

# 2018 CCA Science Expo

## K5-4<sup>th</sup> Grade GUIDEBOOK

**Science Expo, Thursday, October 18**  
**From 6:00pm-7:30pm**

**Registration- August 6<sup>th</sup> through September 17<sup>th</sup>**

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# Calling all Scientists!! *It's time to put on your white coat and engage your curiosity about our world!*

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Our mission is to offer students an opportunity to practice scientific investigation and see God's wonderful world through an experiment, a collection, or a study. At Covenant Christian Academy, we have the ability to recognize and celebrate our Creator in our lives and in our study!



*CCA Bible verse of the year:*

“Worthy are You, our Lord and our God, to receive glory and honor and power; for You created all things, and because of Your will they existed, and were created.”

*Revelation 4:11*

## **WHICH GUIDEBOOK DO I USE?**

To be developmentally appropriate, the steps to a science expo project are different for each grade group. Each group is comprised of different grade levels and thus different expectations.

**We have created two age-appropriate Science Project Guidebooks K5-4<sup>th</sup> grades & 5<sup>th</sup>-6<sup>th</sup> grades. Make sure you are using the correct Guidebook for your grade!**

# Important Dates

- August 6<sup>th</sup> - Registration begins
- September 17<sup>th</sup> - Final Registration deadline  
All registration forms are due by this date. Turn your form into your teacher or the office
- Thursday, October 18 from 6:00-7:30pm - Science Expo! *All participants must stand by their project from 6:00PM – 6:20PM during the Science Expo.*



## Science Expo Activities

- Families are encouraged to view projects and enjoy activities at the Science Expo!
- Hands-on Pumpkin Catapult will be available for all who come. Bring your own pumpkin and see how far it launches. Please place your name, pumpkin's weight and grade with a permanent marker on the pumpkin.
- Experts will be demonstrating activities related to their field.

# AN IMPORTANT NOTE FOR PARENTS

We ask that the science project be a realistic reflection of the child's knowledge and skill level. We want parents to be involved, but please let the project be the child's own. Having a fun, hands-on project that isn't too difficult for the child will help. It is understood that parents may need to assist more with some children than others, based on the child's abilities and the complexity of the project. In general, we expect that K5-1<sup>st</sup> grade students will need help with most of the project, while 2<sup>nd</sup>-4<sup>th</sup> graders will be able to do at least some parts by themselves.

## There are ways parents can help their child without “taking over”, as needed:

- Help your child focus on the project question
- Guide in accessing reliable information sources
- Assist with typing
- Facilitate gathering materials and supplies
- Provide an extra set of hands
- Encourage, support, and give feedback throughout the process
- Ask your child questions to stimulate their thinking rather than give them the answers



## NOTE ON JUDGING:

The main purpose of the Science Expo project is to give students exposure to science in a fun, hands-on way. Our Science Expo is not competitive.

## Science Expo RULES

1. Students must bring their projects to school on the morning of **Thursday, October 18**, no sooner please.
2. Each Science Expo participant receives one white, 48” x 36” tri-fold display board. If you would like to use a colored tri-fold board and would like to purchase that yourself, that is fine.
3. Label **THE BACK** of your display board with the Project Nameplate at the end of this packet. **Be sure that your name is also included somewhere on the front of the board.**
4. You will be given 3 feet of space on a table. Please do not use more than your allotted space on the top of the table.
5. Please feel free to bring samples that are secured and labeled.
6. Please bring items for the students/parents to touch or look at with your project. ***But please make sure they are labeled and if item(s) are lost that it does not matter.*** An example would be to

- show some of your leaf collection or some of the wires you used to create a charge.
7. A computer is a tool for research and writing, not for copying someone else's work. When using books, magazines, information you find online, be sure to use your own words and to document your sources to avoid plagiarism (using someone else's words as your own work). Include your resources for your research (which may include where you got your project idea) and any sources for images you use.
  8. **All participants must stand by their project from 6:00PM – 6:20PM during the Science Expo.**

## **Do Not Bring**

### **Projects with items from the following list will not be accepted or displayed**

1. Explosives, open liquid containers, bubbles, glass, bacteria, actual flames, chemicals or active volcano models are not allowed. If you used these items, you can use pictures to show your materials.
2. "Live" experiments (where you complete your project at the event), such as an erupting volcano.
3. Live animals are NOT allowed as part of your display at the Science Expo. If you used a live animal, you can use pictures to show your subject. Do not bring them to the school.
4. An item that needs to plug in, as electrical outlets are not available. Do not bring generators or any other form to power your project.
5. Items that are valuable or breakable. The CCA Science Expo is not responsible for items that are lost or broken. If you used an item that is valuable or breakable, take a picture to show it. Do not bring it to school.
6. Projects that are potentially harmful or dangerous to people or animals.

# **HOW I GET STARTED?**

## **ASK A QUESTION**

First thing you need to ask yourself is **what interests you?** Do you have a hobby, sport, or activity that you especially like? Go to the library and look at science books; do a search for science fair topics on the Internet; visit places like the Tellus Science Center, the zoo, the aquarium, or local museums; consider what you have studied during science in school that you might want to learn even more about.

The library has many books on a variety of science topics that may be helpful. Once you have a general idea, brainstorm questions that you can investigate. Consider the time needed, what supplies you might require, how complicated (or simple) the project would be, and talk with your parents/teachers about the suitability of your idea.

**Determine which of the three types of projects will fit with your topic and question;** see the following pages for specific information on each type. Map out a timeline for completing your project on time, get started, and have fun!

Here's an example of a Science Expo Project: I like dogs and I am interested in what the best breed would be for a family? Or I want to know more about the moon and why it looks different in the sky sometimes. Or I heard you can cook food using just solar energy, is that true?

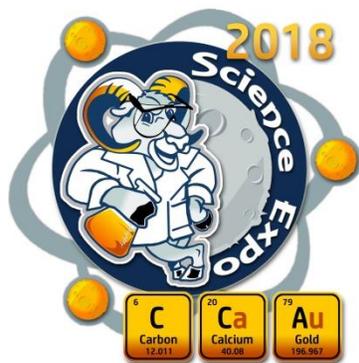
## **ASK A TEACHER, PARENT...**

If you still aren't sure of a question or are having trouble narrowing it down to one idea, ask your parents, teacher or friends. What topics have you been discussing in class? Is there a way to extend any class projects further?

## **TOPICS...**

Here are some subject areas:

- Natural Science: water, light, earth movement, solar system, moon, animals, habitats
- Geography and Travel: migrating birds, flash floods, survey of mountain peaks
- Arts: origami, carpentry, special effects, perspective
- Animals: dogs, fish, cats
- Biblical: Biblical foods; Weights, Measures and Money from Biblical Times
- Creation: gemstones, orchids, chocolate, root beer
- Economy and Money: money, metals, the cost of going to a movie in 2020
- Scientists or Inventors: Tesla, Einstein, Marie Curie....



## Types of Science Projects, Choose One: For K5 - 4<sup>th</sup> Grade

The Science Expo at CCA is held to celebrate God’s creation. All students are encouraged to select a topic for scientific inquiry; this should be something you don’t already know a lot about. You will share at the Expo what you learned while doing your project. To demonstrate what you learned, **choose one of the following project types:**

- **Do an experiment.** In doing an experiment, you will use the Scientific Method. You begin by asking a question about the subject you are interested in. You’ll do some research (library, Internet), and then come up with your hypothesis—your best guess on what you think will happen in your experiment. The next step is to design and then conduct your experiment. At the end, you compare your results to what your hypothesis was. Some examples of this type of project: “Does sound travel faster through air or solids?” or “Which rocks are more porous?” or “What makes plants grow faster?”
- **Make a collection.** In a collection, you will collect items with similar properties. These objects need to be natural science items, like leaves, tree bark, rocks, or fossils. You will need to group the objects into categories, looking for similarities and differences, and then explain how and why you grouped certain objects. Some ways to group objects are by appearance, texture, use, or location. Some examples of what you can learn from a collection: “What kind of rocks are found in area parks?” or “What kind of leaves grow on the trees in my neighborhood?”
- **Do a study.** By doing a study, you will become an “expert” in the topic you choose. You may study a disease, a physical phenomenon like weather or electricity, the population of living organisms in an environment, or the work of a notable scientist. You will research what is known about the topic or scientist’s work and present what you learned from this study. Some example questions you may explore through a study: “What is astigmatism and how does it affect vision?” or “What kind of birds can be seen in my yard?”

# If you want to do an **EXPERIMENT**: K5 - 4<sup>th</sup> Grade

## **METHODOLOGY:**

### **QUESTION:**

Determine what you are going to test, and then state that in the form of a question.

### **RESEARCH:**

Read about your topic to find out more about the idea you are investigating. Check out at least 1-2 sources.

### **HYPOTHESIS:**

Based on what you learned in your research, make your predication about your results—your best guess about what you think will happen in your experiment.

### **EXPERIMENT:**

Materials: Determine what materials you need to do your experiment and collect them.

Procedure: Plan how you will conduct your experiment. What steps do you need? What are you looking for, and how will you measure the effects or changes? Conduct your experiment.

Data Recording: Take careful notes (observations, measurements) on what happens during your experiment.

Results: Take your data and document it in charts, tables, and graphs.

### **ANALYSIS:**

Compare your results to your initial hypothesis. Did what you expected actually happen? (It's okay if not; scientists learn from unexpected results too!) What did you learn from your experiment?

### **SOURCES:**

List any sources you used in your research or to make your display board.

### **BIBLE VERSE:**

Select a Bible verse that relates in some way to your experiment. Look for ways to see God in science.

## **DISPLAY BOARD:**

See the general information earlier in this packet. Specific items to include:

- The project title
- Your name and type of project (An Experiment by...)
- Your question
- Your hypothesis
- The procedure you followed in doing your experiment
- Any pictures taken or drawn of the experiment
- Your results (use charts, tables, or graphs as appropriate)
- Your conclusion/analysis
- The Bible verse you selected
- The list of references used
- Who helped you on your project
- Put your completed nameplate on back of the board (the nameplate is at the end of this packet)

Along with your display board, you may include some of the items used in your experiment. **Please check the “Do Not Bring” list in the Guidebook on what objects cannot be brought to the Science Expo.**

# If you want to make a **COLLECTION**: K5 - 4<sup>th</sup> Grade

## **METHODOLOGY:**

### **PURPOSE:**

Determine what natural items (specimens) you are going to collect.

### **QUESTION:**

What do you hope to learn from making this collection?

### **RESEARCH:**

Read about your topic to find out more about the idea you are investigating. Check out at least 1-2 sources.

### **COLLECTION:**

*Materials:* Determine and gather any supplies you need to make and categorize your collection. Collect the specimens that will be in your collection. (Photographs are acceptable, if collecting actual items isn't possible.)

*Sort/Categorize:* Organize your specimens according to one or more characteristics: size, color, weight, location, hardness, or other quality.

*Data Recording:* Make notes on your collection—how many items, how did you categorize them? Use charts, tables, or graphs if useful for your data.

### **ANALYSIS:**

Explain what you learned from making your collection. How are the items similar or different? Answer your starting question.

### **SOURCES:**

List any sources you used in your research or to make your display board.

### **BIBLE VERSE:**

Select a Bible verse that relates in some way to your collection. Look for ways to see God in science.

## **DISPLAY BOARD:**

See the general information earlier in this packet. Specific items to include:

- The project title
- Your name and type of project (A Collection by...)
- Your question
- Any interesting facts you learned in your research about the items in your collection
- Any pictures taken or drawn of the collection
- Your results (use charts, tables, or graphs as appropriate)
- The summary of what you learned from your collection; answer your starting question
- The Bible verse you selected
- The list of references used
- Who helped you on your project
- Put your completed nameplate on back of the board (the nameplate is at the end of this packet)

Along with your display board, you may include the collection you made. If the collection is too large or for some other reason not displayable at the Science Fair, you should include clear photographs of your collection items. **Please check the “Do Not Bring” list in the Guidebook on what objects cannot be brought to the Science Expo.**

# If you want to do a **STUDY**: *K5- 4<sup>th</sup> Grade*

## **METHODOLOGY:**

### **PURPOSE/TOPIC:**

Select a subject you want to learn more about.

### **QUESTION:**

Decide on a question about your subject that you want to answer as you do this study.

### **RESEARCH:**

Read about your topic to find out more about the idea you are investigating. Check out at least 1-2 sources.

### **FINDINGS:**

What information did you learn? Your subject will determine what type of facts you will want to include. If you studied a disease, you would include facts about what the disease is, who gets it, how do you know you have it, and how is it treated. If you explored a physical phenomenon like magnetism or sound, you would describe the phenomenon, explain what other things can influence it, and state how is used or seen in everyday life. If you do a population study, you could describe what creatures, like birds, insects, or plants, that you are likely to observe in a certain space. If you study a scientist, you would include some personal background information about them, and then describe the discoveries they made and why they are important. Use pictures, diagrams, statistics, and examples as appropriate.

### **EXPERIENCE:**

Consider what you learned through your research and look for a hands-on experience that allows you to see your topic in action. Possible options: go somewhere that you can observe or use the item you are studying; do an activity that you find online or in a book that demonstrates the concept you are studying. For example, can you do the vision tests used to decide if someone has astigmatism, can you try a magnet on different items, or can you create static electricity? If you are doing a population study, go count and list the different birds, insects, or plants you see in a specific space, and do some further reading about the creatures you actually saw. Document what happened as you tried out what you learned from your research.

## **CONCLUSION:**

Summarize how you can answer your starting question, based on what you learned in this study.

## **SOURCES:**

List any sources you used in your research or to make your display board.

## **BIBLE VERSE:**

Select a Bible verse that relates in some way to your study. Look for ways to see God in science.

## **DISPLAY BOARD:**

See the general information earlier in this packet. Specific items to include:

- The project title
- Your name and type of project (A Study by...)
- Your question
- Facts you learned from your study
- Visual aids to demonstrate or illustrate something you learned (be creative)
- Your conclusion
- The Bible verse you selected
- The list of references used
- Who helped you on your project
- Put your completed nameplate on back of the board (the nameplate is at the end of this packet)

Along with your display board, you may include any materials that demonstrate something you learned from this study. **Please check the “Do Not Bring” list in the Guidebook on what objects cannot be brought to the Science Expo.**

# ADDITIONAL INFORMATION

## DOCUMENTING YOUR SOURCES

Sample for book:

Goodman, Susan. How Do You Burp in Space? 2013.

Sample for book (multiple authors):

Wagner, Kathi & Wagner, Obe. The Everything Kids' Sharks Book. 2005.

Sample for website:

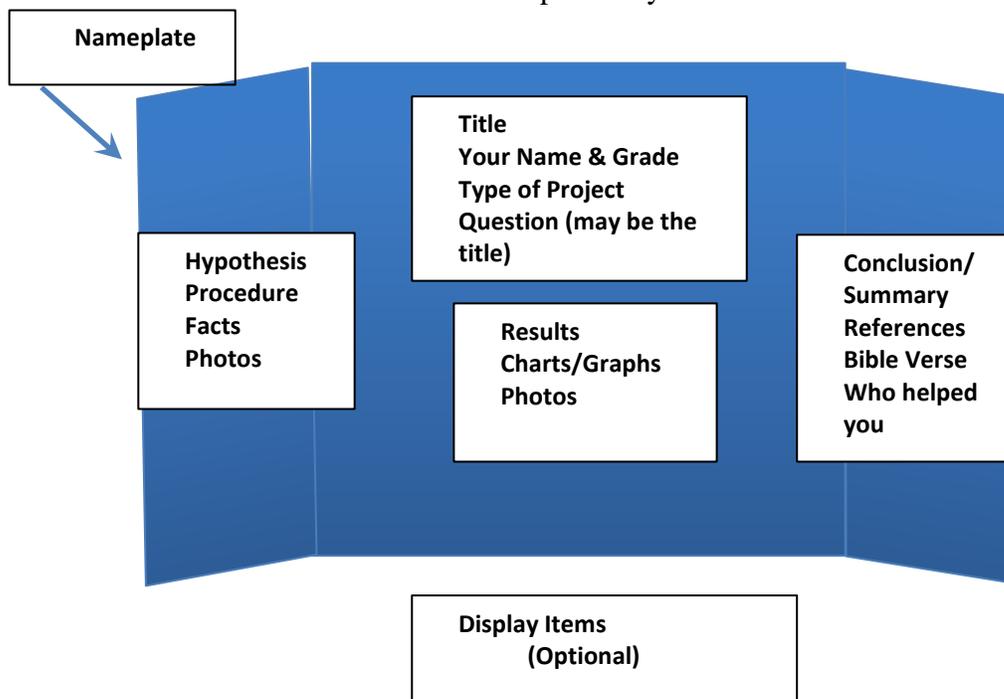
“What Is Protein?” Straight Health. 26 Apr. 2014.

<http://straighthealth.com/pages/qna/what-is-protein.html>

Images used from the Internet may be cited in a separate list, with either the name of the website or the URL.

## MAKING THE DISPLAY BOARD

- Fill out and put the nameplate on the right upper corner of the back of your display board (the nameplate is at the end of this packet).
- Your board should be clear, neat, and readable from at least 2 feet away.
- The arrangement of information should be logical; below is an example, but you are free to order the parts in whatever way makes sense for your project.
- Include titles for the sections of your display board. Label all pictures, charts or graphs, and any other materials you include.
- Consider what you can do to make the display visually appealing, like use of color, diagrams, pictures, etc.
- Make sure anything you put on the board is securely attached. You may cut the board down in size, if you need to avoid extra blank space.
- For your display you may include some of the materials from your project, such as a plant you used, examples of your paper airplanes, or the collection you made. **Please note all the rules on what objects cannot be brought to the Science Expo.**
- Be sure to not use more than 3 feet of space on your table.



# **Thank you to the Science Expo Committee!**

Kristen DeBoard

Katrina Wingertsahn

Heather Cooke

Hilary Baylor

Amanda Hearn

These parent volunteers have made this event possible!

# 2018 CCA Science Expo Nameplate



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## Science Expo Project Nameplate

Detach and place on the upper right corner on the back of the display board.

TEACHER: \_\_\_\_\_ GRADE: \_\_\_\_\_

STUDENT NAME: \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_

PROJECT TYPE: \_\_\_ EXPERIMENT \_\_\_ COLLECTION \_\_\_ STUDY

### **PROJECT CHECKLIST:**

- Nameplate is on the back, your name is on the front
- Display board is present (plus any optional display items, parent summary)
- The question you studied is clearly on the display board
- Your research is included
- Your **experiment** materials, procedure, and results are shown on the board
- OR
- Your **collection** materials, descriptions, & categorizing are shown on the board
- OR
- Your **study** demonstration/experience is shown on the board
- Your conclusion(s) are clearly listed on the display board
- You included a relevant Bible verse on your board
- You listed references on the display board
- You included who helped you on your display board

