



Out of This World

Cub Scout Nova Award Workbook



This workbook can help you but you still need to read the Cub Scout Nova Awards Guidebook.

The work space provided for each requirement should be used by the Scout to make notes for discussing the item with his counselor, not for providing the full and complete answers. Each Scout must do each requirement.

No one may add or subtract from the official requirements found in the Cub Scout Nova Awards Guidebook (Pub. 34032).

The requirements were issued in 2015 • This workbook was updated in October 2015.

Scout's Name: _____ Unit: _____

Counselor's Name: _____ Counselor's Phone No.: _____



<http://www.USScouts.Org> • <http://www.MeritBadge.Org>

Please submit errors, omissions, comments or suggestions about this **workbook** to: Workbooks@USScouts.Org

Send comments or suggestions for changes to the **requirements** for the **Nova Award** to: Program.Content@Scouting.Org

This module is designed to help you discover the wonders of space exploration

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 the planets, space, space exploration, NASA, or astronomy.

What was watched?	Date	Start Time	Duration

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.

Then do the following:

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

1.	
2.	

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

1. _____

2. _____

- B. Read (about one hour total) about about the planets, space, space exploration, NASA, or astronomy.

What was read?	Date	Start Time	Duration

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.

Then do the following:

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

1. _____

2. _____

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

1.	
2.	

- C Do a combination of reading and watching (about one hour total) about the planets, space, space exploration, NASA, or astronomy.

What was watched or read?	Date	Start Time	Duration

Then do the following:

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

1.	
2.	

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

1.	
2.	

- 2. Complete ONE adventure from the following list. (Choose one that you have not already earned.) Discuss with your counselor what kind of science, technology, engineering, or math was used in the adventure.

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|-------------------------|------------------------|-----------------------|
| <u>Wolf Cub Scouts</u> | <u>Bear Cub Scouts</u> | <u>Webelos Scouts</u> |
| Air of the Wolf | A Bear Picnic Basket | Adventures in Science |
| Collections and Hobbies | Robotics | Engineering |
| Germ's Alive! | Super Science | Game Design |
| Motor Away | | |

3. Choose TWO from A or B or C or D or E or F and complete ALL the requirements for the options you choose..

- A. Have a star party with your den, pack, or family. (Make sure you wear proper clothing for the nighttime temperature.)
 - 1. Choose a clear night to investigate the stars. A fun time to watch stars is during a meteor shower. You may check <http://earthsky.org/astronomy-essentials> with your parent's or guardian's permission to find good times to watch meteors.
 - 2. Find five different constellations and draw them. With your parent's or guardian's permission, you may use a free smartphone application such as Google Sky Map for Android phones or Night Sky for iPhones to help identify stars and constellations.
 - 3. Share your drawings with your counselor. Discuss whether you would always be able to see those constellations in the same place.

B. Explain how "revolution," or "orbit," compares with "rotation" when talking about planets and the solar system.

- Show these by walking and spinning around your counselor. Do the following:
- 1. Choose three planets to investigate (you may include the dwarf planet Pluto). Compare these planets to Earth. Find out how long the planet takes to go around the sun (the planet's year) and how long the planet takes to spin on its axis (the planet's day). Include at least TWO of these: distance from the sun, diameter, atmosphere, temperature, number of moons.
- 2. Discuss what you have learned with your counselor.

C. Using materials you have on hand (plastic building blocks, food containers, recycled materials, etc.), design a model Mars rover that would be useful to explore the rocky planet's surface. Share your model with your counselor and explain the following:

1. The data the rover would collect

2. How the rover would work

3. How the rover would transmit data

4. Why rovers are needed for space exploration.

- D. Design on paper an inhabited base located on Mars or the moon. Consider the following: the energy source, how the base will be constructed, the life-support system, food, entertainment, the purpose and function, and other things you think would be important.

Then do the following:

- 1. Draw or build a model of your base using recycled materials.
- 2. Discuss with your counselor what people would need to survive on Mars or the moon.

- E. Become an asteroid mapper. Obtain your parent's or guardian's permission and map an asteroid as part of the Jet Propulsion Laboratory and the California Institute of Technology's Dawn project: http://dawn.jpl.nasa.gov/DawnCommunity/asteroid_mappers.asp . Then discuss with your counselor your mapping activities, why mapping asteroids is important, and what you learned about space and asteroids.
- F. Eclipses
 - 1. Investigate and make models or diagrams of solar and lunar eclipses. (Example: You may wish to use balls of different sizes and a flashlight to represent the sun.)

- 2. Using your model or diagram, discuss eclipses with your counselor, and explain the difference between a solar eclipse and a lunar eclipse.

- 4. Visit or explore. Choose A or B and complete ALL the requirements.

- A. Visit a place where space science is being done, used, explained, or investigated, such as one of the following: observatory, planetarium, air and space museum, star lab, astronomy club, NASA, or any other location where space science is being done, used, explained, or investigated.

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- 1. During your visit, talk to someone in charge about how people at the location use or investigate space science.

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Find out how this investigation could make the world a better place.

- 2. Discuss with your counselor the science being done, used, explained, or investigated at the place you visited.

1.	
2.	

3.

B. Explore a career associated with space exploration.

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Find out what subjects you would need to study as you get older.

Find out whether you must be an astronaut to explore space, and what other opportunities exist for people interested in space exploration.

5. Tell your counselor what you have learned about space exploration while working on this award.

Important excerpts from the [Guide To Advancement - 2015](#), No. 33088 (SKU-620573)

[1.0.0.0] — Introduction

The current edition of the *Guide to Advancement* is the official source for administering advancement in all Boy Scouts of America programs: Cub Scouting, Boy Scouting, Varsity Scouting, Venturing, and Sea Scouts. It replaces any previous BSA advancement manuals and previous editions of the *Guide to Advancement*.

[Page 2, and 5.0.1.4] — Policy on Unauthorized Changes to Advancement Program

No council, committee, district, unit, or individual has the authority to add to, or subtract from, advancement requirements. There are limited exceptions relating only to youth members with special needs. For details see section 10, "Advancement for Members With Special Needs".

[Page 2] — The "Guide to Safe Scouting" Applies

Policies and procedures outlined in the *Guide to Safe Scouting*, No. 34416, apply to all BSA activities, including those related to advancement and Eagle Scout service projects.

[7.0.3.1] — The Buddy System and Certifying Completion

A youth member must not meet one-on-one with an adult. Sessions with counselors must take place where others can view the interaction, or the Scout must have a buddy: a friend, parent, guardian, brother, sister, or other relative—or better yet, another Scout working on the same badge—along with him attending the session. If merit badge counseling or instruction includes any Web-based interaction, it must be conducted in accordance with the BSA Social Media Guidelines (<http://www.scouting.org/Marketing/Resources/SocialMedia>). For example, always copy one or more authorized adults on email messages between counselors and Scouts.

When the Scout meets with the counselor, he should bring any required projects. If these cannot be transported, he should present evidence, such as photographs or adult verification. His unit leader, for example, might state that a satisfactory bridge or tower has been built for the Pioneering merit badge, or that meals were prepared for Cooking. If there are questions that requirements were met, a counselor may confirm with adults involved. Once satisfied, the counselor signs the blue card using the date upon which the Scout completed the requirements, or in the case of partials, initials the individual requirements passed.

Note that from time to time, it may be appropriate for a requirement that has been met for one badge to also count for another. See "Fulfilling More Than One Requirement With a Single Activity," 4.2.3.6.

[7.0.3.2] — Group Instruction

It is acceptable—and sometimes desirable—for merit badges to be taught in group settings. This often occurs at camp and merit badge midways, fairs, clinics, or similar events. Interactive group discussions can support learning. The method can also be attractive to "guest experts" assisting registered and approved counselors. Slide shows, skits, demonstrations, panels, and various other techniques can also be employed, but as any teacher can attest, not everyone will learn all the material.

There must be attention to each individual's projects and his fulfillment of *all* requirements. We must know that every Scout—actually and *personally*—completed them. If, for example, a requirement uses words like "show," "demonstrate," or "discuss," then every Scout must do that. It is unacceptable to award badges on the basis of sitting in classrooms *watching* demonstrations, or remaining silent during discussions.

It is sometimes reported that Scouts who have received merit badges through group instructional settings have not fulfilled all the requirements. To offer a quality merit badge program, council and district advancement committees should ensure the following are in place for all group instructional events.

- A culture is established for merit badge group instructional events that partial completions are acceptable expected results.
- A guide or information sheet is distributed in advance of events that promotes the acceptability of partials, explains how merit badges can be finished after events, lists merit badge prerequisites, and provides other helpful information that will establish realistic expectations for the number of merit badges that can be earned at an event.
- Merit badge counselors are known to be registered and approved.
- Any guest experts or guest speakers, or others assisting who are not registered and approved as merit badge counselors, do not accept the responsibilities of, or behave as, merit badge counselors, either at a group instructional event or at any other time. Their service is temporary, not ongoing.
- Counselors agree to sign off only requirements that Scouts have actually and personally completed.
- Counselors agree not to assume prerequisites have been completed without some level of evidence that the work has been done. Pictures and letters from other merit badge counselors or unit leaders are the best form of prerequisite documentation when the actual work done cannot be brought to the camp or site of the merit badge event.
- There is a mechanism for unit leaders or others to report concerns to a council advancement committee on summer camp merit badge programs, group instructional events, and any other merit badge counseling issues—especially in instances where it is believed BSA procedures are not followed. See "Reporting Merit Badge Counseling Concerns," 11.1.0.0.
- There must be attention to each individual's projects and his fulfillment of all requirements. We must know that every Scout—actually and personally—completed them.

It is permissible for guest speakers, guest experts, or others who are not merit badge counselors to assist in the counseling process. Those providing such assistance must be under the direction of a registered and approved counselor who is readily available onsite, and provides personal supervision to assure all applicable BSA policies and procedures—including those related to BSA Youth Protection—are in place and followed.

[7.0.3.3] — Partial Completions

A Scout need not pass all the requirements of one merit badge with the same counselor. It may be that due to timing or location issues, etc., he must meet with a different counselor to finish the badge. The Application for Merit Badge has a place to record what has been finished—a "partial." In the center section on the reverse of the blue card, the counselor initials for each requirement passed. In the case of a partial completion, the counselor does not retain his or her portion of the card. A subsequent counselor may choose not to accept partial work, but this should be rare. A Scout, if he believes he is being treated unfairly, may work with his unit leader to find another counselor. An example for the use of a signed partial would be to take it to camp as proof of prerequisites. Partials have no expiration except the Scout's 18th birthday. Units, districts, or councils shall not establish other expiration dates for partial merit badges.

[7.0.4.8] — Unofficial Worksheets and Learning Aids

Worksheets and other materials that may be of assistance in earning merit badges are available from a variety of places including unofficial sources on the Internet and even troop libraries. Use of these aids is permissible as long as the materials can be correlated with the current requirements that Scouts must fulfill. Completing "worksheets" may suffice where a requirement calls for something in writing, but this would not work for a requirement where the Scout must discuss, tell, show, or demonstrate, etc. Note that Scouts shall not be required to use these learning aids in order to complete a merit badge.