

# Cub Scout Pack 295 Year 1 NOVA Program Workbook

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### **Helpful Information**

### Requirements

For video or TV watching requirements, some examples include—but are not limited to—shows found on PBS ("NOVA"), Discovery Channel, Science Channel, National Geographic Channel, TED Talks (online videos), and the History Channel. You may choose to watch a live performance or movie at a planetarium or science museum instead of watching a media production. You may watch online productions with your counselor's approval and under your parent's supervision.

For article reading, books on many topics may be found at your local library. Examples of magazines include but are not limited to Odyssey, KIDS DISCOVER, National Geographic Kids, Highlights, and OWL or owlkids.com.

### **Scientific Method**

The scientific method is a process for experimentation that is used to explore observations and answer questions. This method may be needed for some requirements throughout the NOVA program.

### Steps of the Scientific Method

Ask a Question: The scientific method starts when you ask a question about something that you observe: How, What, When, Who, Which, Why, or Where?

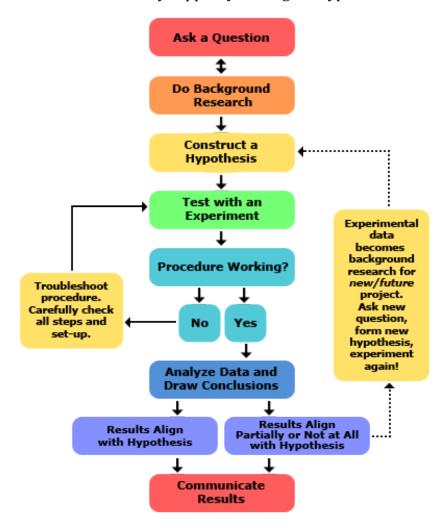
Do Background Research: Rather than starting from scratch in putting together a plan for answering your question, you want to be a savvy scientist using library and Internet research to help you find the best way to do things and insure that you don't repeat mistakes from the past.

Construct a Hypothesis: A hypothesis is an educated guess about how things work. It
is an attempt to answer your question with an explanation that can be tested. A
good hypothesis allows you to then make a prediction:
"If[I do this], then[this] will happen."
State both your hypothesis and the resulting prediction you will be testing.
Predictions must be easy to measure.

Test Your Hypothesis by Doing an Experiment: Your experiment tests whether your prediction is accurate and thus your hypothesis is supported or not. It is important for your experiment to be a fair test. You conduct a fair test by making sure that you change only one factor at a time while keeping all other conditions the same. You should also repeat your experiments several times to make sure that the first results weren't just an accident.

Analyze Your Data and Draw a Conclusion: Once your experiment is complete, you collect your measurements and analyze them to see if they support your hypothesis or not. Scientists often find that their predictions were not accurate and their hypothesis was not supported, and in such cases they will communicate the results of their experiment and then go back and construct a new hypothesis and prediction based on the information they learned during their experiment. This starts much of the process of the scientific method over again. Even if they find that their hypothesis was supported, they may want to test it again in a new way.

Communicate Your Results: To complete your science fair project you will communicate your results to others in a final report and/or a display board. Professional scientists do almost exactly the same thing by publishing their final report in a scientific journal or by presenting their results on a poster or during a talk at a scientific meeting. In a science fair, judges are interested in your findings regardless of whether or not they support your original hypothesis.



Source: http://www.sciencebuddies.org/science-fair-projects/project\_scientific\_method.shtml

# **Science Everywhere**

This module is designed to help you explore how science affects your life each day.

Requirements being completed in Den Meetings: 2B, 3

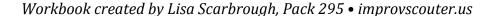
### **Requirement 1**

Choose A or B or C and complete ALL the requirements.

- A. Watch an episode or episodes (about one hour total) of a show about anything related to science.
- B. Read (about one hour total) about anything related to science.
- C. Do a combination of reading and watching (about one hour total) about anything related to science.
- 1. Make a list of at least two questions or ideas from what you watched.

2. Discuss two of the questions or ideas with your counselor.

Title(s) Watched or Read:	
Question 1:	
Question 2:	
Requirement 1 Completed:	
Counselor's OK	 Date



### **Requirement 4**

Visit a place where science is being done, used, or explained, such as one of the following: zoo, aquarium, water treatment plant, observatory, science museum, weather station, fish hatchery, or any other location where science is being done, used, or explained.

A. During your visit, talk to someone in charge al	bout science.
Location visited:	
Date Visited:	
What did you learn, what science was done?	
B. Discuss with your counselor the science done, visited.	, used, or explained at the place you
Requirement 4 Completed:	
Counselor's OK	 Date

3

Science Everywhere Complete	
Counselor's OK	Date

# **Down and Dirty**

This module is designed to help you explore how earth science affects your life each day.

Requirements being completed in Den Meetings: 2B(a or b), 3A, 3C1, 5

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### **Requirement 1**

Counselor's OK

Choose A or B or C and complete ALL the requirements.

- A. Watch an episode or episodes (about one hour total) of a show about Earth, the weather, geology, volcanoes, or oceanography.
- B. Read (about one hour total) about Earth, the weather, geology, volcanoes, or oceanography.
- C. Do a combination of reading and watching (about one hour total) about Earth, the weather, geology, volcanoes, or oceanography.
- $1. \ Make \ a \ list \ of \ at \ least \ two \ questions \ or \ ideas \ from \ what \ you \ watched.$

2. Discuss two of the questions or ideas with your counselor.

1	,	
Title(s) Watched or Read:	 	 
Question 1:		
Question 2:		
Requirement 1 Completed:		

Date

### Requirement 3

### C. Weather changes our world

- 1. Make three weather instruments out of materials around your home. (Examples include a rain gauge, weather vane, barometer, anemometer, and weather journal.) Use these and another method that is readily available (i.e., thermometer, eyes, older person's joints, etc.) for a total of four methods to monitor and predict the weather for one week. Keep a log of your findings. Which instrument provided the most accurate information?
- 2. Keep a weather journal for a week. Include your predictions and the predictions of a local meteorologist. Do your predictions match those of the local meteorologist? Do your predictions match the weather that occurred? How can the predictions become more accurate?
- 3. Discuss your work with your counselor.

Investigation and Discovery:			

Down and Dirty	3
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Requirement 3 Completed:	
Counselor's OK	 Date

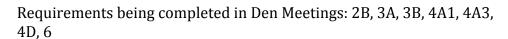
## Requirement 4

need to study as you get older. What kind of education v to help explore Earth? What types of people other than a	vould you need in the future geologists explore Earth?
Discuss with your counselor what is needed to have a ca	ireer in earth science.
Requirement 4 Completed:	
Counselor's OK	 Date

Den Requirements Completed	
Requirement 2B	
Counselor's OK	Date
Requirement 3A	
Counselor's OK	Date
Requirement 3C1	
Counselor's OK	Date
Requirement 5	
Counselor's OK	Date
Down and District Constitute	
Down and Dirty Complete	
Counselor's OK	 Date

### Wild!

This module is designed to help you learn about wildlife and the natural world around you.





### Requirement 1

Counselor's OK

Choose A or B or C and complete ALL the requirements.

- A. Watch an episode or episodes (about one hour total) of a show about wildlife, endangered species, invasive species, food chains, biodiversity, ecosystems, or wildlife habitats.
- B. Read (about one hour total) about wildlife, endangered species, invasive species, food chains, biodiversity, ecosystems, or wildlife habitats.
- C. Do a combination of reading and watching (about one hour total) about wildlife, endangered species, invasive species, food chains, biodiversity, ecosystems, or wildlife habitats.

1. Make a list of at least two questions or ideas from what you watched.

2. Discuss two of the questions or ideas with your counselor.

Title(s) Watched or Read:

Question 1:

Question 2:

Requirement 1 Completed:

Date

Requirement 3
C. Draw (or find) pictures of your favorite native plant, native reptile or fish, native bird, and native mammal that live in an ecosystem near you.
Why do you like these? How do they fit into the ecosystem?
Requirement 3 Completed:

Date

Counselor's OK

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A. 2. Design a display (a poster, PowerPoint presentation, or other type of display to show at least 10 of the threatened, endangered, or extinct species in your state (You may use your drawings or photo collection in your display.)		
Requirement 4 Completed:		
Counselor's OK	 Date	

### **Requirement 5**

Visit a place where you can observe wildlife. Examples include parks (national, state, and local), zoos, wetlands, nature preserves, and national forests.	
Location visited:	
Date Visited:	
A. During or after your visit, talk to someone about:	
1. The native species, invasive species, and endangered or threatened species that live there. If you visit a zoo, talk to someone about the ecosystems for different zoo animals and whether any of the zoo animals are invasive in different areas of the world. (For example, pythons are often found in zoos, but they are an invasive species in Florida.)	
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2. The subjects studied in school that enabled him or her to work with wildlife.

Examples of experts to talk to include forest ranger, wildlife biologist, botanist, park ranger, naturalist, game warden, zookeeper, docent, or another adult whose career involves wildlife.	
Person you talked to:	
Their job or position:	
B. Discuss with your counselor what you learned du	ring your visit.
Requirement 5 Completed:	
Counselor's OK	 Date

Requirement 6	
Discuss with your counselor:	
A. Why wildlife is important.	
B. Why biodiversity is important.	
C. The problems with invasive species and habitat dest	ruction.
Requirement 6 Completed:	
Counselor's OK	– — Date

Den Requirements Completed	
Requirement 2B	
Counselor's OK	Date
Requirement 3A	
Counselor's OK	Date
Requirement 3B	
Counselor's OK	Date
Requirement 4A1	
Counselor's OK	Date
Requirement 4A3	
Counselor's OK	Date
Requirement 4D	
Counselor's OK	Date
Requirement 6	
Counselor's OK	Date
Wild Complete	
Counselor's OK	

Tech Talk 1

### Tech Talk

This module is designed to help you explore how technology affects your life each day.

Requirements being completed in Den Meetings:

### **Requirement 1**

Choose A or B or C and complete ALL the requirements.

- A. Watch an episode or episodes (about one hour total) of a show about anything related to technology.
- B. Read (about one hour total) about anything related to technology.
- C. Do a combination of reading and watching (about one hour total) about anything related to technology.
- 1. Make a list of at least two questions or ideas from what you watched.

2. Discuss two of the questions or ideas with your counselor.

Title(s) Watched or Read:	
Question 1:	
Question 2:	
Requirement 1 Completed:	
Counselor's OK	 Date

Tech Talk 2

### **Requirement 4**

Visit a place where technology is being designed, used, or explained, such as one of the following: an amusement park, a police or fire station, a radio or television station, a newspaper office, a factory or store, or any other location where technology is being designed, used, or explained.

Location visited:
Date Visited:
A. During your visit, talk to someone in charge about the following:
1. The technologies used where you are visiting
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Tech Talk 3 2. Why the organization is using these technologies B. Discuss with your counselor what you learned during your visit. Requirement 4 Completed: Counselor's OK Date

Tech Talk 4

Den Requirements Completed	
Requirement 2B	
Counselor's OK	Date
Requirement 3	
Counselor's OK	Date
Requirement 5	
Counselor's OK	Date
Tech Talk Complete	
Counselor's OK	