Science Fair Guide

We are excited to be hosting a Science Fair at the Homeschool Connections 2025 Spring Expo. Students in grade 2nd - 12th are invited to participate and will have the opportunity to explore a scientific topic in depth.

Students will...

- select a topic of interest and choose a question to investigate such as
  Can an earthworm detect light and darkness?
  Which bread molds most quickly?
  How does the air pressure of a soccer ball affect how far it travels when kicked?
  Can people identify flavors of Gatorade when blindfolded?
- follow the steps of the scientific method to form a hypothesis, conduct an experiment, compile the data, and present a conclusion
- create a tri-fold posterboard that summarizes their research and shows the steps of the scientific method (see below for steps of scientific method)
- present their project to guests and judges at the expo

Students will be divided into three grade-level categories: EL (2nd-5th), MS (6th-8th), HS (9th-12th) and prizes will be awarded based on the number of participants. Parents, you should not do your child's project for them, but you can guide their work. For parents of younger students, please keep in mind that your child must be able to explain their experiment in detail on their own to our guests and judges.

SCIENCE FAIR PROJECT EXPECTATIONS BY GRADE LEVEL (adapted from apologia.com)
Expectations for science fair projects will vary based on grade level. Although all of the students are expected to follow the scientific method, please note the general expectations for each category:

2nd - 5th Grade: Simplified Scientific Method

- Elementary students will explore a topic more in-depth by creating a simple hypothesis and going through a simplified version of the scientific method.

6th - 8th Grade: Scientific Method

- Middle school students will follow the scientific method, including brief background research

9th - 12th Grade: Scientific Method, With In-Depth Research, Conclusions, & Future Studies

- High school students will complete all portions of the scientific method, including in-depth research and conclusions

STUDENTS SHOULD FOLLOW THESE STEPS OF THE SCIENTIFIC METHOD AND INCLUDE THEM ON THEIR TRI-FOLD POSTERBOARD

STEP 1:
TITLE & PURPOSE - Ask a testable and measurable question about your topic. The TITLE of your project can simply be your question or your question in a “catchy” form. Your PURPOSE is your QUESTION or what you want to solve in your experiment.

STEP 2:
HYPOTHESIS - Create a hypothesis. This is an educated guess as to what will happen during your experiment.

STEP 3:
BACKGROUND RESEARCH - Gather background information about your topic that will help you develop a good experiment. Write a short paragraph including this information.

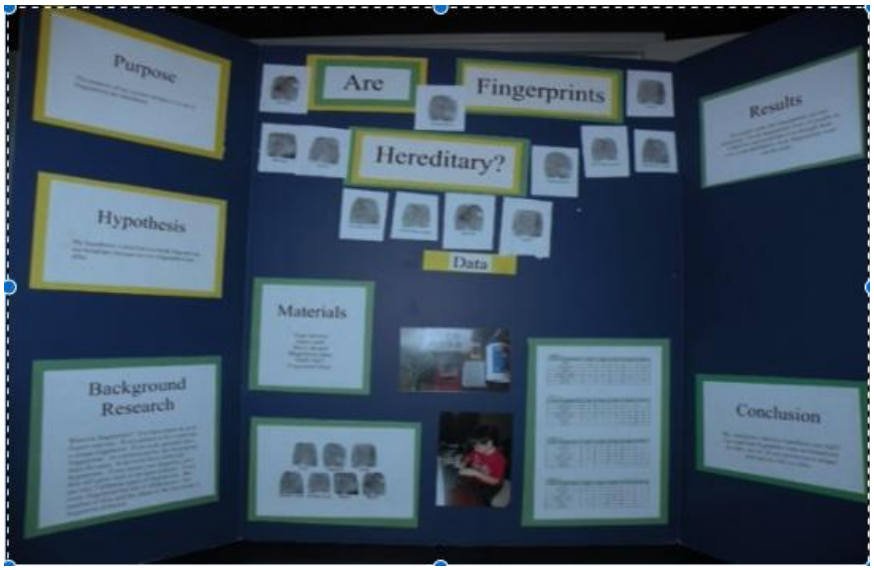
STEP 4:
EXPERIMENT - Test your hypothesis by doing an experiment to test one variable. This is whatever changes in the experiment. List all of the MATERIALS you used in your experiment and describe the PROCEDURE you followed

STEP 5:
ANALYZE DATA - Display the results of your experiment in a way that your audience will understand. You can use charts, tables, graphs, or photographs.

STEP 6:
RESULTS - Write a statement or paragraph explaining what happened during the experiment.

STEP 7:
CONCLUSION - Write a statement telling whether your hypothesis was right or not. If it wasn’t right, tell why you think it turned out the way it did and what you might do differently next time.

SCIENCE FAIR PROJECT EXAMPLE (taken from https://www.ecscience.org/science-fair)



TITLE: Are Fingerprints Hereditary?

PURPOSE: The purpose of my science project is to see if fingerprints are hereditary.

HYPOTHESIS: I do not think fingerprints are hereditary because no two fingerprints are alike.

BACKGROUND RESEARCH: What are fingerprints? You have them on your fingers and toes. Every person in the world has a unique fingerprint. Even some animals have fingerprints. As a person grows, the fingerprint stays the same. Even twins have different fingerprints. If you injure your fingertip, your skin will grow back in the same pattern. There are only 7 different types of fingerprints. But every fingerprint has lots of differences - the number of lines and the shape or the size make a fingerprint different.

EXPERIMENT: MATERIALS and PROCEDURE
MATERIALS:
Four families
Index cards
Black ink pad
Magnifying glass
Hand wipes
Fingerprint chart

PROCEDURE:
Here I put pictures of the process I followed to conduct the experiment. (You can use words and/or pictures to describe the steps of your experiment.)

DATA:
Here I put the chart with findings of the experiment and pictures of the different types of fingerprints.

RESULTS:
My results were that fingerprints are not hereditary. I took fingerprints from 22 people in 4 families and found that even though there were some similarities, their fingerprints were not the same.

CONCLUSION:
My conclusion is that my hypothesis was correct. I guessed that fingerprints were not hereditary and they are not. Every person has a unique print and none are exactly alike.

SAMPLE LAYOUT FOR TRI-FOLD POSTERBOARD