



Lunar Eclipse Campout

January 20 – 21, 2019

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S9-99-18

Programming Schedule

Sunday

3 pm – Check in and set up campsites

4 pm – Round robin stations

6 pm – Dinner in campsites

7 pm – Naptime (for those who need or wish to partake) in campsites

9:36 pm – Lunar Eclipse Penumbral Begins

10:30 pm – Arrive to Activity Field for Evening Program

Hot Cocoa station being provided by Venture Crew 369

Bring tarps, cots, chairs, binoculars for viewing

10:33 pm – Lunar Eclipse Partial Begins

11:41 pm – Lunar Eclipse Full Begins

12:12 am – Lunar Eclipse Maximum

12:43 am – Lunar Eclipse Full Ends

1:50 am – Lunar Eclipse Partial Ends

2:48 am – Lunar Eclipse Penumbral Ends

Monday

7:00 am – Breakfast in campsites, or later if needed

12:00 pm – All units out

Afternoon Round Robin Stations

Cubs and Scouts will travel from station to station to complete activities. At each station, they will have a passport to get a sticker or stamp added to show they have completed the activity.

Investigate Eclipses

- Solar Eclipse
- Lunar Eclipse

Constellations

- Drawings
- Edible constellations

Solar Systems

- Draw a diagram of the solar system and identify the planets (Use page in NPS Night Explorer program)
- Solar System Hike (in NPS Night Explorer Program)
- Phases of the Moon by Oreos

Scout Astronomers

Physical Activities

- Space Yoga
- Train Like an Astronaut

Evening Program Activities

Hot Cocoa Station

Red Light Flashlight

Telescope viewing

Viewing Area Decorating

Activity Guides

Constellation Drawing

Materials

- Blue or Black construction paper
- Yellow or white colored pencils, crayons, markers or chalk
- Gold star stickers (optional)

For NOVA Award:

Draw and label five constellations.

For Sky is the Limit:

Draw and name your own constellation.



Image source: <http://www.giftofcuriosity.com/wp-content/uploads/2015/03/Constellations-craft-3.jpg>

Edible constellations

Materials

- 10 Mini marshmallows
- 10 Toothpicks or pretzel sticks
- Paper plates

Create your own constellation or try and recreate one from a photo using your snack items. Make these easy grab and go packs by packaging them in advance with a suggested constellation on paper.

<https://artsymmomma.com/learning-constellations-crafts-activities.html>

Phases of the Moon by Oreos

Materials

- 8 Oreos
- Popsicle sticks
- Paper plates

Instructions: <https://sciencebob.com/oreo-cookie-moon-phases/>

Scout Astronomers

Download and print information in advance for Scouts to read and complete their various requirements:

- Astronauts and the BSA
 - <https://filestore.scouting.org/filestore/pdf/02-558.pdf>
- Bryan on Scouting
 - <https://blog.scoutingmagazine.org/2013/10/21/watch-this-space-at-least-two-thirds-of-astronauts-were-scouts/>

Do it Yourself Solar Eclipse

Materials

- Flashlight
 - Quarter
1. Either hold the flashlight for your child, or have her place it on a surface at his eye level.
 2. Aim the flashlight at the right side of her face.
 3. Have your child hold out the quarter in front of her face.
 4. Turn the flashlight on.
 5. Have your child position herself so that the quarter is directly between the light and her face. She may have to adjust the position of the instruments involved.
 6. Eclipse time! Experiment with both full and partial solar eclipses, where the moon comes between Earth and the sun, and either fully or partially obscures the light from the sun.

<https://www.education.com/activity/article/solar-eclipse/>

Do It Yourself Lunar Eclipse

Materials

- Two different sizes of plastic or foam balls
- Old bucket handle
- Bicycle spoke
- Thread
- Scissors
- Flashlight

Follow instructions from PDF to create (figure 17 and 18) though it is recommended to make the model in advance.

<http://arvindguptatoys.com/toys/planetarymotion.html>

Space Yoga

Materials

- Printed poses and instructions
- Yoga mats

Instructions: <https://www.pinkoatmeal.com/space-yoga-pose-ideas/>

Train Like an Astronaut (NASA Program)

Materials

- Cones
- Tape Measure
- Streamers (to create lanes)
- Jump Rope

Space Walk: https://www.nasa.gov/sites/default/files/atoms/files/spacewalk_-_student.pdf

Jump for the Moon:

https://www.nasa.gov/sites/default/files/atoms/files/jumpforthemoon_-_student.pdf

Hot Cocoa Station

Materials

- Hot water
- Hot water container
- Cocoa mix
- Mini marshmallows
- Mugs (or be eco-friendly and have Scouts bring reusable mugs)

Have a little fun, set up a station with hot cocoa and marshmallows to keep you warm and awake for the eclipse.

Red Light Flashlights

Materials

- Red cellophane
- Rubberbands
- Scissors

Using red lights allows for our eyes to better to adjust to night vision, something needed for sky viewing. Pre-cut squares of red cellophane that can be attached to a flashlight lens with rubberband.

Telescope Viewing

Materials

- Telescopes
- Table
- Star charts
- Caution tape
- Stakes

Set up at least one telescope to allow for up close views during the night. You may wish to contact a local astronomy club. This is a requirement for most every astronomy award so go ahead and have one on hand. Help Scouts learn about respectful use of equipment by having them keep a safe distance and viewing in turns.

Viewing Area Decorating

Materials

- Tarps
- Decorations provided by units

Invite units to have a little fun and decorate their viewing area. Have them set out a tarp as most of the evening may be on backs looking up at the sky.

Advancement/Awards Requirements

Sky is the Limit (Tigers Elective)

1. Observe the night sky. Talk about what you see or might see.
2. Look at an object through telescope or binoculars and show how to focus.
3. Find out about two astronauts who were Scouts when they were younger.
4. Draw and name your own constellation.



*<https://cubscouts.org/wp-content/uploads/2015/05/Sky-is-the-Limit.pdf>
Please note the requirements were updated in December 2016 to be as listed above. The link is provided as a reference for additional activities you may want to consider.*

Cub Scout Nova Award - Out of This World (Wolves, Bears, Webelos)

- 1.C. Do a combination of reading and watching (about one hour total) about the planets, space, space exploration, NASA, or astronomy. Then do the following:
 1. Make a list of at least two questions or ideas from what you read and watched.
 2. Discuss two of the questions or ideas with your counselor.
2. Option A: Do all of the following: (a) Demonstrate how to focus a simple telescope or binoculars. (A local astronomy club may be a resource for this activity.) (b) Draw a diagram of our solar system. Identify the planets and other objects. (c) Draw and label five constellations. See if you can locate any of them in the sky using a star map.
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.

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.
1. During your visit, talk to someone in charge about how people at the location use or investigate space science. 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.
5. Tell your counselor what you have learned about space exploration while working on this award.

<https://i9peu1ikn3a16vg4e45rqi17-wpengine.netdna-ssl.com/wp-content/uploads/2018/05/Nova-Out-of-This-World-2018.pdf>

Cub Scout Astronomy Belt Loop (Retired Program)

Complete these three requirements:

1. Set up and demonstrate how to focus a simple telescope or binoculars. (A local astronomy club may be a resource for this activity.)
2. Draw a diagram of our solar system--identify the planets and other objects.
3. Explain the following terms: planet, star, solar system, galaxy, the Milky Way, black hole, red giant, white dwarf, comet, meteor, moon, asteroid, star map, and universe.

https://meritbadge.org/wiki/images/4/45/Cub_Scout_Astronomy.pdf
Belt loops can still be awarded even though the program is retired.

Boy Scouts Astronomy Merit Badge Requirements

https://filestore.scouting.org/filestore/Merit_Badge_ReqandRes/Astronomy.pdf

PDF Workbook:

<http://www.usscouts.org/mb/worksheets/Astronomy.pdf>

National Parks Service Night Skies Junior Ranger Program Patch

Download: <https://www.nps.gov/subjects/night skies/juniorrangernight.htm>

Ages 5 to 12

Complete the workbook and mail in to get a patch from NPS

Several activities within the workbook can help complete activities for awards at Cub and Boy Scout level.

Materials List

Print Materials

- NPS Night Explorer Program (free download)
 - <https://www.nps.gov/subjects/nightskies/juniorrangernight.htm>
- Yoga Pose Printables (downloadable, may have a fee)
 - <https://www.pinkoatmeal.com/space-yoga-pose-ideas/>
- Astronauts and the BSA (free download)
 - <https://filestore.scouting.org/filestore/pdf/02-558.pdf>
- Also recommended:
 - <https://blog.scoutingmagazine.org/2013/10/21/watch-this-space-at-least-two-thirds-of-astronauts-were-scouts/>
- NASA Train Like an Astronaut Instructions
 - <https://www.nasa.gov/tla/activities/english>
 - Select the physical activities you want to do

Physical Materials

- | | |
|---|--|
| <ul style="list-style-type: none"> • Blue or Black construction paper • Yellow or white colored pencils, crayons, markers or chalk • Gold star stickers (optional) • Cones • Tape measure • Streamers • Flashlight • Quarter • Jump ropes • Yoga mats | <ul style="list-style-type: none"> • Red cellophane • Rubberbands • Scissors • Telescopes • Table • Star charts • Caution tape • Stakes • Stamps or stickers for passports • Glow necklaces (optional) |
|---|--|

Food Items

- | | |
|---|---|
| <ul style="list-style-type: none"> • Food gloves • Zip lock bags • Cocoa mix • Hot water container • Mini marshmallows | <ul style="list-style-type: none"> • Toothpicks or pretzel sticks • Paper plates • Oreos (8 per person) • Popsicle sticks |
|---|---|

Materials List for Units

- Pens or pencils for workbooks
- Tarps
- Decorations for viewing area (optional)

Packing List for Families

- Sleeping bag
- Pillow
- Flashlight
- Binoculars
- Camping chair
- Tent
- Reusable mug for hot cocoa
- Food for snacks and meals (dinner Sunday night, breakfast Monday morning)
- Clothes appropriate to the weather

Event Patch

BSA did not create an event patch for this like the solar eclipse in 2017. Below are the options I found online.

Advantage Emblem

- <http://www.advantageemblem.com/fun-patches/S-5234-lunar-eclipse.asp>

Etsy

- <https://www.etsy.com/listing/500986144/sun-moon-lunar-eclipse-embroidered-iron>
- <https://www.etsy.com/listing/632365288/evening-of-light-eclipse-logo-patch>

Additional Resources

Evaluating a Lunar Eclipse (NASA)

<https://www.jpl.nasa.gov/edu/teach/activity/evaluating-a-lunar-eclipse/>

Lunar Eclipse Map

<https://www.timeanddate.com/eclipse/map/2019-january-21>

About Eclipses:

<https://spaceplace.nasa.gov/eclipses/en/>

Why does the Moon have craters?

<https://spaceplace.nasa.gov/craters/en/>

Glossary:

<https://spaceplace.nasa.gov/glossary/en/>