair. *Also, a successful project does not have to cost a lot of money!* This packet is to help you keep on track with the STEM fair project and help you with questions you may have about the STEM Fair. There are monthly meetings to help you with this process. You must sign up for the optional meetings IF you plan on attending at http://bit.ly/ossstemhelp.

Thank you,

Ms. Coy and Mrs. Trujillo
Stephanie.Coy@orlandoscience.org
Amy.Trujillo@orlandoscience.org

STEM Fair Student/Family Checklist

Student: _____ Teacher/Grade: _____

	Due Date	Parent Initials	Grade
1. Review this STEM Fair Packet with your family.	12/1/18		
2. Complete and turn in the STEM Fair School Contract. (Page 3)	1/12/18		___/10
3. Set up STEM Fair 3-ring binder.	1/19/18		
4. Complete and turn in the Science Project Proposal Form. Here is the direct link: http://bit.ly/ossprojectproposal	1/26/18		___/10
5. Complete topic research. Cite four or more resources. 3rd-5th-Turn in the Bibliography.	2/9/18		___/50
6. Begin the experiment (first trial) and record findings and data. Make sure you take pictures. Create and turn in a graph using the website.	2/16/18		___/50
7. Perform the experiment a second time. Collect data. Take pictures. Create and turn in a graph for your data. (Use the graph website.)	2/23/18		___/50
8. Bring in the 3-ring binder for a notebook check.	3/2/18		___/65
9. Repeat the experiment a third time. Collect data. Take pictures. Create and turn in a graph for the data. (Use the graph website.)	3/9/18		___/50
10. Analyze the data. Write results. Compare results to hypothesis. Write the conclusion and recommendations.	3/16/18		
11. Bring in your 3-ring binder for a notebook check.	3/30/18		___/65
12. Make revisions, additions, and edits to the STEM Fair 3-ring binder.	3/31/18		
13. Create the Display Board.	4/6/18		
14. Turn in the STEM Fair 3-ring binder. (Grade: _____/65)	4/13/18		___/65
15. Turn in the STEM Fair Display Board. (Grade: _____/60)	4/16/18		___/60
18. OSS STEM Fair (class winners will be displayed)	4/20/18		
18. STEM and Maker Faire at Barnes and Noble (optional)	April or May		

3rd-5th graders will be graded on their project throughout the process. It is up to the grade levels on how many of these grades will be recorded in OSES Connect. K-2 will not be graded. The points may be used as a bonus assignment if the teacher adds it to OSES Connect.

Other OPTIONAL Dates:
December 30th -- Living Things at Epcot Unofficial Field Trip: Families are welcome to join us at Epcot to explore The Land and The Seas in correlation with the grade level standards. Time can also be set aside to talk about the STEM Fair projects, if needed. Please email Amy.Trujillo@orlandoscience.org if you are interested.

January 28th -- OSS Open House: Students may display their STEM Fair projects. Classes may showcase their class STEM Fair project as well.

There are OPTIONAL monthly meetings to help families through the STEM Fair process. Register online at http://bit.ly/ossstemhelp.

Please include this page in your STEM 3-ring binder.

OSS STEM Fair Contract

Kindergarten through second graders should return this form if they are participating in this year's STEM Fair. All 3rd-5th graders must complete and return this form by **January 13, 2018. Students that have an EP are also strongly encouraged to complete a STEM project.**

I, _____, am participating in this year's OSS STEM Fair. I understand that the OSS STEM Fair will be held on Friday, April 20, 2018, during school hours at OSS. I also understand that spring is a busy time with FSA testing and that I am able to work on and turn in my project early if needed to allow for FSA practice and/or relaxation during testing.

OSS STEM Fair Guidelines:

1. All students in third grade are required to complete a STEM Fair project.
2. Projects should have a purpose and a question that can be followed through an investigation process.
3. 3-ring binders and display boards should including the following parts and in this order:
    a. Title Page
    b. Statement of the Problem and Testable Question
    c. Research Notes
    d. Hypothesis
    e. List of Variables (Independent, Dependent, and Controlled)
    f. List of Materials (with Quantities)
    g. Step-by-Step Procedure
    h. Observations and Data Record (Computer Generated)
    i. Conclusion
    j. Citation of Sources Used
    k. Recommendations
4. Projects must reflect the **student's work**.
5. Proper safety-wear should be worn when appropriate such as eye goggles and gloves.
6. An adult must supervise when using chemicals, sharp tools, or when using items/tools that involve projective objects or heating equipment.
7. Consider only school appropriate topics for investigation.
8. There is a STEM Fair schedule to help keep families on track and not be overwhelmed in the spring.
9. Students may use www.sciencebuddies.org, www.easybib.com, https://nces.ed.gov/nceskids/createagraph/, and other helpful websites to help them (and their parents) through the STEM Fair process.
10. Please email if you need any help on where to start, how to create the book or board, or have any other questions.

Student Signature: _____

Parent Signature: _____

Teacher Signature: _____

STEM Displays will be shown in the classrooms and hallway and will be judged in one of the following categories:

a. **Life Science**: This category deals with animal, plant, and human body questions. Students can study insects, plants, bacteria, leaf chromatography, butterfly gardens, and photosynthesis.
b. **Physical Science**: This category deals with matter and structure, electricity, magnetism, sound, light, and anything else that you can figure out how it works and how to make it better. Students can study laws of force and motion, the power of the sun, hovercrafts, illusions, periscopes, and balloon rocket cars.
c. **Earth and Space Science**: This category deals with weather, geology, rocks, fossils, volcanoes, stars, planets, the sun, and anything dealing with Earth and space. Remember that this should be a science EXPERIMENT and not a model, which means there are variables that change.
d. **Engineering**: This category deals with technological devices, which are useful to the global society within an engineering related field, such as electricity, civil, mechanical, chemical, aeronautical, and geological.
e. **Mathematics**: This category deals with projects that demonstrate any theory or principles of mathematics.

A note to our families and staff members:

For many of you, this is the first time you have completed a STEM or Science Fair project. It can be overwhelming but please know that this is part of our school culture and we will help you through it. We strongly encourage teachers to complete a class STEM project in addition to the student's project. By doing a class project, the teachers and students learn together about the STEM Fair and the process of creating an experiment, recording the data in the STEM Fair book, as well as how to display it on the board. We recommend teachers having their own STEM Fair in their room to display all of the projects.

We are available to discuss the project, walk families through how to build the book, create the graphs and bibliography, or answer any questions. There are monthly meetings to help families through the process. Sign up online at http://bit.ly/ossstemhelp.

Approximately two winners will be chosen from each room to be displayed at the OSS STEM Fair on April 20th. Some of the projects will also be on display at the STEM and Maker Faire at Barnes and Noble in April or May. There will also be a chance for students and families to lead experiment and STEM activities, as well as talk about their STEM project at Barnes and Noble on that day.

Thank you,
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Amy.Trujillo@orlandoscience.org

Helpful Tips and Links for Families

Title/Topic: If you need help coming up with a topic for your STEM Fair project, go here: http://bit.ly/1NE7ezc.

Statement of the Problem and Testable Question: If you need help creating a problem or question, go here: http://bit.ly/1LXG19s.

Research: Students should have four to five sources that have been researched and are related to the project. Information about researching can be found at: www.sciencebuddies.org, http://www.tryscience.com/kids, http://bit.ly/sciencefairhelp, or http://users.rcn.com/tedrowan/primer.html. Students may also interview experts in the field, visit the local library, and Skype or Facetime with experts outside of our area.

Hypothesis: The hypothesis should be written in the correct format (If-then-because) and should be testable. For help on forming a hypothesis, go here: http://bit.ly/1RyGW7h.

Variables: If you need help with variables, go here: http://bit.ly/1R4bRZT. For sample variables, go here: http://bit.ly/1Q9JoSd. For a video about variables, go here: http://bit.ly/1RyGlCO.

Materials: All materials must be listed with specific quantities. For more information, go here: http://bit.ly/1RyH9Yh.

Procedures: The list of procedures is written in a numbered or bullet pointed list. Procedures must be easily replicated with at least three trials. For help on procedures, go here: http://bit.ly/1lHXkpG.

Data Collection: All STEM Fair projects that move onto the OSS STEM Fair must have computer generated graphs and/or charts. Graphs can be created easily at this website: https://nces.ed.gov/nceskids/createagraph/.

Conclusion: The conclusion shows how the results support or contradict the original hypothesis. For more information, go here: http://bit.ly/1NcThsB.

Citation of Sources: Must be a typed list of citations using MLA or APA formats. A bibliography can be created and saved throughout the STEM Fair project using www.easybib.com and then printed at the end to mount to the display board and inserted in the STEM Fair 3-ring binder.

Recommendations: Students must provide recommendations related to the project and include ideas for future related projects or designs.

Display Board: Display Boards should be tri-fold and be able to stand on their own. For help on the display board, go here: http://bit.ly/1Qq93EN.

STEM Fair 3-ring binder: Students must keep a 3-ring binder with their work from the STEM Fair project. For help, go here: http://bit.ly/1NcU90e.

STEM Fair Scoring Rubric for Display Board and Book

3-ring binder		
5-The 3-ring binder has a title page, table of contents, labeled sections, and items are organized in the correct order.	3-The 3-ring binder is organized in the correct order but one component is missing.	1-The 3-ring binder is not organized in the correct order and/or is missing several components.
Problem and Question		
5-There is a well written, testable problem as well as a question that is original and/or related to real-world topics.	3-There is a well written and testable problem and question but it doesn't demonstrate originality or significant real-world context.	1- The problem and question is unclear and the question is not testable. The project is a MODEL rather than an experiment with controlled conditions.
Hypothesis		
5-The hypothesis is testable and is written correctly (if-then-because.) It is original and the student did not already know the answer.	3-The hypothesis is present and testable but is not written in the correct format.	1-The hypothesis is incomplete and/or not testable.
Background Information and Citation of Resources		
10-At least 4-5 sources are listed on a typed bibliography using MLA or APA format and are aligned with the topic. A summary of the research is included.	5-Research is insufficient or not aligned. Bibliography is not typed. Research is not summarized. Less than 4 sources are listed.	2-The topic was not researchable or included in the project. Bibliography is not typed. Less than 2 sources are listed.
Materials		
5-All materials are listed with quantities.	3-All the materials are listed but quantities are not included.	1-The material list is incomplete or missing.
Variables		
10-The independent, dependent, and control variables are all identified correctly.	5-Not all variables are listed and identified correctly.	2-Variables are not included or identified correctly.
Procedures		
5-All steps are clearly written and are easily replicated with at least three trials.	3-Not all steps are fully explained or there are less than three trials of evidence.	1-Steps are unclear and incomplete.
Data Analysis and Results		
10- Data is clearly labeled showing all three trials and results are explained and linked to data. Correct graph format is used and are computer generated.	5-Data and results are not recorded or linked properly. Trials are not identified or labeled. An incorrect graph format was used or were hand drawn.	2- Data is incorrect; trials are not labeled and not linked to results. No graphs or charts were included.
Conclusion and Recommendations		
10-The conclusion fully connects the elements of the purpose, background information, data analyze, and results. Recommendations provided are related to the project and include ideas for a redesign or future projects. New questions are posed for further investigations.	5-The conclusion does not address all of the elements. There is an attempt to provide recommendations or a redesign that are related to the project.	2-Only results are listed. There is no connection to the elements. No recommendations or ideas for redesign have been made.

Score: 3-ring Binder _____/65 = _____% Display Board _____/60 = _____%