

2020 Participants' Workbook

AMESBURY PTO SCIENCE FAIR



In this Packet

In this packet, you'll learn about the Scientific Method and how to use it to explore your Science Fair Project topic.

Important Safety Rules

To keep everyone safe, the following items are **NOT** permitted at the fair:

- Hazardous substances or controlled devices (including model rockets, drugs, alcohol, and caustic chemicals)
- Large quantities of water over 1 gallon
- Open flame or explosives
- Nonhuman Vertebrate Animals
- Potentially Hazardous Biological Agents (microorganisms, recombinant DNA (rDNA) technologies, or human or animal fresh tissues, blood, or body fluids)

Have a Question?

Chances are others might have the same question, too! Please post it on the Amesbury PTO Facebook group page or email amesburyptogroup@gmail.com and title the subject "Science Fair."

There are no Failures here... Just fun!

Our little scientists should enjoy the project's process and discover that learning about science can be fun! Please don't let your child think the project is a failure if it doesn't turn out as expected, nor take the project too seriously. Did you know Post-It Notes were an accident?

What is the Scientific Method?

The Scientific Method is the way scientists figure out how the world works. There are seven steps to scientific discovery:

Step 1: Ask a Question

Step 2: Form a Hypothesis

Step 3: Perform an Experiment

Step 4: Observe and Record Data

Step 5: Analyze Results

Step 6: Draw Conclusions

Step 7: Share Your Findings

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Step 1: Ask a Question

Asking questions about how things work promotes curiosity and learning.
A great question is one that you can test to find an answer.
Consider framing your question like this;

I wonder if/how/why...

Step 2: Form a Hypothesis

Do you think you know the answer to your question, and how to prove it is correct? Great!
You can hypothesize what will happen when you test your theory.
Consider framing your hypothesis like this;

I think that if I do...

than...

will happen; which means that...

is...

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Step 3: Perform an Experiment

Test your hypothesis by designing an experiment that will explore your question. When you design your experiment, remember that it should be able to be replicated by someone else if they want to confirm your hypothesis or results. This is a big part of doing science; so record the materials that you use, how you set up your experiment, and what your data collection sheet looks like when you run your tests.

Materials I/We used

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How I/We Set up this Experiment

To set up this experiment...

Recorded...

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Step 5: Analyze Results

Now that you are finished testing your hypothesis, what did you find? Were you correct every time? Maybe only sometimes? Not at all? How do you know?

A little secret about science is that hypothesis are often proven wrong by experimentation, and that's no big deal, scientists just think about another possible answer their question.

Remember that it is more important to ask questions than have answers about how the world works.

I discovered that...

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Step 6: Draw Conclusions

What does it all mean? Organize your information into a conclusion statement that sums up all of your hard work. It could go something like this;

I wondered about...

so I hypothesized that...

worked like...

I tested my idea by doing a...

experiment, and observed that...

This was what I expected/didn't expect to happen...

If I were to experiment again, I might do...

differently.

This means that...

is/can be...

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Step 7: Share Findings

Great science projects are about doing science and communicating what you learned! Use your display board to present your work at the Science Fair. In addition, you can bring a model or demonstration of your experiment as a part of your presentation.

Here is an example of what you should include on your display board:

