



Boy Scout Nova and Supernova STEM Awards



Nova and Supernova Awards are available to Cub Scouts, Webelos Scouts, Boy Scouts, Venturers and Sea Scouts. These awards recognition learning, work, and achievement in STEM (Science, Technology, Engineering, Mathematics) topics. Participating Boy Scouts may earn any or all of 5 Nova Awards. Venturers and Sea Scouts may earn any or all of 4 Nova awards.

<u>Field of Inquiry</u>	<u>Boy Scout Nova Awards</u>	<u>Venturer/Sea Scout Nova Awards</u>
Science	Shoot!	Launch!
Technology	Start Your Engines!	Power Up
Engineering	Whoosh!	Hang On!
Mathematics	Designed to Crunch	Numbers Don't Lie
Agriculture	Let It Grow!	NA

For the first Nova Award earned, a Boy Scout or Venturer or Sea Scout is awarded the distinctive Nova Award patch. Any additional Nova Awards are recognized by a pi (π) pin-on device attached to the patch.

<https://www.scouting.org/stem-nova-awards/awards/about-nova/>

http://www.scoutstuff.org/nsearch/?q=nova+patch&as_fid=j3Fx2sfUQbvFy4ppsEwo

Earning Boy Scout Nova and Supernova Awards

To earn any Nova Award, a Boy Scout must view videos or read for 3 hours on a STEM topic, complete one Nova Award merit badge, and complete STEM topic activities.

After a Boy Scout completes 3 Nova Awards, 4 Supernova merit badges, Scholarship Merit Badge, and Supernova STEM activities, he can earn the Dr. Bernard Harris Supernova Award.

After a Boy Scout completes the Dr. Bernard Harris Award, 4 more Supernova merit badges, and Supernova STEM activities, he can earn the Thomas Edison Supernova Award.



Boy Scout Nova and Supernova STEM Awards



Earning Venturing Nova and Supernova Awards

To earn any Nova Award, a Venturer or Sea Scout must view videos or read for 3 hours on a STEM topic, complete one Venturing STEM Exploration, and complete STEM topic activities.

After a Venturer or Sea Scout completes 3 Nova Awards, Scholarship Venturing Exploration, 4 Venturing STEM Explorations, 2 Supernova STEM activities, a STEM competition or workshop, and other requirements, he or she can earn the Dr. Sally Ride Supernova Award.

After a Venturer or Sea Scout completes the Dr. Sally Ride Supernova Award, 1 more Nova Award, 4 more Venturing STEM Explorations, 4 more Supernova STEM activities, another STEM competition or workshop, and other requirements, he or she can earn the Wright Brothers Supernova Award.

Earning the Dr. Albert Einstein Supernova Award

After a Boy Scout completes the Thomas Edison Supernova Award or after a Venturer or a Sea Scout completes the Wright Brothers Supernova Award, 4 more Supernova STEM activities, and a significant research project, he or she can earn the Dr. Albert Einstein Supernova Award.

This document includes the requirements for all five Boy Scout Nova Awards and for all three Boy Scout Supernova Awards.



Boy Scout Nova Award

Shoot!
for Science



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

Requirement 1

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

A. Watch about three hours total of science-related shows or documentaries that involve projectiles, aviation, weather, astronomy, or space technology. Then do the following:

1. Make a list of at least five questions or ideas from the show(s) you watched.
2. Discuss two of the questions or ideas with your counselor.

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.

B. Read (about three hours total) about projectiles, aviation, weather, astronomy, or space technology. Then do the following:

1. Make a list of at least two questions or ideas from each article.
2. Discuss two of the questions or ideas with your counselor.

Examples of magazines include—but are not limited to—Odyssey, Popular Mechanics, Popular Science, Science Illustrated, Discover, Air & Space, Popular Astronomy, Astronomy, Science News, Sky & Telescope, Natural History, Robot, Servo, Nuts and Volts, and Scientific American.

C. Do a combination of reading and watching (about three hours total). Then do the following:

1. Make a list of at least two questions or ideas from each article or show.
2. Discuss two of the questions or ideas with your counselor.



Boy Scout Nova Award

Shoot!
for Science



Requirement 1 (continued)

I chose option: ☐ A ☐ B ☐ C

Name(s) of shows that I watched and/or materials that I read:

I made a list of questions or ideas from what I watched or read.

I discussed the questions or ideas with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 2

Complete ONE merit badge from the following list. (Choose one that you have not already used toward another Nova award.) After completion, discuss with your counselor how the merit badge you earned uses science.

Archery	Astronomy	Athletics	Aviation
Game Design	Rifle Shooting	Robotics	Shotgun Shooting
Space Exploration	Sustainability	Weather	

I completed the _____ Merit Badge.

I discussed how the merit badge uses agriculture with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award

Shoot!
for Science



Requirement 3

Choose A or B and complete ALL the requirements.

A. Simulations. Find and use a projectile simulation applet on the Internet (with your parent's or guardian's permission). Then design and complete a hands-on experiment to demonstrate projectile motion.

1. Keep a record of the angle, time, and distance.
2. Graph the results of your experiment. (Note: Using a high-speed camera or video camera may make the graphing easier, as will doing many repetitions using variable heights from which the projectile can be launched.)

Helpful Links

Be sure you have your parent's or guardian's permission before using the Internet. Some of these websites require the use of Java runtime environments. If your computer does not support this program, you may not be able to visit those sites.

Projectile Motion Applets

Website:

http://galileoandeinstein.physics.virginia.edu/more_stuff/Applets/Projectile/projectile.html

Fowler's Physics Applets

Website:

http://galileoandeinstein.physics.virginia.edu/more_stuff/Applets/ProjectileMotion/enapplet.html

Java Applets on Physics

Website: <http://www.walter-fendt.de/ph14e/projectile.htm>

3. Discuss with your counselor:

- a. What a projectile is
- b. What projectile motion is
- c. The factors affecting the path of a projectile
- d. The difference between forward velocity and acceleration due to gravity

B. Discover. Explain to your counselor the difference between escape velocity (not the game), orbital velocity, and terminal velocity. Then answer TWO of the following questions. (With your parent's or guardian's permission, you may explore websites to find this information.)

1. Why are satellites usually launched toward the east, and what is a launch window?
2. What is the average terminal velocity of a skydiver? (What is the fastest you would go if you were to jump out of an airplane?)
3. How fast does a bullet, baseball, airplane, or rocket have to travel in order to escape Earth's gravitational field? (What is Earth's escape velocity?)



Boy Scout Nova Award

Shoot!
for Science



Requirement 3 (continued)

I chose option: ☐ A ☐ B

I discussed the information on Simulations or Discoveries with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 4

Choose A or B and complete ALL the requirements.

A. Visit an observatory or a flight, aviation, or space museum.

1. During your visit, talk to a docent or person in charge about a science topic related to the site.
2. Discuss your visit with your counselor.

B. Discover the latitude and longitude coordinates of your current position. Then do the following:

1. Find out what time a satellite will pass over your area. (A good resource to find the times for satellite passes is the Heavens Above website at www.heavens-above.com.)
2. Watch the satellite using binoculars. Record the time of your viewing, the weather conditions, how long the satellite was visible, and the path of the satellite. Then discuss your viewing with your counselor.

I chose option: ☐ A ☐ B

I visited _____ on (date) _____.

My latitude and longitude coordinates are: _____.

I observed a satellite on (date) _____.

I discussed the information on my visit or satellite observations with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award

Shoot!
for Science



Requirement 5

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

A. Design and build a catapult that will launch a marshmallow a distance of 4 feet. Then do the following:

1. Keep track of your experimental data for every attempt. Include the angle of launch and the distance projected.
2. Make sure you apply the same force every time, perhaps by using a weight to launch the marshmallow. Discuss your design, data, and experiments—both successes and failures—with your counselor.

B. Design a pitching machine that will lob a softball into the strike zone. Answer the following questions, then discuss your design, data, and experiments—both successes and failures—with your counselor.

1. At what angle and velocity will your machine need to eject the softball in order for the ball to travel through the strike zone from the pitcher's mound?
2. How much force will you need to apply in order to power the ball to the plate?
3. If you were to use a power supply for your machine, what power source would you choose and why?

C. Design and build a marble run or roller coaster that includes an empty space where the marble has to jump from one part of the chute to the other. Do the following, then discuss your design, data, and experiments—both successes and failures—with your counselor.

1. Keep track of your experimental data for every attempt. Include the vertical angle between the two parts of the chute and the horizontal distance between the two parts of the chute.
2. Experiment with different starting heights for the marble. How do the starting heights affect the velocity of the marble? How does the starting height affect the jump distance?

☐ I chose option A, a catapult. I completed parts 1 and 2.

☐ I chose option B, a pitching machine. I completed parts 1, 2, and 3.

☐ I chose option C, a marble run or roller coaster. I completed parts 1 and 2.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Shoot!
for Science



Requirement 6

Discuss with your counselor how science affects your everyday life.

I discussed how science affects my everyday life with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

This worksheet is based on requirements for all 5 Boy Scout Nova Awards posted at
<https://www.scouting.org/stem/Awards/BoyScouts.aspx#shoot> as of 01/03/2018.



Boy Scout Nova Award
Start Your Engines!
for Technology



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

Requirement 1

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

A. Watch about three hours total of technology-related shows or documentaries that involves transportation or transportation technology. Then do the following:

1. Make a list of at least two questions or ideas from each show.
2. Discuss two of the questions or ideas with your counselor.

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.

B. Read (about three hours total) about transportation or transportation technology. Then do the following:

1. Make a list of at least two questions or ideas from each article.
2. Discuss two of the questions or ideas with your counselor.

Examples of magazines include—but are not limited to—Odyssey, Popular Mechanics, Popular Science, Science Illustrated, Discover, Air & Space, Popular Astronomy, Astronomy, Science News, Sky & Telescope, Natural History, Robot, Servo, Nuts and Volts, and Scientific American.

C. Do a combination of reading and watching (about three hours total). Then do the following:

1. Make a list of at least two questions or ideas from each article or show.
2. Discuss two of the questions or ideas with your counselor.



Boy Scout Nova Award
Start Your Engines!
for Technology



I chose option: ☐ A ☐ B ☐ C

Name(s) of shows that I watched and/or materials that I read:

I made a list of questions or ideas from what I watched or read.

I discussed the questions or ideas with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 2

Complete ONE merit badge from the following list. (Choose one that you have not already used toward another Nova award.) After completion, discuss with your counselor how the merit badge you earned uses technology.

Automotive Maintenance
Cycling
Energy
Motorboating
Railroading
Truck Transportation

Aviation
Drafting
Farm Mechanics
Nuclear Science
Small-Boat Sailing

Canoeing
Electricity
Kayaking
Programming
Space Exploration

I completed the _____ Merit Badge.

I discussed how the merit badge uses agriculture with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Start Your Engines!
for Technology



Requirement 3

Do ALL of the following:

A. Use the requirements from the above list of merit badges:

1. Tell your counselor the energy source(s) used in these merit badges.
2. Discuss the pros and cons of each energy source with your counselor.

B. Make a list of sources of energy that may be possible to use in transportation.

C. With your counselor:

1. Discuss alternative sources of energy
2. Discuss the pros and cons of using alternative energy sources.

- ☐ A. 1. I discussed energy sources used in the merit badges with my counselor.
- ☐ A. 2. I discussed the pros and cons of each energy source with my counselor.
- ☐ B. I made a list of sources of energy used in transportation.
- ☐ C. 1. I discussed alternative sources of energy.
- ☐ C. 2. I discussed the pros and cons of using alternative energy sources.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Start Your Engines!
for Technology



Requirement 4

Design and build a working model vehicle (not from a kit).

- A. Make drawings and specifications of your model vehicle before you begin to build.
- B. Include one of the following energy sources to power your vehicle (do not use gasoline or other combustible fuel source): solar power, wind power, or battery power.
- C. Test your model. Then answer the following questions:
1. How well did it perform?
 2. Did it move as well as you thought it would?
 3. Did you encounter problems? How can these problems be corrected?
- D. Discuss with your counselor:
1. Any difficulties you encountered in designing and building your model.
 2. Why you chose a particular energy source.
 3. Whether your model met your specifications.
 4. How you would modify your design to make it better.

- ☐ A. I made drawings and specifications of my model before I began building it.
- ☐ B. My vehicle is powered by _____.
- ☐ C. 1. I tested my model.
- ☐ C. 2. I evaluated how it performed.
- ☐ C. 3. It moved better than as well as not as well as I expected.
- ☐ C. 4. I did did not (Circle) encounter problems.

Explain: __

- ☐ D. I discussed with my Counselor:
- ☐ 1. Difficulties encountered in designing and building my model.
- ☐ 2. Why I chose that particular energy source.
- ☐ 3. Whether my model met my specifications.
- ☐ 4. How I would modify my design to make it better.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Start Your Engines!
for Technology



Requirement 5

Discuss with your counselor how technology affects your everyday life.

I discussed how technology affects my everyday life with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

This worksheet is based on requirements for all 5 Boy Scout Nova Awards posted at <https://www.scouting.org/stem/Awards/BoyScouts.aspx#shoot> as of 01/03/2018.



Boy Scout Nova Award
Whoosh!
for Engineering



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

Requirement 1

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

A. Watch about three hours total of engineering-related shows or documentaries that involve motion or motion-inspired technology. Then do the following:

1. Make a list of at least five questions or ideas from the show(s) you watched.
2. Discuss two of the questions or ideas with your counselor.

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. One example is the NOVA Lever an Obelisk page on ancient Egypt and the use of levers, available at www.pbs.org/wgbh/nova/egypt/raising/lever.html.

Examples of magazines include—but are not limited to—Odyssey, Popular Mechanics, Popular Science, Science Illustrated, Discover, Air & Space, Popular Astronomy, Astronomy, Science News, Sky & Telescope, Natural History, Robot, Servo, Nuts and Volts, and Scientific American.

B. Read (about three hours total) about motion or motion-inspired technology. Then do the following:

1. Make a list of at least two questions or ideas from each article.
2. Discuss two of the questions or ideas with your counselor.

C. Do a combination of reading and watching (about three hours total). Then do the following:

1. Make a list of at least two questions or ideas from each show or article.
2. Discuss two of the questions or ideas with your counselor.



Boy Scout Nova Award
Whoosh!
for Engineering



Requirement 1 (continued)

I chose option: ☐ A ☐ B ☐ C

Name(s) of shows that I watched and/or materials that I read:

I made a list of questions or ideas from what I watched or read.

I discussed the questions or ideas with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 2

Choose ONE merit badge from the following list. (Choose one you have not already used for another Nova award.) After completion, discuss with your counselor how the merit badge you earned uses engineering.

Archery	Aviation	Composite Materials
Drafting	Electronics	Engineering
Inventing	Mining in Society	Model Design and Building
Railroading	Rifle Shooting	Robotics
Shotgun Shooting		

I completed the _____ Merit Badge.

I discussed how the merit badge uses engineering with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Whoosh!
for Engineering



Requirement 3

Do ALL of the following:

- A. Make a list or drawing of the six simple machines.
- B. Be able to tell your counselor the name of each machine and how each machine works.

Helpful Link

"Six Simple Machines": ConstructionKnowledge.net

Website:

http://www.constructionknowledge.net/general_technical_knowledge/general_tech_basic_six_simple_machines.php

C. Discuss the following with your counselor:

- 1. The simple machines that were involved with the motion in your chosen merit badge (Hint: Look at the moving parts of an engine to find simple machines.)
- 2. The energy source causing the motion for the subject of your merit badge
- 3. What you learned about motion from earning your merit badge

- ☐ A. I made a list or drawing of the six simple machines
- ☐ B. I told my counselor the name of each simple machine and how it works.
- ☐ C. I discussed with my counselor:
 - ☐ 1. The simple machine(s) involved with my Merit Badge.
 - ☐ 2. The energy source for my Merit Badge.
 - ☐ 3. What I learned about motion from my Merit Badge.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Whoosh!
for Engineering



Requirement 4

Choose A or B and complete ALL the requirements.

A. Visit an amusement park. Then discuss the following with your counselor:

1. The simple machines present in at least two of the rides
2. The forces involved in the motion of any two rides

B. Visit a playground. Then discuss the following with your counselor:

1. The simple machines present in the playground equipment
2. The forces involved in the motion of any two playground fixtures

I visited: ☐ A an amusement park ☐ B a playground

I discussed the simple machines present and the forces involved in the rides or equipment with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Whoosh!
for Engineering



Requirement 5

Do the following:

A. On your own, design one of the following and include a drawing or sketch:
an amusement park ride OR a playground fixture OR a method of transportation.

B. Discuss with your counselor:

1. The simple machines present in your design
2. The energy source powering the motion of your creation

A. I designed and made a drawing of:

- ☐ an amusement park ride OR
- ☐ a playground fixture OR
- ☐ a method of transportation

B. I discussed with my counselor

- ☐ 1. The simple machine(s) in my design
- ☐ 2. The energy source powering my creation

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Whoosh!
for Engineering



Requirement 6

Discuss with your counselor how engineering affects your everyday life.

I discussed with my counselor how engineering affects my everyday life.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

This worksheet is based on requirements for all 5 Boy Scout Nova Awards posted at <https://www.scouting.org/stem/Awards/BoyScouts.aspx#shoot> as of 01/03/2018.



Boy Scout Nova Award
Designed to Crunch
for **M**athematics



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

Requirement 1

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

A. Watch about three hours total math-related shows or documentaries that involve scientific models and modeling, physics, sports equipment design, bridge building, or cryptography. Then do the following:

1. Make a list of at least five questions or ideas from the show(s) you watched.
2. Discuss two of the questions or ideas with your counselor

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.

B. Research (about three hours total) several websites (with your parent's or guardian's permission) that discuss and explain cryptography or the discoveries of people who worked extensively with cryptography. Then do the following:

1. List and record the URLs of the websites you visited and the major topics covered on the websites you visited. (You may use the copy and paste function—eliminate the words—if you include your sources.)
2. Discuss with your counselor how cryptography is used in the military and in everyday life and how a cryptographer uses mathematics.

Helpful Link

"The Mathematics of Cryptology": University of Massachusetts
Website: <http://www.math.umass.edu/~gunnells/talks/crypt.pdf>

C. Read at least three articles (about three hours total) about physics, math, modeling, or cryptography. You may wish to read about how technology and engineering are changing sports equipment, how and why triangles are used in construction, bridge building, engineering, climate and/or weather models, how banks keep information secure, or about the stock market. Then do the following:

1. Make a list of at least two questions or ideas from each article.
2. Discuss two of the questions or ideas with your counselor.

Examples of magazines include—but are not limited to—Odyssey, Popular Mechanics, Popular Science, Science Illustrated, Discover, Air & Space, Popular Astronomy, Astronomy, Science News, Sky & Telescope, Natural History, Robot, Servo, Nuts and Volts, and Scientific American.



Boy Scout Nova Award
Designed to Crunch
for **M**athematics



Requirement 1 (continued)

D. Do a combination of reading, watching, or researching (about three hours total).
Then do the following:

1. Make a list of at least two questions or ideas from each show, website, or article.
2. Discuss two of the questions or ideas with your counselor.

I chose option: ☐ A ☐ B ☐ C ☐ D

Name(s) of shows that I watched and/or websites that I researched and/or articles that I read, with extra pages attached if necessary:

I watched shows and/or researched cryptography and/or read articles.

I discussed the questions or ideas with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Designed to Crunch
for **M**athematics



Requirement 2

Complete ONE merit badge from the following list. (Choose one that you have not already used toward another Nova award.) After completion, discuss with your counselor how the merit badge you earned uses mathematics.

American Business

Chess

Computers

Digital Technology

Drafting

Entrepreneurship

Orienteering

Personal Management

Radio

Signs, Signals, and Codes

Surveying

Weather

I completed the _____ Merit Badge.

I discussed how the merit badge uses mathematics with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Designed to Crunch
for Mathematics



Requirement 3

Choose TWO from A or B or C or D or E and complete ALL the requirements. (Write down your data and calculations to support your explanation to your counselor. You may use a spreadsheet. Do not use someone else's data or calculations.)

A. Calculate your horsepower when you run up a flight of stairs.

Helpful Links

"How to Calculate Your Horsepower": wikiHow

Website: <http://www.wikihow.com/Calculate-Your-Horsepower>

Haplosciences.net

Website: <http://onlinephys.com/labpower1.html>

1. How does your horsepower compare to the power of a horse?
2. How does your horsepower compare to the horsepower of your favorite car?
3. Share your calculations with your counselor, and discuss what you learned about horsepower.

B. Attend at least two track, cross-country, or swim meets.

1. For each meet, time at least three racers. (Time the same racers at each meet.)
2. Calculate the average speed of the racers you timed. (Make sure you write down your data and calculations.)
3. Compare the average speeds of your racers to each other, to the official time, and to their times at the two meets you attended.
4. Share your calculations with your counselor, and discuss your conclusions about the racers' strengths and weaknesses.

C. Attend a soccer, baseball, softball, or basketball game. Choose two players and keep track of their efforts during the game. (Make sure you write down your data and calculations.) Calculate their statistics using the following as examples:

1. Soccer—Goals, assists, corner kicks, keeper saves, fouls, offsides
2. Baseball or softball—Batting average, runs batted in, fielding statistics, pitching statistics
3. Basketball—Points, baskets attempted, rebounds, steals, turnovers, and blocked shots
4. Share your calculations with your counselor, and discuss your conclusions about the players' strengths and weaknesses.

D. Attend a football game or watch one on TV. (This is a fun activity to do with a parent or friend!) Keep track of the efforts of your favorite team during the game. (Make sure you write down your data and calculations.) Calculate your team's statistics using the following as examples:

1. Kicks/punts
 - a. Kickoff—Kick return yards



Boy Scout Nova Award
Designed to Crunch
for Mathematics



Requirement 3 (continued)

- b. Punt—Number, yards
- c. Field goals—Attempted, percent completed, yards
- d. Extra point—Attempted, percent completed
- 2. Offense
 - a. Number of first downs
 - b. Forward passes—Attempted, percent completed, total length of passes, longest pass, number and length of passes caught by each receiver, yardage gained by each receiver after catching a pass
 - c. Running plays—Number, yards gained or lost for each run, longest run from scrimmage line, total yards gained or lost, and number of touchdowns
- 3. Defense—Number of quarterback sacks, interceptions turnovers, and safeties
- 4. Share your calculations with your counselor, and discuss your conclusions about your team's strengths and weaknesses.

E. How starry are your nights? Participate in a star count to find out. This may be done alone but is more fun with a group.

- 1. Visit the website of the Astronomical Society of the Pacific at <http://www.astrosociety.org/education/hands-on-astronomy-activities/> for instructions on performing a star count.
- 2. Do a star count on five clear nights at the same time each night.
- 3. Afterward, share your results with your counselor.

I chose option ☐ A Horsepower. I completed parts ☐ 1 ☐ 2 ☐ 3

I chose option ☐ B Racers. I completed parts ☐ 1 ☐ 2 ☐ 3 ☐ 4

I chose option ☐ C Games. I completed parts ☐ 1 ☐ 2 ☐ 3 ☐ 4

I chose option ☐ D Football. I completed parts ☐ 1 ☐ 2 ☐ 3 ☐ 4

I chose option ☐ E Stars. I completed parts ☐ 1 ☐ 2 ☐ 3

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Designed to Crunch
for Mathematics



Requirement 4

Do ALL of the following.

- A. Investigate your calculator and explore the different functions.
- B. Discuss the functions, abilities, and limitations of your calculator with your counselor. Talk about how these affect what you can and cannot do with a calculator. (See your counselor for some ideas to consider.)

☐ I investigated and explored the functions of my calculator.

☐ I discussed my findings with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 5

Discuss with your counselor how math affects your everyday life.

I discussed with my counselor how math affects my everyday life.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

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Boy Scout Nova Award

Let It Grow!
for Agriculture



This module is designed to help you explore where your food comes from and how agriculture affects your life each day. Agriculture includes growing crops and raising animals to provide food and other products.

Requirement 1

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

A. Watch about three hours total of shows or documentaries related to agriculture or farming. Then do the following:

1. Make a list of at least five questions or ideas from the show(s) you watched.
2. Discuss two of the questions or ideas with your counselor.

Some examples include—but are not limited to—shows found on PBS (“America’s Heartland,” “America Revealed,” “NOVA”), Discovery Channel, Science Channel, National Geographic Channel, History Channel, TED Talks (online videos), or “Good Eats” on the Food Network. 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; appropriate websites include www.americasheartland.org and www.neok12.com/Agriculture.htm

B. Read (about three hours total) about anything related to agriculture or farming. Then do the following:

1. Make a list of at least five questions or ideas from each article.
2. Discuss two of the questions or ideas with your counselor.

Books on these 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.

C. Do a combination of reading and watching (about three hours total). Then do the following:

1. Make a list of at least two questions or ideas from each article or show.
2. Discuss two of the questions or ideas with your counselor.



Boy Scout Nova Award
Let It Grow!
for Agriculture



Requirement 1 (continued)

I chose option: ☐ A ☐ B ☐ C

Name(s) of shows that I watched and/or materials that I read:

I made a list of questions or ideas from what I watched or read.

I discussed the questions or ideas with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 2

Complete ONE merit badge from the following list. (Choose one that you have not already used toward another Nova award.) After completion, discuss with your counselor how the merit badge you earned uses agriculture.

Animal Science

Fish and Wildlife Management

Gardening

Nature

Soil and Water Conservation

Cooking

Fishing

Insect Study

Plant Science

Farm Mechanics

Forestry

Mammal Study

I completed the _____ Merit Badge.

I discussed how the merit badge uses agriculture with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Let It Grow!
for Agriculture



Requirement 3

Act like a farmer! Think about crops or animals that are found on a farm, and think about the different kinds of farms. Then choose TWO from A or B or C.

A. With your counselor, choose two of the following topics related to food production or processing, and investigate them. Discuss your findings with your counselor.

1. Where did the food you ate for dinner last night come from? Pick one food item and learn more about each of its ingredients. Where were those ingredients grown, and how did the food item get to your table?
2. What kind of equipment is used on a farm?
3. How were food plants invented? Where do most food plants come from?
4. How and why are scientists working to develop plants that don't need as much water?
5. If a big disaster wiped out a lot of food plants, how would we get more of them? How do seed banks work?

B. Define and learn about two of the following, and discuss with your counselor.

1. Farming practice categories (conventional, sustainable, till, low-till, and no-till)
2. Conventional, organic, and biotech farming (compare and contrast)
3. Effects of weather on farming
4. Converting biomass into energy
5. STEM careers in agriculture (food science, plant science, farming, agricultural engineering)

C. Do an "agriscience" experiment and discuss the results with your counselor.

Examples of experiments include—but are not limited to—the following:

1. Grow different types of seeds and compare the seedling plants. Use fast-growing seeds such as carrots, castor beans, lima beans, onions, radishes, soybeans, or tomatoes.
2. Select and study a specific growing variable such as the type of liquid used to water a seed, the type of light, the growing temperature, or the soil type. (Examples of growing studies can be found at www.agclassroom.org/teen/science/idealab.htm and www.sciencekids.co.nz/projects/plants.html .)
3. People often think of microorganisms as germs, but many of the ones found in soil are good for agriculture. How can plants grow in soil if no microorganisms are present? Search the internet—with your parent's permission—and find an experiment that can be done to test the effect of microorganisms. Then perform the experiment.



Boy Scout Nova Award
Let It Grow!
for Agriculture



Requirement 3 (continued)

I chose options: ☐ A 1 2 3 4 5 ☐ B 1 2 3 4 5 ☐ C 1 2 3

I discussed the topics and information with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____



Boy Scout Nova Award
Let It Grow!
for Agriculture



Requirement 4

Visit a farm, botanical garden, grocery store, or any other location where farm produce can be found. If a visit is not possible, you can do a virtual tour online with your parent's permission and counselor's approval.

- A. During your visit, talk with someone in charge about how the plants are grown or animals are raised, and how the food is processed.
- B. Discuss with your counselor the food science involved at the place you visited.

I visited _____ to observe farm produce.

I discussed how food science was involved with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

Requirement 5

Discuss with your counselor how farming affects your everyday life.

I discussed how farming affects my everyday life with my counselor.

Scout's Signature: _____ Date: _____

Counselor's Signature: _____ Date: _____

This worksheet is based on requirements for all 5 Boy Scout Nova Awards posted at <https://www.scouting.org/stem/Awards/BoyScouts.aspx#shoot> as of 01/03/2018.



Boy Scout Supernova Awards



If you thrive on challenge, then earning the Supernova award will be right up your alley. To be eligible, you must be a First Class Scout or higher. As a prerequisite, you must first earn any three of the four Nova awards for Boy Scouts. With your parent's and unit leader's help, you must select a council-approved mentor who is a registered Scouter. You may NOT choose your parent or your unit leader (unless the mentor is working with more than one youth).

A Note to the Mentor

The Boy Scout Supernova awards recognize superior achievement by a Boy Scout in the fields of Science, Technology, Engineering, and Mathematics (STEM). All experiments or projects should be conducted using the highest level of safety protocol and always under the supervision of a qualified, responsible adult. The Scout should always have a buddy when meeting with his counselor or mentor.

Here are the merit badges approved for use in earning the Boy Scout Supernova awards:

	Shoot!	Let It Grow!	Start Your Engines!	Whoosh!	Designed to Crunch	Dr. Bernard Harris Supernova Award	Thomas Edison Supernova Award
Needed	1	1	1	1	1	4	4 + 4
American Business					x		
Animal Science		x				x	x
Archaeology						x	x
Archery	x			x			
Architecture						x	x
Astronomy	x					x	x
Athletics	x						
Automotive Maintenance			x			x	x
Aviation	x		x	x		x	x
Bird Study						x	x
Canoeing			x				
Chemistry						x	x
Chess					x		
Composite Materials				x		x	x
Computers					x		
Cooking		x					
Cycling			x				
Dentistry						x	x
Digital Technology					x	x	x
Drafting			x	x	x	x	x
Electricity			x			x	x
Electronics				x		x	x



Boy Scout Supernova Awards



Energy			x			x	x
Engineering				x		x	x
Entrepreneurship					x		
Environmental Science						x	x
Farm Mechanics		x	x			x	x
Fish and Wildlife Management		x				x	x
Fishing		x					
Forestry		x				x	x
Game Design	x					x	x
Gardening		x				x	x
Geocaching						x	x
Geology						x	x
Insect Study		x				x	x
Inventing				x		x	x
Kayaking			x				
Mammal Study		x				x	x
Medicine						x	x
Mining in Society				x		x	x
Model Design and Building				x			
Motorboating			x				
Nature		x				x	x
Nuclear Science			x			x	x
Oceanography						x	x
Orienteering					x		
Personal Management					x		
Plant Science		x				x	x
Programming			x			x	x
Pulp and Paper						x	x
Radio					x	x	x
Railroading			x	x			
Reptile and Amphibian Study						x	x
Rifle Shooting	x			x			
Robotics	x			x		x	x
Scholarship						Required	Required
Scuba Diving						x	x
Shotgun Shooting	x			x			
Signs, Signals, and Codes					x	x	x
Small-Boat Sailing			x				
Soil and Water Conservation		x				x	x
Space Exploration	x		x			x	x
Surveying					x	x	x



Boy Scout Supernova Awards



Sustainability	x					x	x
Truck Transportation			x				
Veterinary Medicine						x	x
Weather	x				x	x	x
Welding						x	x



Boy Scout Supernova Awards

Dr. Bernard Harris Supernova Award



Requirement 1

Complete any three of the Boy Scout Nova awards. (Note: These may be done at any time after becoming a Boy Scout.)

I completed three Nova Awards:

- | | |
|--|-------------|
| <input type="checkbox"/> Shoot! [S cience award] | Date: _____ |
| <input type="checkbox"/> Start Your Engines! [T echnology award] | Date: _____ |
| <input type="checkbox"/> Whoosh! [E ngineering award] | Date: _____ |
| <input type="checkbox"/> Designed to Crunch [M ath award] | Date: _____ |
| <input type="checkbox"/> Let It Grow! [a G riculture award] | Date: _____ |

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____

Requirement 2

Earn the Scholarship merit badge.

I earned the Scholarship Merit Badge. Date: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Dr. Bernard Harris Supernova Award



Requirement 3

Earn four of the Supernova approved merit badges from the above list. (Note: These may be earned at any time after becoming a Boy Scout.)

I earned these four Supernova approved merit badges:	
_____	Date: _____
_____	Date: _____
_____	Date: _____
_____	Date: _____
Scout's Signature: _____	Date: _____
Mentor's Signature: _____	Date: _____



Boy Scout Supernova Awards

Dr. Bernard Harris Supernova Award



Requirement 4

Complete TWO Supernova activity topics, one each in two different STEM areas.

A Supernova activity topic is a two-part, hands-on, high-level activity related to one of the STEM fields.

Part 1 involves research, preparation, set up, coordination, and/or organization.

Part 2 involves analysis and reflection, culminating in the creation of a report in any one of the available format options.

See the “Supernova Activity Topics” chapter.

<http://usscouts.org/USSCOUTS/advance/nova/scout-supernova-activities.asp>

Complete TWO Supernova Activity Topics, one each in two different STEM areas

STEM Areas	Supernova Activity Topics	Date Completed
Science	Environmental Science: New Things from Old	
	Movie “Science”: Misconception, Misunderstanding, and Mistakes	
	Household Chemistry: Diet Coke and Mentos Explosions	
Technology	Energy Technology	
	Communication Technology	
	Entertainment Technology	
Engineering	Deconstruct and Analyze: Mechanical Designs	
	Build and Test: High Performance Paper Gliders	
	Design and Redesign: Egg Drop Contest	
Mathematics	From Simulations to Real Life: Modeling Bungee Jumping	
	Linking the Past to the Future: Modeling Old Faithful’s Next Eruption	
	A Paradox of Counting: Voting Methods and Fair Decisions	
Scout’s Signature: _____ Date: _____		
Mentor’s Signature: _____ Date: _____		



Boy Scout Supernova Awards
Dr. Bernard Harris Supernova Award



Requirement 5

Participate in a local, state, or national science fair or mathematics competition OR in any equally challenging STEM-oriented competition or workshop approved by your mentor. An example of this would be an X-Prize type competition.

I participated in a STEM competition or workshop:

Description: _____

Topic: _____

Date: _____

Activity Summary: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Dr. Bernard Harris Supernova Award



Requirement 6

Do ONE of the following:

- A. With your parent's permission and your mentor's approval, spend at least one day "shadowing" a local scientist or engineer and report on your experience and what you learned about STEM careers to your mentor.
- B. Learn about a career that is heavily involved with STEM. Make a presentation to your mentor about what you learned.

I chose option:	<input type="checkbox"/> A Shadowing activity	Date: _____
Professional name:	_____	
Type of work:	_____	
Scout's Signature:	_____	Date: _____
Parent's Signature:	_____	Date: _____
Mentor's Signature:	_____	Date: _____
I chose option:	<input type="checkbox"/> B Career exploration	
Description:	_____ _____	
I completed the shadowing activity or career exploration and reported to my Mentor.		
Professional Signature:	_____	Date: _____
Scout's Signature:	_____	Date: _____
Mentor's Signature:	_____	Date: _____



Boy Scout Supernova Awards

Dr. Bernard Harris Supernova Award



Requirement 7

Working with your mentor, organize and present a Nova award or other STEM-related program to a Cub Scout den or pack meeting. Be sure to receive approval from the appropriate unit leader and agree on a time and place for the presentation. If a Cub Scout den or pack is not available, your presentation may be given to another youth group, such as your troop or at your place of worship.

I have planned

Event name: _____

Date and time: _____

Audience: _____

Activity Summary: _____

I completed the plans for the above event and the plans have been approved by the appropriate individuals.

Scout's Signature: _____ Date: _____

Pack Representative's Signature: _____ Date: _____

Youth Group Representative's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____

I carried out the event and my report is attached.

Scout's Signature: _____ Date: _____

Pack Representative's Signature: _____ Date: _____

Youth Group Representative's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Dr. Bernard Harris Supernova Award



Requirement 8

Review the *Scientific Method* (you may know this as *the Scientific Process*) and note how scientists establish hypotheses, theories, and laws. Compare how the establishment of “facts” or “rules” using *the scientific method* differs from the establishment of “facts” or “rules” in other environments, such as legal, cultural, religious, military, mathematical, or social environments. Then do the following.

- A. Choose a modern scientific subject with at least two competing theories on the subject and learn as much as possible about each theory.
- B. Analyze the competing theories, decide which one is most convincing to you, and explain why to your Mentor.
- C. Make a presentation to your Mentor that describes the controversy, the competing theories, and your conclusions about how the scientific method can or cannot contribute to the resolution of the controversy.

I completed a scientific method activity:

Subject: _____

I made a presentation to my Mentor:

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Dr. Bernard Harris Supernova Award



Requirement 9

Submit a Supernova Award Application to the district or council Nova or advancement committee for approval. See

<http://www.scouting.org/filestore/STEM/pdf/SupernovaApplication.pdf>.

I submitted a Supernova Award Application to the district or council Nova or advancement committee for approval.

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards

Thomas Edison Supernova Award



Requirement 1

Earn the Dr. Bernard Harris Supernova Award.

I completed the Dr. Bernard Harris Supernova Award: Date: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____

Requirement 2

Complete one additional Boy Scout Nova Award for a total of four. (Note: These may be done at any time after becoming a Boy Scout.) Show all Boy Scout Nova Awards with completion dates:

I completed four Nova Awards:

☐ Shoot! [Science award] Date: _____

☐ Start Your Engines! [Technology award] Date: _____

☐ Whoosh! [Engineering award] Date: _____

☐ Designed to Crunch [Math award] Date: _____

☐ Let It Grow! [Agriculture award] Date: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Thomas Edison Supernova Award



Requirement 3

Earn four additional Supernova approved merit badges from the above list, other than the four earned while working on the Dr. Benard Harris Supernova Award for a total of eight. (Note: These may be earned at any time after becoming a Boy Scout.) Show all eight Supernova approved merit badges with completion dates:

I earned these four Supernova approved merit badges for the Dr. Bernard Harris Supernova Award:

_____ Date: _____
_____ Date: _____
_____ Date: _____
_____ Date: _____

I earned these four additional Supernova approved merit badges:

_____ Date: _____
_____ Date: _____
_____ Date: _____
_____ Date: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards

Thomas Edison Supernova Award



Requirement 4

Complete TWO additional Supernova activity topics, one each in the two STEM areas NOT completed for the Harris Supernova Award. (Note: The intent is that upon completion of the Edison Supernova Award, the Scout will have completed one Supernova Activity topic in each of the four STEM areas.)

A Supernova activity topic is a two-part, hands-on, high-level activity related to one of the STEM fields.

Part 1 involves research, preparation, set up, coordination, and/or organization.

Part 2 involves analysis and reflection, culminating in the creation of a report in any one of the available format options.

See the “Supernova Activity Topics” chapter.

<http://usscouts.org/USSCOUTS/advance/nova/scout-supernova-activities.asp>

Complete TWO additional Supernova Activity Topics, one each in two different STEM areas. Show all four Topics with completion dates:

STEM Areas	Supernova Activity Topics	Date Completed
Science	Environmental Science: New Things from Old	
	Movie “Science”: Misconception, Misunderstanding, and Mistakes	
	Household Chemistry: Diet Coke and Mentos Explosions	
Technology	Energy Technology	
	Communication Technology	
	Entertainment Technology	
Engineering	Deconstruct and Analyze: Mechanical Designs	
	Build and Test: High Performance Paper Gliders	
	Design and Redesign: Egg Drop Contest	
Mathematics	From Simulations to Real Life: Modeling Bungee Jumping	
	Linking the Past to the Future: Modeling Old Faithful’s Next Eruption	
	A Paradox of Counting: Voting Methods and Fair Decisions	
Scout’s Signature: _____ Date: _____		
Mentor’s Signature: _____ Date: _____		



Boy Scout Supernova Awards

Thomas Edison Supernova Award



Requirement 5

Participate in a local, state, or national science fair or mathematics competition OR in any equally challenging STEM-oriented competition or workshop approved by your mentor. An example of this would be an X-Prize type competition. (Note: The intent is that upon completion of the Edison Supernova Award, the Scout will have participated in two such events.)

I participated in a STEM competition or workshop:

Description: _____

Topic: _____

Date: _____

Activity Summary: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards

Thomas Edison Supernova Award



Requirement 6

Working with your mentor, organize and present a Nova award or other STEM-related program to a Cub Scout den or pack meeting. Be sure to receive approval from the appropriate unit leader and agree on a time and place for the presentation. If a Cub Scout den or pack is not available, your presentation may be given to another youth group, such as your troop or at your place of worship. (Note: The intent is that upon completion of the Edison Supernova Award, the Scout will have completed two such presentations.)

I have planned

Event name: _____

Date and time: _____

Audience: _____

Activity Summary: _____

I completed the plans for the above event and the plans have been approved by the appropriate individuals.

Scout's Signature: _____ Date: _____

Pack Representative's Signature: _____ Date: _____

Youth Group Representative's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____

I carried out the event and my report is attached.

Scout's Signature: _____ Date: _____

Pack Representative's Signature: _____ Date: _____

Youth Group Representative's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Thomas Edison Supernova Award



Requirement 7

Research a scientific, technical, engineering, or mathematical breakthrough or invention of the past 100 years that has affected our society in a meaningful way and present your hypothesis on how it might further affect our society during your lifetime. Present either a 30-minute oral report or a 1500-word written report to your mentor.

I completed the research activity on the topic of

and

- ☐ made a 30-minute oral presentation to my mentor. (Please attach notes.)
or
☐ presented a 1500-word written report to my mentor. (Please attach report.)

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Thomas Edison Supernova Award



Requirement 8

Submit a Supernova Award Application to the district or council Nova or advancement committee for approval. See

<http://www.scouting.org/filestore/STEM/pdf/SupernovaApplication.pdf>.

I submitted a Supernova Award application to the district or council Nova or advancement committee for approval.

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Dr. Albert Einstein Supernova Award



Guidelines for Einstein Supernova Award Applications

<https://filestore.scouting.org/filestore/pdf/GuidelinesForEinsteinSupernovaAward.pdf>

Requirement 1

Earn the Thomas Edison Supernova Award.

I completed the Thomas Edison Supernova Award:	Date: _____
Scout's Signature: _____	Date: _____
Mentor's Signature: _____	Date: _____



Boy Scout Supernova Awards

Dr. Albert Einstein Supernova Award



Requirement 2

Complete FOUR additional Supernova activity topics, one from each of the four different STEM areas. (Note: The intent is that upon completion of the Dr. Albert Einstein Supernova Award, the Scout will have completed four more Supernova activity topics in each of the four STEM areas for a total of eight.)

A Supernova activity topic is a two-part, hands-on, high-level activity related to one of the STEM fields.

Part 1 involves research, preparation, set up, coordination, and/or organization.

Part 2 involves analysis and reflection, culminating in the creation of a report in any one of the available format options.

See the “Supernova Activity Topics” chapter.

<http://usscouts.org/USSCOUTS/advance/nova/scout-supernova-activities.asp>

Complete FOUR additional Supernova Activity Topics, one each in four different STEM areas. Show all eight Topics with completion dates:

STEM Areas	Supernova Activity Topics	Date Completed
Science	Environmental Science: New Things from Old	
	Movie “Science”: Misconception, Misunderstanding, and Mistakes	
	Household Chemistry: Diet Coke and Mentos Explosions	
Technology	Energy Technology	
	Communication Technology	
	Entertainment Technology	
Engineering	Deconstruct and Analyze: Mechanical Designs	
	Build and Test: High Performance Paper Gliders	
	Design and Redesign: Egg Drop Contest	
Mathematics	From Simulations to Real Life: Modeling Bungee Jumping	
	Linking the Past to the Future: Modeling Old Faithful’s Next Eruption	
	A Paradox of Counting: Voting Methods and Fair Decisions	
Scout’s Signature: _____ Date: _____		
Mentor’s Signature: _____ Date: _____		



Boy Scout Supernova Awards

Dr. Albert Einstein Supernova Award



Requirement 3

Create and propose a new Nova Awards topic for any program (Cub Scout, Webelos Scout, Boy Scout, or Venturing) comparable to the existing Nova Awards topics at that program level.

Prepare a written outline for this proposed Nova Awards topic and submit it to your mentor.

I proposed this new Nova Awards topic: _____

This new Nova Award topic applies to the

- ☐ Cub Scout program
- ☐ Webelos Scout program
- ☐ Boy Scout program
- ☐ Venturing program

My written outline for this proposed Nova Awards topic is attached.

I have reviewed this proposed Nova Awards topic with my mentor.

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____



Boy Scout Supernova Awards
Dr. Albert Einstein Supernova Award



Requirement 4

With guidance from your mentor, select a current STEM-related concern and develop a research project or experiment related to that issue. This research project or experiment should be challenging and should require a significant investment of time and effort on your part. (A guideline would be approximately 100 hours.) If your mentor is not a specialist in the area of your project or experiment, he or she will request assistance from a specialist who will serve as a STEM consultant. Execute the project or experiment, and then prepare a complete and well documented written report AND an oral presentation. Present both reports to your mentor and to your local council Nova Awards committee.

The subject of my research or experiment was: _____

My written report of the research or experiment is attached.

I presented an oral report on this subject to my mentor. Date: _____

I presented an oral report on this subject to the Nova Awards committee.

Date: _____

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____

Requirement 5

Submit an application to the national Einstein Supernova Committee for approval.

I submitted an application to the national Einstein Supernova Committee for approval.

Scout's Signature: _____ Date: _____

Mentor's Signature: _____ Date: _____