

The 7th Annual Louis M. Klein 6-8 Science & Engineering Fair

Dear Parent(s):

Your child will have the option to take part in an exciting school event-**The Louis M. Klein Science & Engineering Fair**. This learning experience will allow your child to do research and be innovative offering them experiences to explore topics beyond what they learn in the classroom. Investigating a specifically-selected science or technology topic of interest in detail can open up a new appreciation for questioning and learning about the world we live in.

We would like to invite you to work along with your child as he or she selects, investigates, and reports on an appropriate area of science or technology. With your interest and encouragement, your child can develop the skills and attitudes he or she needs to make this project a valuable experience. Your child will have the opportunity to wrestle with problems they have always wondered about, and will learn by doing. We encourage you to guide your child whenever and wherever you can, but the final project should reflect your child's individual effort and design.

All of the documents provided in Google Classroom will help your child prepare for the science and engineering fair. The provided sheets have been designed to allow your child to work independently but with guidance as they move through the research process, thus helping him or her generate a successful project.

Participation in this learning experience **is optional for our grade 6-8 students** so it will not be reflected in their science or technology grades for the year. However, your child will have the opportunity to be academically recognized. The true reward will be his/her engagement in a personalized experience similar to the work that scientists and engineers do to learn about and improve the world we live in.

After reviewing the components of this packet, if your son or daughter chooses to participate in the science & engineering fair, please return the contract with child and parent signatures to your child's science or technology teacher.

We look forward to your child's participation in this wonderful event.

Sincerely,
The LMK Science and Technology Education
Departments

The 7th Annual Louis M. Klein 6-8 Science & Engineering Fair

This Year's Date: Tuesday, March 10, 2020

6pm LMK

Please return this form to your child's science teacher by Tuesday, January 14, 2020.

We have reviewed with our child the attached packet and the resources provided in Google Classroom describing the 7th Annual LMK 6-8 Science & Engineering Fair. After reviewing this information, we have made a sound decision based on our child's interest in having this experience and other demands our child has. Our decision is:

_____ My child, _____, **will participate** in the March 10, 2020 LMK 6-8 Science & Engineering Fair. We are looking forward to supporting our child through this project in partnership with the LMK Science and Technology teachers.

_____ My child, _____, **will not participate** in the March 10, 2020 LMK 6-8 Science & Engineering Fair. It doesn't work for our child now but we might try it next year.

_____ In addition, I would like my child's project to be evaluated for entry into the **Tri-County Science & Technology Fair** held at White Plains High School on Saturday, April 18, 2020. See link for more information.
<https://discoveryctr.org/tri-county-science-and-technology-fair/>

Parent Name _____

Parent Signature _____ **Date:** _____

Parent email address: _____

Parent best phone contact: _____

***** If your child is participating, please have them fill out the 3rd, 4th and 5th page of this form and return it with this page on *January 14, 2020.***

Student Contract

- A. The project described in this packet, which I plan to enter in the Harrison Science & Engineering Fair, will be my own work and will be completed by me according to the rules/guidelines of the LMK Science & Engineering Fair noted in the packet.

- B. I promise not to begin any part of the experimental procedure until my teacher has approved the safety component of the experiment.

- C. I agree to set up my project on March 10, 2020 at 2:40pm and be present from 6-7pm. I will bring my poster and any supporting materials to the designated area.

Signature of Student

Date: _____

Science & Engineering Fair Topic Selection Guide

(To be submitted to your Science Teacher)

What areas of science or technology interest me the most?

<input type="checkbox"/> Biology	<input type="checkbox"/> Industrial Technology
<input type="checkbox"/> Earth & Space Science	<input type="checkbox"/> Biotechnology
<input type="checkbox"/> Chemistry	<input type="checkbox"/> Power Energy Technology
<input type="checkbox"/> Physics	<input type="checkbox"/> Transportation Technology
<input type="checkbox"/> Environmental Science	<input type="checkbox"/> Computer Technology
<input type="checkbox"/> Health & Medicine	<input type="checkbox"/> Engineering
<input type="checkbox"/> Mathematics & Computer Science	<input type="checkbox"/> Other _____

What specifically interests me in the categories I chose?

1. _____

2. _____

3. _____

How much time can I spend on my project each week? _____ hours

What kind of materials or equipment/tools do I enjoy using or am I familiar with?

Other thoughts!!!!

Idea #1 _____

Circle the approach you will take.

Scientific Method or *Engineering Design Process*

Time Requirement: _____

Materials Needed:

Presentation Materials:

Presentation Board (provided by LMK)

Experiment/Design Materials:

I will seek help from: (You can circle more than one.)

Parent/Guardian *Science Teacher* *Technology Teacher*

Older Siblings *School Support in Library (HHS Science Research Students)*

Other _____

Idea #2 _____

Circle the approach you will take.

Scientific Method or *Engineering Design Process*

Time Requirement: _____

Materials Needed:

Presentation Materials:

Presentation Board (provided by LMK)

Experiment/Design Materials:

I will seek help from: (You can circle more than one.)

Parent/Guardian *Science Teacher* *Technology Teacher*

Older Siblings *School Support in Library (HHS Science Research Students)*

Other _____

(CHECK POINT 1) Science Teacher Signature _____

What is a Science & Engineering Fair Project?

A science or engineering fair project is different from any other type of project you work on at school. Why?... because it is an **independent, student-generated** educational activity that incorporates critical thinking, creativity and a variety of other skills throughout the process. Over several weeks, you will conduct research and complete an experiment, or design a product, in preparation for a science and technology fair presentation night in which you will showcase and present this work.



Why Should You Participate in a Science & Engineering Fair?

“The important thing is not to stop questioning. Curiosity has its own reason for existing.”

– Albert Einstein

The experiences you have taking on a science or engineering fair project will teach you skills that have endless benefits for your future.

You will...

1. Learn and practice critical thinking, problem-solving, and investigative skills that encourage you to think “outside the box.”
2. Research topics of interest to you.
3. Develop organizational skills.
4. Enhance communications skills.
5. Earn recognition for academic excellence.

Rules/Guidelines for Projects

1. All materials for the project **cannot exceed \$15.00 unless otherwise approved by your teacher.** (See budget sheet in Planning Template.) If there are any financial constraints that will prevent you from participating, please contact Ms. O’Keeffe via e-mail at okeeffej@harrisoncsd.org.
2. The **Scientific Method** must be followed if completing a science project. The **Engineering Design Cycle** must be followed if completing an engineering project. There are two teacher approval points that must be adhered to.
3. The participant **must be present on Tuesday, March 10, 2020** from approximately 6:00pm-7:00pm.
4. All aspects of the project must be displayed on a **Tri-Fold presentation board.** You should also bring any interesting components of your project (samples, equipment, models, etc.) to set up in front of your display board during the Science/Technology Fair.) **Presentation boards** do not need to be purchased. They will be supplied to you by your teacher.
5. This is an **independent, extra -curricular activity** that does not take place in the classroom.

Parents	Students
<p>Do’s...</p> <ul style="list-style-type: none"> ● Discuss project ideas with your child. ● Bring your child to the library and/or introduce him/her to appropriate websites. ● Help your child manage the time frame for completing his/her project. ● Refer to the Scientific Method or Engineering Design Cycle Template and encourage your child to discuss his or her ideas and findings through the process. ● Shop with your child and help him or her stick to the \$15.00 limit. ● Contact your child’s teacher if you have any questions. <p>Don’ts</p> <ul style="list-style-type: none"> ● Choose a science fair project for your child. ● Do the research (supply sources of information) for your child. ● Let your child procrastinate! ● Conduct the experiment – (The key here is to be a guide, not an active participant). ● Spend more than the budget. ● Allow your child to conduct an experiment using dangerous chemicals or which proposes to do anything unsafe, no matter how excited he/she is about the idea. If you are unsure of safety guidelines, contact your child’s science teacher. Teachers will approve the project to check for safety before your child begins so this shouldn’t be an issue unless your child strays from the experimental procedures. 	<p>Do’s...</p> <ul style="list-style-type: none"> ● Follow the Planning Design Template and Timeline provided in the packet. ● Follow the steps of the scientific method when conducting your research (a reference sheet is in the packet). ● Choose a topic that interests you – be creative and unique! ● Be organized, challenge yourself, proofread, use your resources, seek help when needed, and above all HAVE FUN! ● Practice responding to judges’ questions about your project to prepare for the fair ● Seek out help from teachers or science fair helpers when needed. ● Dress professionally on the night of the Science and Technology Fair. <p>Don’ts</p> <ul style="list-style-type: none"> ● Wait to the last minute to perform your research and experiment- (some of the best experiments require time and detailed data collection). ● Copy a project that has already been done – try and put your own spin on it! ● “Wing it” – practice will be needed to prepare for the fair. ● Give-up when things get difficult! The best scientists have spent years researching before coming to any conclusions.

Sample Topics for Science Projects

- Water transport in stems
- Behaviors of invertebrate animals or one-celled protozoa
- Factors affecting dissolving rates
- Good and poor conductors
- Factors affecting condensation
- Effect of object color on temperature
- Effect of light on plants
- Effect of root position on plant growth
- Effect of fertilizers on plant growth
- Effect of light sources on producing shadows
- Expansion rates of different metals
- The transmission of sound through different materials
- Mold growth on different types of bread
- Effect of noise on plant growth

Sample Engineering/Design Problems for Technology

- Crystal radios
- Skyscraper shapes and wind forces
- Rubber-band powered helicopters or other vehicles
- Robotics (Lego or otherwise)
- Build a musical instrument
- Mousetrap-powered vehicles
- Model airplanes
- Dirt batteries
- Use of hydraulics to control an arm
- Use of pneumatics to control an arm
- Electric fruits
- Hydropower vs. wind power
- How does the bow of a ship influence water resistance?
- Adhesive tape strength
- Reflective sun shade shapes and materials
- Fabric type and water resistance
- Expansion and shrinking of wood
- Comparing thermal insulation
- Building materials for earthquake-prone areas
- Comparing incandescent lamps and LED lamps
- Build an anemometer to measure wind speed
- What materials make a good sound barrier?
- Build solar cookers
- Build hovercrafts
- Build a simple electricity generator
- Waves and power generation
- Salt water desalination
- Water purification