

**Rising 7<sup>th</sup> Grade – Required Summer Science Assignment**  
**Due on Monday, August 26, 2019**

To help us launch our STEM Fair activities in the best possible way at the start of school, **students are required to generate and submit three (3) different ideas that they are potentially interested in considering as a STEM Fair project.** A student can choose ideas that could be investigated using either the Scientific Method approach or that could deliver a solution to a specific problem using the Engineering Design approach. You will turn in one sheet of paper (or more) for each idea. For scientific method project ideas, please complete information according to that framework and sheet. For engineering design ideas, please complete information according to that framework and sheet. The two sheets appear on the next two pages.

Please take a look at the questions in the box for each approach, and then use one of those frameworks for each one of your ideas. You may offer three ideas that are all in one approach, or you may have a combination (such as one scientific method idea and two engineering design methods, or the reverse of that). We've listed a few examples from this year just to help initiate your thought process.

*If you have trouble thinking about possible ideas, we encourage you to go to Science Buddies, take the survey about your interests, and you will receive recommendations about projects that might align with your interests.*  
<https://www.sciencebuddies.org/science-fair-projects/topic-selection-wizard/background-info>

**Scientific Method Approach (SM) – For STEM Fair, this means designing and conducting a controlled experiment.**

*This **method** involves making observations, forming questions, making hypotheses, doing an experiment, analyzing the data, and forming a conclusion. Every **scientific** experiment performed is an **example** of the **scientific method** in action, but it is also used by non-**scientists** in everyday situations.*

*(BSS 2019 project examples: Maddie's organic plastics and their decomposition, with purpose being to save oceans; Charlotte's cleaning of oil-soaked feathers, with purpose to help birds after oil spills; Jack's testing of different knots to see which kinds of knots are strongest.)*

For your ideas using this approach, please use the questions below to present an initial idea.

**Engineering Design Approach – For STEM Fair, this means identifying a problem you want to try to solve, and designing possible solutions to meet certain requirements.**

*The **engineering design process** is a series of **steps** that engineers follow to come up with a solution to a problem. Many times the solution involves **designing** a product (like a machine or computer code) that meets certain criteria and/or accomplishes a certain task.*

*(BSS 2019 project examples: Bobby's model car designed to move when a certain sound was made—could help propel vehicles for people with special physical needs; Will's homemade computer designed to meet image quality and speed criteria at a lower cost than a commercial computer; Dani's water filtering system designed to provide a low-cost solution to help a person/family gain access to clean water.)*

For your ideas using this approach, please use the questions below to present an initial idea.

- What question would you investigate?
- Why?
- How would knowing the answer to the question help something in real life?
- How would you investigate that question with an experiment?
- What do you think you'd need to learn about before designing your experiment?
- What do you already know about this question?

- What problem would you hope to solve?
- Why?
- How would solving this problem help or improve something in real life?
- What criteria (or requirements) would your invention or solution need to meet to be successful?
- What do you think you'd need to learn about before designing your solution?
- What do you already know about this problem or solutions that you have in mind?

## SCIENTIFIC METHOD APPROACH SHEET

Name: \_\_\_\_\_

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For your ideas using this approach, please use the questions below to present an initial idea.

- What problem would you hope to solve?
- Why?
- How would solving this problem help or improve something in real life?
- What criteria (or requirements) would your invention or solution need to meet to be successful?
- What do you think you'd need to learn about before designing your solution?
- What do you already know about this problem or solutions that you have in mind?