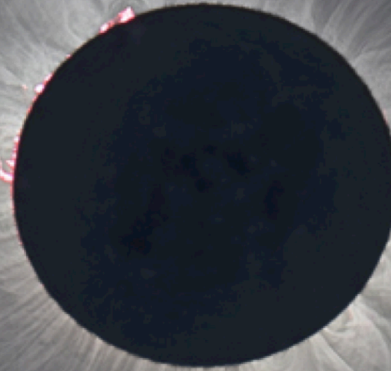


TOTAL SOLAR ECLIPSE



Credit: S. Habbal, M. Druckmüller and P. Aniol

Pack 295 Eclipse Day

Monday, August 21, 2017

Program created by Lisa Scarbrough

Basic Event Details

- When: Monday, August 21, 2017, 11:45 to 4:15 pm
- Where: Camp K.T. Wallace
- Meals: Lunch and snacks will be provided

Notice given to Parents

Effingham County Schools will be in session. Parents should note that their child's participation in the Eclipse Day may be counted as an unexcused absence. A letter of participation will be sent home with each Scout to be turned in for the absence.

Advancement/Awards

- Tigers will earn Sky is the Limit
- Wolves, Bears and Webelos will earn NOVA Out of this World
- All participants will earn BSA Eclipse patch

Activities

- NASA Live Feed
- Learn to use a telescope
- Shoebox Pinhole Viewer
- Solar System Necklace
- Shadow Drawing
- Design and Test a Moon Rover
- Constellation Drawings
- Journal Pages
- Word Searches

Materials NeededSafety

- Solar eclipse glasses
- Sunscreen

Food Items

- Sun Chips
- Pretzel sticks
- Mini marshmallows
- Hershey's Chocolate bars
- Graham Crackers
- Large marshmallows
- Moon Pies
- Starburst
- Milky Way bars
- Water

Live Feed

- Projector
- Screen
- Computer
- Wifi

Activities

- Pizza box
- Black construction paper
- Telescope and/or binoculars
- Solar sheet filter for telescope
- Books about space - sun, moon, constellations, planets, astronomy, astronauts
- Drawing (white) paper
- Crayons, colored pencils, and/or markers
- Legos
- Shoe boxes (1 per Scout)
- Aluminium foil
- Push pin
- Scissors
- Box cutter
- Duct tape
- Legos
- Wooden board, four feet long
- Three balls of various sizes
- Flashlight
- Black elastic jewelry string
- Beads of various sizes and colors
- Toys of various heights
- Measuring tape
- Printables
- Folders (for taking journal pages and drawings home)

Snacks

- Edible constellations (Pretzel sticks and marshmallows)
- Sun Chips
- Summer Oven S'mores
 - <http://lemonlimeadventures.com/summer-science-experiments-solar-oven-smores>

Treat bag (given after completion of 1/2 of stations) – One for each Scout

- Moon Pie
- Starburst
- Milky Way

Beverages

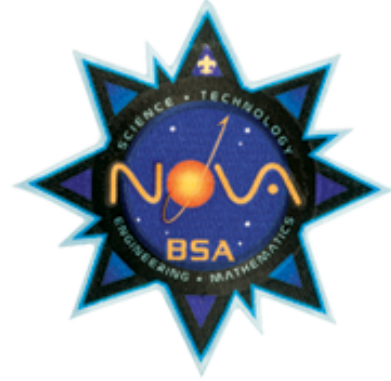
- Water (Scouts should bring refillable water bottle)

Advancement/Awards Requirements

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.

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

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.

B. Explore a career associated with space exploration. 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.

(Books will be provided for Cubs to research this question.)

Sky is the Limit (Tigers Elective)

1. Observe the night sky. Talk about what you see or might see. (During the eclipse, the sun will be in the constellation Leo and Venus will be nearby. More information: <https://www.space.com/36721-stars-planets-visible-during-solar-eclipse.html>)



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.

BSA Eclipse Patch – All Participating Scouts

1. Locate a site suitable for viewing either the total eclipse or the partial eclipse.

2. Describe how to safely view the eclipse.

3. Discuss with your group what you saw and felt during the eclipse. If you can, post your comments and eclipse photos on social media with the hashtag #BSAEclipse2017.

4. Cub Scouts—Discuss what a solar eclipse is with your leaders.



Activities

NASA Live Feed

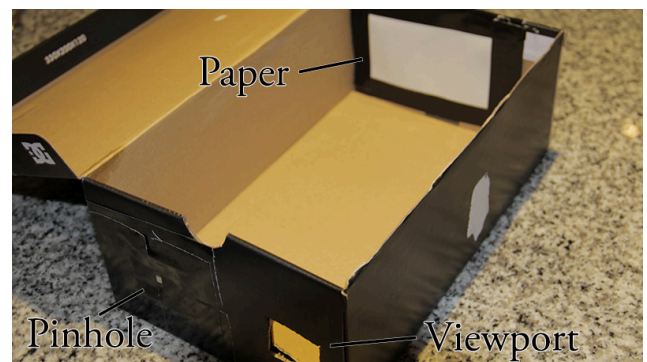
Beginning at 11:45 a.m. Eastern on August 21, 2017, NASA will offer a free live webcast of all things eclipse from Carbondale, Illinois, the spot in North America where the moon will block out the sun for the longest amount of time: 2 minutes and 40 seconds. NASA will show the eclipse in three wavelengths of light, provide insight from experts, and show the launch of an eclipse-seeking weather balloon from a stadium in Carbondale.

- <https://eclipse2017.nasa.gov/planning-your-eclipse-party>
- <https://youtu.be/is8OLhGgLAE>

Shoebox Pinhole Viewer

Materials

- Shoebox
- Small piece of aluminum foil
- White sheet of paper
- Tape
- Pushpin
- Box cutter



Step 1. Cut a small hole (about 1 inch across) in one end of the shoe box, near an edge.

Step 2. Tape a piece of tinfoil over the hole.

Step 3. Using a pin or needle, punch a hole in the center of the foil.

Step 4. Tape a small piece of white paper to the inside of the box, at the opposite end from the foil-covered hole. The paper should be positioned so that light entering the box through the pin hole will hit it. This is where you'll look for the sun.

Step 5. Cut a 1 inch-diameter hole in the box near the image screen (the white piece of paper), but on a different side of the box — the side adjacent to the screen. This is your viewing hole; it must be positioned such that you can look through it at an angle and see the image screen.

Hold the shoe box so that it lines up with its own shadow, demonstrating that it is aligned with light from the sun. Stand so that when you look through the viewing hole, you can see a tiny bead of light on the image screen; that's the sun. During the eclipse, you'll see the shadow of the moon pass in front of the sun.

*Steps taken from <https://www.livescience.com/33906-solar-eclipse-viewer.html>
Image from <https://d2t2wfirfyzjhs.cloudfront.net/images/blog/shadowbox-design.jpg>*

Solar System Necklace

Materials

- Black elastic jewelry string
- Beads of various sizes and colors (see below)

Beads and suggested colors:

Sun - Yellow

Mercury - Solid Red

Venus - cream

Earth - clear blue / blue and green

Mars - clear red

Jupiter - orange

Saturn - clear gold

Uranus - dark blue

Neptune - light blue

Pluto - brown

Asteroid Belt - black (string and spacers)

References:

- <https://www.jpl.nasa.gov/edu/teach/activity/solar-system-bead-activity/>
- <http://www.lilblueboo.com/2016/06/diy-solar-system-necklace.html?crlt.pid=camp.pZlcPxMGIUMk>



Shadow Drawing

Materials

- White Paper
- Markers
- Toys of various heights (we will be using the Safari space toob)

1. Place paper on ground
2. Place toys on paper
3. Trace shadows of toys with markers
4. Color and decorate as desired.

Reference

- <http://www.rookieparenting.com/shadow-drawing/>



Design and Test a Moon Rover

Set a 20 minute time limit for building.

Criteria:

1. Must be able to go down a four-foot board at a 45 degree angle and not break as it came down.
2. Must be able to move at least two feet when someone (adult) pushes the moon rover
3. Must be able to hold two figures
4. Must be able to hold cargo in it, and the cargo cannot fall out during any of the tests
5. Must stay in one piece for the crash test



Have a moon rover derby - judge by distance rovers travel.

Reference

- <http://adventuresinmommydom.org/design-a-moon-rover/>

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>

NOVA Award Journal (Wolves, Bears, Webelos)



Scout Name: _____

Make a list of at least two questions or ideas from what you read and watched about the eclipse today.

1. _____

2. _____

Explore a career associated with space exploration. 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.

Sky is the Limit Journal (Tigers)

Scout Name: _____

Find out about two astronauts who were Scouts when they were younger. What did you learn about them?



1. Astronaut Name: _____

Scout Rank: _____

What I Learned: _____

2. Astronaut Name: _____

Scout Rank: _____

What I Learned: _____

Make notes of what you saw and felt during the eclipse:

Printables

Word Searches:

- http://www.thekidzpage.com/colouring_menus/activities/pages/c0083.gif
- <https://www.teacherspayteachers.com/Product/FREE-Solar-System-Word-Search-Planets-Word-Search-2728966>

Other Downloads:

- Solar System ID Cards
<http://www.survivingateacherssalary.com/free-printable-solar-system-id-flashcards/>
- <https://eclipse2017.nasa.gov/downloadables>
- <https://www.teacherspayteachers.com/Product/Solar-Eclipse-2017-Printables-Reading-Passages-Task-Cards-Activities-More-3227218?pp=1> (not free)
- <https://www.teacherspayteachers.com/Product/Lunar-and-Solar-Eclipses-Activity-Foldable-Space-Science-Astronomy-1917256> (not free)

OuterSpace Word Search

Search the puzzle for the words shown in the word list. Circle each word that you find until you find all of the words listed.

Word List	
booster	earth
countdown	mars
launch	saturn
orbit	jupiter
atmosphere	pluto
capsule	mercury
lander	neptune
satellite	uranus
shuttle	sun
astronauts	moon
rocket	venus
exploration	comet
gravity	meteor
lunar	star

L L M E T E O R W F W M G J A
A A K R S H U T T L E A R W T
N U C O U N T D O W N R A Q M
D N A S T R O N A U T S V S O
E C K U L U U R A N U S I U S
R H W S M N E P T U N E T V P
S U N A O C J Y R X T P Y D H
P B N T O C U V Z V E N U S E
T O E E N O P M E R C U R Y R
O O A L P M I K C P L U T O E
R S R L E E T X X S T A R R L
B T T I K T E P L U N A R Z L
I E H T A H R S A T U R N V M
T R I E E X P L O R A T I O N
C A P S U L E R O C K E T H F

Activity Copyright 2005, theKidzpage.com
Image Credits: NASA

Other Resources

- https://eclipse2017.nasa.gov/sites/default/files/NASA_Eclipse_Activity_Guide.pdf
- <http://www.scouting.org/eclipse2017.aspx>
- 25 facts you should know about the August 21, 2017, total solar eclipse
<http://cs.astronomy.com/asy/b/astronomy/archive/2014/08/05/25-facts-you-should-know-about-the-august-21-2017-total-solar-eclipse.aspx>
- <https://triviaquestionsworld.com/space-trivia-questions/>



August 22, 2017

Dear School Administrator,

This letter is to certify that _____
was absent from school on Monday, August 21, 2017, in order to attend a special educational opportunity through the Boy Scouts of America Cub Scout Pack 295 of Guyton, GA for the 2017 solar eclipse.

My signature below confirms the student's participation in our day-long activities including science projects and webcasts with NASA officials.

The parent signing below recognizes that it is up to the school official to determine if this absence is excused or unexcused.

Lisa Scarbrough
Pack 295 Activities Chair/Den Leader

Parent Signature