**So, you want to do a science fair project this year?**

**Where do you start?**

**Pick a topic:**
What are you interested in? What do you want to learn more about? Instead of just picking a random science experiment from a list, pick something that you affects your life. What are your hobbies and interests? When was the last time you wondered about how something worked or why something happened? You will be working on this project for multiple weeks, so it should be something that you really want to learn about!

When choosing a project, remember that the use of animals, bacteria, and mold are closely regulated. If you are interested in using one of these, make sure you first read the NPS Student Information Packet for those rules.

**Find a Friend:**
If you would like to, you may complete your project on a team with another student in your same grade category (K-2, 3-5).

**Inform your teacher**
Once you have a good idea of what your project will be, let your teacher know so that your project is eligible for the district science fair!

**Experimental vs. Illustrative**

Illustrative projects are ones in which you research and report on a topic. It explains and illustrates your science concept. For example, you may want to learn about weather patterns and demonstrate a tornado in a bottle. **Illustrative projects will be allowed at the Cranbury Science Fair, but they will NOT be eligible to move on to the district-wide fair.**

Experimental projects are ones where you ask a question, propose an answer to the question, then do experiments to test to see if your answer is correct or not. For example, you may want to see which brand of paper towels is stronger or which type of grass seed grows the fastest.

**Invention**

Maybe instead of an experiment, you have a good idea for a new product that could help solve a problem that you’ve noticed. You can enter your invention as a project as well!
EXPERIMENTAL

Follow the Scientific Method

Question:
Think of questions to ask about your topic. Ask specific, focused, open ended questions. Make sure they are questions you can test to find the answers. Then pick ONE question to research.

Research:
Learn as much as you can about your topic. You can use books, reliable online sources, and experts such as teachers, scientists, etc. Keep track of your references!

Hypothesis:
Think of what you believe to be the answer to your question based on your research. This is your hypothesis. Remember, this is what you THINK is the answer BEFORE you do your experiment. You do not know yet whether you are correct or not.

Testing:
Design and carry out a simple experiment. Remember to record your observations and take pictures during your experiment. You will use them later on your presentation board.

Most experiments have two or more variables (conditions that can change). You should only manipulate (purposely change) one variable at a time. For example, if you tested Bounty paper towels with a brick and Brawny paper towels with a rock, then you would not be able to tell if the paper towels or the weight was the cause of the difference in results. How you design your experiment is just as important as actually doing it. Check out some of the online references listed later if you need more information on variables.

Measure, record, and observe factually and accurately. Record everything in a notebook. Try to use some consistent standard of measure. Be objective (without thinking of what you want to happen).

Analysis and Conclusion:
Take a look at your data. What do the results of your experiment teach you? Does your data support your hypothesis? That is, was your hypothesis correct or not? What do you now believe based on your experimental data?

Publish:
Type or neatly print your background information, planning, experimental process, details of how you conducted your experiment, results you measured, and your conclusion. Mount these on your display board along with pictures of you doing the experiment and any diagrams, charts, or graphs of your data.
INVENTION

Solve a Problem

Problem:
Think about a problem that you have come across or have noticed someone else has. Maybe you have a good idea for how to solve that problem. Or maybe you have a new or better way of solving a problem. Try to be creative and original.

Research:
Learn as much as you can about your topic. Why is this topic important to you? Why is it important to the world? You may be able to find background information about the topic along with other solutions that have been tried before.

Product:
Draw a detailed diagram of your product. If it is possible, build a prototype (model) of it.

Testing:
Show your diagram or invention to other people to get feedback on it. Do they think it would work? Would they see a need for this invention? If you were able to build your invention, test it out to see if it really does solve the problem. Keep track of successes and failures.

Analysis and Conclusion:
Could your invention solve the problem you were trying to solve? Could it be made into a real working device? Would it be something that people would really buy? Is there anything that didn’t work that you would need to change?

Publish:
Type or neatly print your background information, research, details of how you designed/built your invention, testing results, and your conclusion. Mount these on your display board along with a diagram of your invention, pictures of you building or testing it, and any charts or graphs of your results.

Looking for help with an invention idea?
The Fairfield County Makers Guild has offered to mentor any kids looking to do an invention project.
FCMG is a community workshop and fabrication studio that provides access to specialized tools and equipment to enable members to turn their ideas into reality.

Contact Vladimir Mariano at info@makersguildfc.com
Or check out makersguildfc.com for more info!
ILLUSTRATIVE

Research and Report

**Topic**
Think of an issue that is important to you. Develop a statement about your topic. What information do you want to share with people? How do you want your project to affect the future?

**Plan**
Plan carefully so your project illustrates what you want it to show. The goal of an effective science fair project is to contribute further understanding on a topic or to generate originate thinking, not to just repeat previously know information.

**Research**
Learn as much as you can about your topic. Use books, reliable websites, and experts in the field. Unlike an Experimental project, the information you gather for an Illustrative project IS the project itself. Be thorough, clear, informative and objective!

**Product**
Develop a product. This may be a physical model that helps to illustrate a concept. It may be a plan for change in the way people approach something. Creating the project reinforces the purpose of your project – to share your discoveries with the world!

**Conclusion**
What have you learned? How has your opinion changed based on your research? Does the evidence support your opinion? If not, do not be afraid to admit it and explain how your thinking has changed.

**Publish**
Type or neatly print your background information, planning, details on how you designed your project, results, and your conclusion. Mount these on your display board.

REMEMBER: This type of project will be allowed at the Cranbury Science Day but WILL NOT be eligible to move on to the District-Wide fair. If you want that opportunity, then you need to do an Experimental Project or an Invention!
Presentation and Display

There are lots of different ways you can arrange your display (some examples are below), but no matter how you arrange it, you will want to include some key sections. (Invention projects will differ somewhat)

RESEARCH: Describe some of the background information that you learned about your topic.

MATERIALS: List all the materials and equipment you used.

PROCEDURE: What did you do? This should be a list of the steps you performed for your experiment. Another person should be able to perform the same experiment by following these steps.

PURPOSE/QUESTION: What do you want to find out?

HYPOTHESIS: What do you THINK the answer to your question is?

RESULTS & DATA: What happened? Display your results in a table or graph format.

CONCLUSION: What did you learn? Did your experiment agree or disagree with your hypothesis? What could you do differently or test further?

If you have a model or other item to display with your board, make sure it meets the guidelines listed in the NPS Science Fair Information Packet.
DISPLAY DOS AND DONTS

**Do:**

Use a tri-fold board

Display as much information as possible.

Come up with a catchy title and display it at the top in a large, dark font that contrasts with the background.

Lay the pieces of your presentation out to find the best layout before gluing anything down.

Include photos of you doing your experiment

Space everything evenly across the layout.

Mount black and white text blocks on colored paper for contrast.

Choose a simple font in black or a dark color.

Label all graphs, charts, and tables. Write captions for photos.

Make type large enough to read from 4 feet away. (Suggestion: Use 24 pt font for headings, 16 pt for text).

Use bullet points rather than large paragraphs of text.

Double and Triple check all text before gluing it to the board.

Include a note about how your parents helped.

Label your project with your grade level (K-2, 3-5), type (illustrative, experimental, or invention) and category (Biology, Earth Science, Chemistry, Physics).

**Don’t:**

Leave the display until the last minute.

Go crazy with colors. 2 or 3 coordinating colors is plenty. More than that is distracting.

Write or draw directly on the board.

Be afraid to be creative!

**How (and how much) can your parents help?**

Parents are allowed to help, however the child should be leading the process. The child should pick the topic, create the finished product, and present the final display. Parents can help with the planning, brainstorm ideas, suggest organizational improvements, or point out problems the student may have not noticed. However, parents should not tell students what to think, give solutions to problems, or make decisions on the project. Parents should model the way to do something or make suggestions, but don’t do the work for the student.

Questions? Need more help?

Just ask Mr. Turchick, Ms. Johnson, Mrs. O’Neill, or Mrs. Cobbs.
Resources

** The school library has some science project books! Ask Mrs. Myles! **

But you may also want to check out:

Websites for project ideas
- www.sciencebuddies.com
- www.sciencebob.com
- www.explorabox.org
- www.sciencemadesimple.com
- www.hometrainingtools.com
- www.1000sciencefairprojects.com
- www.wonderville.com

Norwalk Public Library (Main Branch)
1 Belden Avenue
203-899-2780

Westport Public Library
20 Jesup Road
203-291-4800

Wilton Public Library
137 Old Ridgefield Road
203-762-3950

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137 Old Ridgefield Road
203-762-3950

NPS Science Fair Information Packet

Supplies

** For your convenience, the Cranbury PTO will be selling display boards at a discounted price **

Walmart
650 Main Ave, Norwalk
203-846-4514

680 Connecticut Ave, Norwalk
203-854-5236

Jerry’s Artarama
360 Main Ave
Norwalk

Target
5065 Main Street, Trumbull
203-873-2013

Staples
654 Main Street, Norwalk
203-840-7431

420 Westport Ave, Norwalk
203-845-0260

Michael’s
14 Danbury Rd, Wilton
203-762-7213

51 Richards Ave, Norwalk
203-857-5470

120 Hawley Lane, Trumbull
203-455-0102