KMLHS GRADE SCHOOL FEDERATION SCIENCE FAIR

(to be updated when new material is available)

To all grade schools in the federation,

The KML Grade School Federation will host the Science Fair at Kettle Moraine Lutheran School on Friday, March 27, 2020. The Science Fair projects will be available for viewing during the Family Music Fest hours on that day from 5:00 PM to 9:00 PM. The Family Music Fest charges admission. It is $5 for adults and children are free. If parents are just coming to view the projects and pick-up, they will be given free admission after 8:30 PM that evening. Please make them aware of the costs and times. Projects will be on display in the gym.

Grade school children in grades 5-8 are invited to participate. They will be divided into two grade levels: 5/6 and 7/8. Awards will be given according to categories in each grade level. There will be one *Best of Fair* award for each level.

Projects are to be delivered to K.M.L. on Thursday, March 26, between 5:00 and 6:00 PM. We are asking that participants take their projects home between 8:30 PM and 9:00 PM on the day of the science fair.

The last page is the entry form that is to accompany each project. The form must accompany the project or it cannot be judged.

Please make sure the size of each project is 1 square meter or less and that it is able to stand on its own.

KML Science Fair 2020

Each student will complete a project, write a report and make a display unit for their project.

The best place to start is the scientific method. The scientific method is a procedure that scientists use to investigate things they want to learn more about and understand better. By following the method, you can be sure you are creating a project that will qualify for the KML Science Fair. The real purpose for having a method is so that others can also test your idea. Hopefully, by following your method, they will get a similar result.

The scientific method used for KML has five main steps:

1. Determine the scientific problem to solve. (A Good Question)

What is the purpose of this project? What question are you trying to answer? You need to ask a specific question about the problem you picked. The question should identify the subject to be studied and the variables observed. Be specific and identify the variables. This is important in order to help sharpen your focus and define the area you are investigating. (Example – How many drops of water will fit on the head of a new penny?)

2. Develop a hypothesis. (A Good Guess)

A hypothesis is a speculation, an educated guess, about how or why something happens. Based on your hypothesis, you can predict what outcome you expect from your particular experiment. (Example- Mice raised on a diet of junk food will show a lower body weight after 6 weeks than the mice raised on a regular diet because of a deficiency of necessary nutrients in the junk food.) You are trying to prove or disprove your hypothesis.

3. Test your hypothesis. (A Good Test)

You must carry out some experiments or research to test your hypothesis. Finding out that your hypothesis is wrong is just as good as finding out that it is right. Either way you are learning something about your problem. You must also check the results of your experiment against known facts. (Example-Separate the junk food gerbils from the regular diet gerbils. Feed them the same amounts of food, one is regular and one is junk, feed them the same numbers of times and at the same time of day. Record their weights every other day for 6 weeks. Keep a neat record of all facts and observations.)

4. Record your observations. (Good Record Keeping)

What did your experiments tell you? All your observations should go into your report. If you have measurements from your test, a nice table or chart is appropriate.

5. Draw a conclusion. (A Good Report)

Your conclusion presents your interpretation of the results of the experiments you performed. If your experimental results agree with your original prediction, then they support your hypothesis. If not, you need to tell why you think your prediction differs from your results. Was there a problem in the way you did your experiment? Do you need a new hypothesis to explain what you see? In a sense, the conclusion represents what you actually learned by conducting the experiment. It is also an opportunity for you to suggest needed improvements in the design of the experiment or changes that could be made in attempting the experiment in the future. The conclusion should contain a statement or series of statements written by you on the importance of the experiment. (Example – you might discuss the importance of a well-rounded and nutritious diet in the maintenance of proper body weight for animals and humans. The conclusion, then, is an opportunity for you to draw relationships between the experiment and the world in which you live.

The Report

No matter what category you choose, you will need to write a report. The report will be a complete summary of your experiment or the research you did for a project. Simply said, you need to include in the report everything (people you interviewed, results of your experiments, your purpose, the title, conclusion, anything you want judges to know about your project) you did for the project. A resource page is needed for your research. We will follow the rules for an MLA project. [Times New Roman, 12 pt, double space, 1/2 inch indent, 1 inch margins, etc]

The Categories

1. Experiments

(Example-the effects of junk food on a gerbil; mold growth on different types of bread) The type of project most often presented at science fairs is the experiment. These presentations allow students to pose a problem, design an experiment to investigate the problem, record and report their results, and make conclusions based on those results. The final project is a display of the steps the student took in performing the experiment, the results of the experiment-successes or failures, and the conclusion based on the data results. Entries in this category will need to use the scientific method.

2. Demonstrations

(Example- how birds fly; wavelengths of sound; how pianos work; all about fingerprints) In this type of project, students demonstrate a particular science principle or fact. The demonstration should be self-contained; that is, observers can operate or manipulate any controls, switches or devices needed for the demonstration. Students may wish to demonstrate how something works, a science phenomenon, or how something is made naturally or in the lab. You must have a display telling observers about your demonstration showing any pictures, charts, the title(s), and the purpose of your demonstration. Entries in this category will need to use the scientific method.

3. Research

(Example-how matches work; how glass is made and used; tidal waves; different types of explosives) In a research project, students investigate a chosen area of science by consulting primary sources. Students will need to consult reading materials from libraries, museums, government agencies, and the like. In addition, they may choose to interview experts: scientists, health care workers, county agents, shop forepersons, and so on. It is encouraged that on-site investigation at labs, factories, a printing plant, a farm, or fish hatchery occur.

The intent is for you to explore a scientific area in depth and detail and to report the findings in a

vivid, interesting way through the project. You must have a display explaining your demonstration, showing any pictures, charts, titles, and the purpose of your demonstration.

4. Apparatus

(Example-thermometers, big and small; kinds of motors; windmills; simple machines; robots) In this type of project students display some kind of scientific apparatus or instrument and describe their use or function in detail. The project should identify the importance of the apparatus for

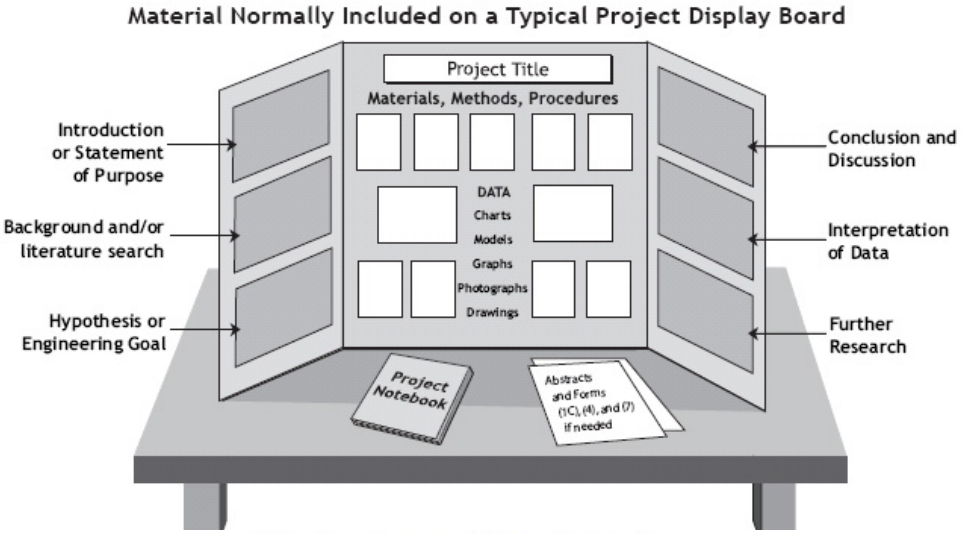
both scientists and the general public. Descriptions of how each apparatus is used within or outside the scientific community would also be appropriate.)

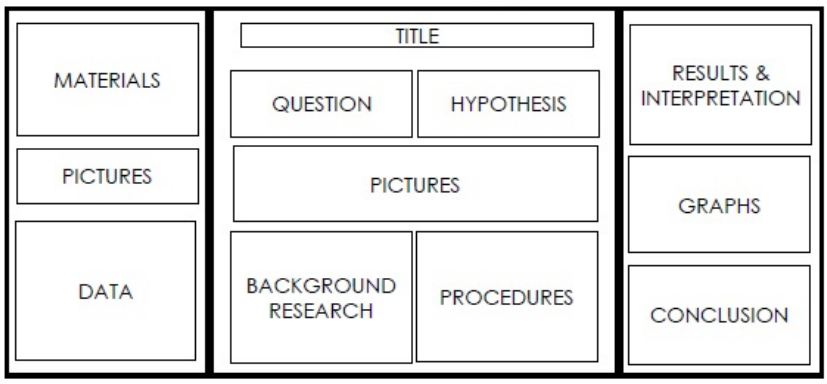
The Display

After you have selected a topic, investigated or experimented with that topic, and come to some conclusions about that area of science, you will want to display your efforts for the science fair. Presenting the project can be one of the most satisfying parts of the entire preparation. It is here that you can demonstrate your ingenuity and creativity in sharing what you have learned.

Each project entered MUST consist of three elements: the display unit, the exhibit materials, and the written report. The displays will be evaluated and must present a complete picture of your efforts for the judges and observers. Do not hang research papers on the display board.

The display is going to be up for a few days. Make sure your display unit is rigid or strong enough to keep it standing straight. Some possible materials would be pegboard, Masonite, heavy cardboard, foam board, etc. You have an area of one square meter to display your project.





Science Fair Links:

A science fair project can seem overwhelming at first. Students either have no idea where to begin or there are too many ideas. The trick to a successful science project is to do something that interests YOU. After that the rest gets a lot easier.

For those who want to search the internet, this criteria seems to work well. Just put it in your favorite search engine. ***science fair projects for kids***

I have a list of some sites that seem to offer a wide range of options for many skill levels, interests, and abilities. Once you decide on a project, go back to your search engine and look for specific videos or images that apply to your project. You may be lucky enough to find additional information or insights.

101 ideas for Science Fair Projects: This has lots of pictures and gives a good sense for how a well constructed science project should look.
http://m.youtube.com/watch?v=-EJUAb6GdPw

Hundreds of Science Projects: This is a great site. You can SEARCH, BROWSE, and find related LINKS to all things about science projects. The site covers many grade levels and ability levels. There is also a wide range of disciplines and interests. More importantly, there is a section for tips and guides, detailed examples, resources, blogs, and more. Definitely plan to visit this site.
http://www.all-science-fair-projects.com/

Science Fair Project Ideas: This is a side with many ideas for many levels. There is a filter on the left side of the page to select grade level and area of interest.
http://www.education.com/science-fair/

10 Easy Science Fair Projects: This site provides ideas from one of my favorite science teachers, Steve Spangler. He is the one who provided many ideas for dry ice and the energy sticks. He is the new version of BILL NEY THE SCIENCE GUY.
http://www.parenting.com/gallery/easy-science-fair-projects-kids

Home Science Tools - Science Fair Projects: This site seems to be geared at the home schooler who are looking for ideas. They have a nice selection of ideas.
http://www.hometrainingtools.com/science-fair-projects/c/1114/

Considerations and Evaluations (judges will look for these elements)

Creative Ability (originality, uniqueness, presentation, overall effect)

Does the student demonstrate curiosity?

Does the project or display demonstrate ingenuity in the design and development of the project?

Has the student shown creativity in the design of the display?

Thoroughness (Research of scientific literature, repeated trials, attention to details of the problem)

Is the project the result of careful planning?

Does the project indicate a thorough understanding of the chosen topic? Is all information accurate?

Does the notebook sufficiently document the student's work? Has sufficient data been collected?

Does the display represent a complete story?

Skill (Evidence of laboratory skills, computational skills, structural and procedural design)

Does the project reflect the student's own work?

Is the project sturdy and well constructed?

Is all equipment used within the student's level of understanding or expertise?

Written Report (Clearly states all activities, research, and data involved with the project. Free of grammatical, mechanical, and usage errors.)

Is one present?

Is it free of grammatical and mechanical errors? Does it clearly state all activities, research, and data?

Clarity (Purpose, procedures, data, and conclusions clearly explained through the display. Sources of ideas, data, and assistance clearly identified.)

Is the project self-explanatory?

Can the average person understand it?

Are all lettering, signs, and diagrams neat and accurate?

Are lettering, signs, and diagrams appropriately used, or do they clutter or confuse? Are visual aids an asset to understanding the project, or do they clutter or confuse?

Scientific Method (Problem clearly defined, hypothesis correctly stated, procedure clearly reported, observations accurately done, conclusions relate to the problem and hypothesis.)

Is the topic or problem an appropriate subject for scientific investigation? Is the problem stated clearly?

Is it sufficiently narrow?

Is the method of investigation appropriate to the problem?

Have variables been eliminated, controls been made, and results been double-checked? Does the data collected justify the conclusion made?

KMLHS SCIENCE FAIR - Judges Form

includes scoring information and final score for the project

Name: _____Grade: _____ School: _____

Project Title: _____

Category: (circle one) Experiment Demonstration Research Apparatus

0 = missing **1 = present to minimum** **2 = adequately present**

3 = nearly completely present **4 = well represented**

1. **Creative Ability** (originality, uniqueness, presentation, overall effect)

2. **Thoroughness** (Research of scientific literature, repeated trials, attention to details of the problem)

3. **Skill** (Evidence of laboratory skills, computational skills, structural and procedural design)

4. **Clarity** (Purpose, procedures, data, and conclusions clearly explained through the display. Sources of ideas, data, and assistance clearly identified.)

5. **Written Report** (Clearly states all activities, research, and data involved with the project. Free of grammatical, mechanical, and usage errors.)

6. ***Scientific Method** (Problem clearly defined, hypothesis correctly stated, procedure clearly reported, observations accurately done, conclusions relate to the problem and hypothesis.)

* Will only be scored on experiment and demonstration projects.

TOTAL SCORE

Total Points

Comments:

Judges' Guide for Score Sheet Evaluation

Creative Ability

Does the student demonstrate curiosity?
Does the project or display demonstrate ingenuity in the design and development of the project?
Has the student shown creativity in the design of the display?

Thoroughness

Is the project the result of careful planning?
Does the project indicate a thorough understanding of the chosen topic? Is all information accurate?
Does the notebook sufficiently document the student's work?
Has sufficient data been collected?
Does the display represent a complete story?

Skill

Does the project reflect the student's own work?
Is the project sturdy and well constructed?
Is all equipment used within the student's level of understanding or expertise?

Written Report

Is one present?
Is it free of grammatical and mechanical errors? Does it clearly state all activities, research, and data?

Clarity

Is the project self-explanatory?
Can the average person understand it?
Are all lettering, signs, and diagrams neat and accurate?
Are lettering, signs, and diagrams appropriately used, or do they clutter or confuse? Are visual aids an asset to understanding the project, or do they clutter or confuse?

Scientific Method

Is the topic or problem an appropriate subject for scientific investigation? Is the problem stated clearly?
Is it sufficiently narrow?
Is the method of investigation appropriate to the problem?

Have variables been eliminated, controls been made, and results been double-checked? Does the data collected justify the conclusion made?

KMLHS SCIENCE FAIR

Name: _____Grade: _____ School:

_____

Project Title: _____ Category: (circle one)

Experiment, Demonstration, Research, Apparatus

0 = missing, 1 = present to minimum, 2 = adequately present, 3 = nearly completely present, 4 = well represented

1. **Creative Ability** (originality, uniqueness, presentation, overall effect)

2. **Thoroughness** (Research of scientific literature, repeated trials, attention to details of the problem)

3. **Skill** (Evidence of laboratory skills, computational skills, structural and procedural design)

4. **Clarity** (Purpose, procedures, data, and conclusions clearly explained through the display. Sources of ideas, data, and assistance clearly identified.)

5. **Written Report** (Clearly states all activities, research, and data involved with the project. Free of grammatical, mechanical, and usage errors.)

6. ***Scientific Method** (Problem clearly defined, hypothesis correctly stated, procedure clearly reported, observations accurately done, conclusions relate to the problem and hypothesis.)

* Will only be scored on experiment and demonstration projects.

TOTAL SCORE

Comments: