

# **STEM Resources**



## Badge in a Box

## Brownie Space Science Adventurer

	These kits are designed to allow a leader to conduct a Brownie meeting
Overview for	with less planning, less effort, and less cost.
Leaders	This kit is intended to provide the ideas and materials for all five
	requirements. There are at least two options offered for every requirement
	and sometimes more. You only need to do one option per requirement and
	you can choose what is the best fit for your troop.
	In the kit, there are activities and supplies. Some supplies are provided, but not all. Make sure to look at the Materials list for the activities so that you
	have some lead time to order or shop. Normal troop supplies, such as
	scissors and markers, may be needed. Those are specified. Copies may
	need to be made.
	Materials or game pieces for each activity are designed so that at least 10
	dirls can do the activity at a time.
	Please be a sister to the next troop when using these materials. Put them
	away in the same manner as you received them and report any
This Activity	broken/missing items when returning the box to Badgerland.
I his Activity	<ol> <li>Meet the heighbors</li> <li>See more than before</li> </ol>
Those	2. See more than before
Padga	5. Investigate the Moon
Bauye	4. De a Stalyazei 5. Celebrate and share
s	
•	STEM
Outcomes	<ul> <li>STEM Interest: Girls are excited about STEM subjects and want to</li> </ul>
	learn more about them.
	STEM Confidence: Girls have confidence in their STEM skills and
	abilities.
	<ul> <li>STEM Competence: Girls think scientifically to solve problems.</li> </ul>
	<ul> <li>STEM Value: Girls learn the importance and relevance of STEM to</li> </ul>
	people and society.
Materials	Markers/crayons
Troop Needs	Pencils
to Supply	• Paper
Bronaration	• Lape
Actions	Make copies of activity sheets from master. Depending on your
	copier, you may be able to leave the master in the sleeve and just
	lay it on the copier bed.
	• Sandwich bag, 1/Brownie (#1 – A: Make a Pocket Solar System)
	<ul> <li>Binoculars (#2 – A: Use a telescope or binoculars)</li> </ul>
	Reserve binoculars separately from any of the three
	<u>service centers. There is a kit at each one.</u>

	<ul> <li>Cell phones with a sky viewing app downloaded (#2 – B: See the</li> </ul>
	stars with a cell phone)
	<ul> <li>4 Oreo cookies per Girl Scout (#3 – A: Oreo Moon Phases)</li> </ul>
	<ul> <li>Each Girl Scout needs a popsicle stick or a plastic knife (#3 – A:</li> </ul>
	Oreo Moon Phases)
	<ul> <li>A copy of the Moon Phase chart for each Girl Scout (troop provides</li> </ul>
	copies; master provided) (#3 – A: Oreo Moon Phases)
	<ul> <li>Paper towel for table cleanup (#3 – A: Oreo Moon Phases)</li> </ul>
	• Optionally, you might want some paper cups and water for when the
	Brownies get to eat their cookies. (#3 – A: Oreo Moon Phases)
	• Flour, at least 5 pounds per pan (#3 – B: Create your own Moon
	Craters)
	Are you short on flour? You could use a bottom layer of
	oatmeal and then put the flour on top of it.
	• Powdered cocoa, at least 1 cup or more per pan (#3 – B: Create
	your own Moon Craters)
	<ul> <li>1-2 cheap plastic tablecloths (#3 – B: Create your own Moon</li> </ul>
	Craters)
	• Paper towel for clean up (#3 – B: Create your own Moon Craters)
	Copies of the Constellation Transformation pages (master provided;
	troop makes copies) (#4 – A: Transform a Constellation)
	• 5 oz. paper drinking cups, 6 five-ounce paper cups per Brownie (#4
	– C: Constellation Viewer)
	<ul> <li>Pre-printed constellation pictures (troop makes copies; master</li> </ul>
	provided) (#4 – C: Constellation Viewer)
	• Snack version: bag of pretzel sticks (#5 – A: Constellation Snack or
	Constellation Bead Craft)
	<ul> <li>Snack version: bag of white mini-marshmallows (#5 – A:</li> </ul>
	Constellation Snack or Constellation Bead Craft)
	Snack version: Bowl for each Brownie: A scoop of pretzel sticks per
	person – maybe 30. (#5 – A: Constellation Snack or Constellation
	Bead Craft)
	<ul> <li>Snack version: Bowl for each Brownie: A scoop of mini-</li> </ul>
	marshmallows – maybe 30 (#5 – A: Constellation Snack or
	Constellation Bead Craft)
	<ul> <li>Snack version: Napkin as a work area (#5 – A: Constellation Snack</li> </ul>
	or Constellation Bead Craft)
	<ul> <li>Craft version: Beads, about 30 per Brownie (#5 – A: Constellation</li> </ul>
	Snack or Constellation Bead Craft)
	Craft version: 6-7 pipe cleaners per Brownie plus spares for those
	that become impossibly kinked. ( $\#5 - A$ : Constellation Snack or
	Constellation Bead Craft)
	<ul> <li>Craft version: bowl to hold the beads for each Brownie (#5 – A:</li> </ul>
1	Constellation Snack or Constellation Bead Craft)

	<ul> <li>Craft version: a paper plate for each Brownie to use as a work space to keep the beads contained. (#5 – A: Constellation Snack or Constellation Bead Craft)</li> <li>Craft version: a quart-sized bag (#5 – A: Constellation Snack or Constellation Bead Craft)</li> <li>Craft version: a few scissors to trim pipe cleaners. (#5 – A: Constellation Snack or Constellation Snack or Constellation Bead Craft)</li> <li>Copy of a Cootie Catcher for each Brownie. (Master provided; troop makes copies.) (#5 – B: Make a Constellation Cootie Catcher)</li> <li>A copy of a pair of green outer ears and a pair of pink inner ears per Brownie. (Master provided; troop makes copies.) (#5 – B: Make a Constellation Cootie Catcher)</li> <li>A copy of a pair of green outer ears and a pair of pink inner ears per Brownie. (Master provided; troop makes copies.) (#5 – C: Make Baby Yoda Ears Headband)</li> <li>Cardstock for making the headband. Any color. About <sup>3</sup>/<sub>4</sub> - 1 inch wide. (#5 – C: Make Baby Yoda Ears Headband)</li> <li>A way to attach pieces: glue sticks, double-stick tape or ordinary tape, staplers (#5 – C: Make Baby Yoda Ears Headband)</li> <li>Nice paper for copying the finished poem, 1 per Girl Scout. Can be letter sized paper, scrapbook paper, card stock, poster sized paper. (#5 – E: Write Simple Poems)</li> </ul>
Contents in the Box	00. Master set of activity sheets 01. Leader's Guide
	<ul> <li>02. A 5-6 foot long piece of adding machine paper for each girl plus an extra for the troop. (provided) (#1 – A: Make a Pocket Solar System)</li> <li>03. A set of stickers for each planet plus the sun. (provided) (#1 – A: Make a Pocket Solar System)</li> <li>04. Planet name cards, 3 sets, full-sized pages (provided) (#1 – B: Name the planets)</li> <li>05. Mnemonic saying cards (provided) (#1 – B: Name the planets)</li> <li>06. 6 Orange cones (provided) (#1 – B: Name the planets)</li> <li>07. Moon poster, qty. = 2 (provided) (#2 – A: Use a telescope or binoculars)</li> <li>08. Chart of creatures to be spotted on the moon, on pink paper. (qty = 6) (provided) (#2 – A: Use a telescope or binoculars)</li> <li>09. 2 Flashlights (provided). (please take batteries out after use.) representing the Sun. (#3 – A: Oreo Moon Phases)</li> <li>10. Tennis ball (provided) representing the Earth. (#3 – A: Oreo Moon Phases)</li> <li>11. Hard plastic golf ball (provided) representing the Moon. (#3 – A: Oreo Moon Phases)</li> <li>12. 2 cake pans (provided) (#3 – B: Create your own Moon Craters)</li> <li>13. Strainer (provided) (#3 – B: Create your own Moon Craters)</li> <li>14. An assortment of balls and objects (provided) (#3 – B: Create your own Moon Craters)</li> </ul>

	<ul> <li>15. Comb for mixing and smoothing the flour to set up the pan for a second use (provided) (#3 – B: Create your own Moon Craters)</li> <li>16. Four-page packet of photos of moon craters on white paper (quantity = 6) (provided) (#3 – B: Create your own Moon Craters)</li> <li>17. Pictures of moon craters on blue paper (quantity = 12) (provided) (#3 – B: Create your own Moon Craters)</li> <li>18. Laminated card with a photo of the full moon. (qty = 12) (provided) (#3 – C: find shapes in the full moon)</li> <li>19. Sample, laminated (qty = 12) (provided) (#4 – A: Transform a Constellation)</li> <li>20. Book: Once Upon a starry Night: a Book of Constellations. By Jacqueline Mitton (#4 – B: Read a Star Story or Two)</li> <li>21. Book: Star Stories: Constellation Tales from Around the World. By Anita Ganeri (#4 – B: Read a Star Story or Two)</li> <li>22. A bright, single-LED flashlight or a cell phone flashlight (one is provided; however troop provides any additional flashlights) (#4 – C: Constellation Viewer)</li> <li>23. Gluesticks (provided) (#4 – C: Constellation Viewer)</li> <li>24. Push pins (provided) (#4 – C: Constellation Viewer)</li> <li>25. A diagram sheet of constellations for each Brownie (provided) (quantity = 12) (#5 – A: Constellation Snack or Constellation Bead Craft)</li> <li>26. Two tent cards of women of color in NASA (#5 – D: See the tent cards about the Women of NASA)</li> <li>27. Two tent cards with instructions for poems that can be placed out on</li> </ul>
	(#5 E: Write Simple Deems)
	(#5 – E: Write Simple Poems)
#1 - A:	Materials:
	<ul> <li>Markers/pencils (troop provides)</li> </ul>
Requirement	<ul> <li>A 5-6 foot long piece of adding machine paper for each girl plus an extra for the troop. (provided)</li> </ul>
Meet the	<ul> <li>A set of stickers for each planet plus the sun. (provided)</li> </ul>
Neighbors	<ul> <li>Sandwich bag, 1/Brownie, (troop provides)</li> </ul>
	Tape for ontional intro (troop provides)
Activity:	
Make a	Preparation:
Pocket Solar	Cut a 5 to 6 feet long niece of adding machine naner for each girl
System	- Out a 5 to 6 reet long piece of adding machine paper for each gift plus a few extras
_	<ul> <li>Break the stickers up into groups of 10 (that is nine planets plus the</li> </ul>
	sun) and nut them in a sandwich bad
There are 2	surry and put them in a sandwich bay.
options	
included for	
this	

requirement.	Activity:
You only	1. <b>Optional intro:</b> Break up into groups so that there are only 6-8 girls
need to do	in each group so that the girls have an easier time contributing to the
one.	conversation. For each group, an adult should take one of the 5 foot
	sections of adding machine tape and use tape to attach it to the
	table.
	2. <i>Optional intro:</i> With a marker, label one end Sun and one end
	Pluto. (Pluto will represent all of the objects in the Kuiper Belt.)
	3. <i>Optional intro:</i> Have a conversation with the girls, asking them to
	predict how far away each planet is from the sun. Keep the planets
	in the correct order. Using a marker, write down the girl's predictions
	on the adding machine paper tape.
	a. Now the girls are going to have their own paper tape and they
	are going to learn how far apart and where each planet really
	4. Each girl gets a bag with stickers of the sun, the eight planets and
	Pluto representing the Kulper Belt. They also get a 5-6 foot paper
	tape.
	5. Each gift puts her hame on her paper tape. It may be easiest if the
	gins work on the noor.
	b Put the sun sticker on one end of the tane and Pluto
	representing the Kuiper Belt on the other end
	- Kuines Balt
	Sun Kulper Beit
	7
	a Fold the paper in helf presses and then open in the paper
	c. Fold the paper in hall, crease, and then open up the paper
	ayam. Fut the oranus sticker at the crease.



	Jupiter
	<ul> <li>g. Fold the Sun to meet Jupiter, and crease. Unfold and write 'A' for Asteroid Belt.</li> <li>h. Fold the Sun to meet the Asteroid Belt, and crease. Unfold and put the Mars sticker on the crease.</li> <li>i. Now things will get very crowded and stickers will start to overlap.</li> <li>j. Option 1 for Mercury, Venus and Earth (simpler): <ul> <li>i. Remind the Brownies of the proper order of the three inner planets: Mercury, Venus and Earth with Mercury being the closest to the Sun.</li> <li>ii. Have the Brownies simply fit the stickers into the space left between the Sun and Mars. ** The stickers will overlap because there will not be enough space. That 's okay. **</li> </ul> </li> <li>k. Option 2 for Mercury, Venus and Earth: <ul> <li>i. Fold the Sun to meet Mars.</li> <li>put the Mercury sticker on the crease.</li> <li>Put the Mercury sticker halfway between the sun and Venus.</li> <li>a. Put the Earth sticker halfway between Venus and Mars.</li> <li>* The stickers will overlap because there will not be enough space. That 's okay. **</li> </ul> </li> </ul>
#1 - B:	Materials:
Require- ment: Meet the neighbors	<ul> <li>Markers/pencils (troop provides)</li> <li>Paper (troop provides)</li> <li>Planet name cards, 3 sets, full-sized pages (provided)</li> <li>Mnemonic saying cards (provided)</li> <li>6 Orange cones (provided)</li> </ul>
Activity. Name the planets There are 2 options	<b>Preparation:</b> There's a number of options for developing a way of remembering the planets in their proper order. In this activity you can mix and match as you like and you might even create something of your own.

included for	So from a preparation perspective, read through the options and
this	decide which ones are the best fit for your girls and the space that
requirement.	you meet in.
You only	
need to do	If you are doing relay races, you will need to plan for the space to set
one.	up the orange cones.
	Activity:
	<ol> <li>Start by asking the girls what planet do they live on? (Answer:</li> </ol>
	Earth)
	<ol><li>Tell them that we are going to learn the names of the objects in</li></ol>
	space that are near by us; these are called our solar system.
	3. We will travel away from the sun. The planets are, in order,
	a. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus
	("Uranus" is often incorrectly pronounced as "yur-AY-nus."
	Correct pronunciation is "YUR-uh-nus."), Neptune
	b. Beyond Neptune is the the dwarf planet Pluto which resides in
	the Kuiper Belt with other dwarf planets and other objects.
	We will not be including Pluto.
	4. To help us remember them and their order, we are going to learn a
	phrase. Each word in the phrase has the same first letter as one of
	the planets.
	Ontion 1. Mnomonia Ruzzlaa
	5 There are 9 sets of cards of a mnemonic to help the Brownies learn
	the order of the planets. They are color-coded
	6. You can divide your girls into groups or you can have girls work
	individually or in pairs; you know your girls the best.
	7. Give each group a set of cards. The cards should be placed so the
	words are upside down at the beginning of the activity.
	8. Then they turn over the cards and they need to get the mnemonic in
	the proper order that matches the planets.
	a. You can decide if you want this to be timed and there to be a
	winner.
	b. Or if you just want each group to go around and read out their
	mnemonic when everybody is done and laugh at what it says.
	c. Your girls might even want to vote on their favorite one.
	9. <i>Chaos follow-on:</i> The girls can make up new sayings by mixing and
	matching the cards that they have and working with other groups.
	10. These are the provided mnemonics:
	<ul> <li>my very excited monkey just slurped unicorn noodles</li> </ul>
	<ul> <li>my very exhausted monster jumbo saw ugly newts</li> </ul>
	<ul> <li>miss velociraptor eats macaroni just spinning under noon</li> </ul>
	<ul> <li>my very educated mother just served us nachos</li> </ul>

<ul> <li>mary's violet eyes make jim stay up nights</li> </ul>
<ul> <li>my very easy method just speeds up nothing</li> </ul>
<ul> <li>many very early men just sat under north</li> </ul>
<ul> <li>men very easily make jugs serve useful needs</li> </ul>
<ul> <li>mustard volcanoes erupt meaty juicy sandwiches up north</li> </ul>
<b>Option 2: Make Your Own Mnemonic</b>
11. Divide your girls into groups. Give each group a piece of paper and something to write with.
12. On the side of the paper, have them list, from top to bottom, the 1st letter of the planets.
a. That is the first should be M, then V, then E, then M, then J, then S, then U, and then N.
<ul> <li>13. Have the girls work to come up with their own saying as a way to remember the order of the planets.</li> <li>14. When successing the set of the planets.</li> </ul>
14. When everyone is done, have them share their creations.
Option 3: Order of the Planets Relay Races
15. There are three sets of cards, so you can divide your girls into three (or fewer) groups.
16. Set up the orange cones for the start spot and the turnaround spot for each relay team.
17. Shuffle the full size cards with the names of the planets. Put a set of cards, face down, in front of each team.
18. Tell the girls that the planets that are closest to the sun should be closest to the orange cone that is the turnaround spot.
19. At the beginning of the race, the 1st girl picks up a card runs to the turnaround spot and places it in an approximate spot of its distance from the sun.
20. The first girl comes back and tags the 2nd girl. The second girl picks up a card, runs to the turn around spot, and places her planet in the right order compared to the card that is already there.
21. The game continues until all the cards have been placed, in order, at
the turnaround spot. It is likely that the girls will need to rearrange the space between the cards in order to fit their card in: that's OK
22. You will need to decide if you will allow a team to move a misplaced
a You can say wherever it's placed it stavs
b. You could allow an additional girl to do another relav run and
move one card on each relay turn until they get to the order
that they like. It's up to you as the leader.

#2 - A:	The objective is that the Brownies use binoculars to observe the moon.
	Depending on your meeting time and place, that may be a challenge.
Requirement	• You can use this website to determine if you can see the moon
· See more	during your meeting time _ https://www.timeanddate.com/moon/
than before	The website allows you to put in your location and select a
	date
Activity	Uale
Activity.	<ul> <li>It will tell you now much of the moon will be visible.</li> <li>Yeal. You can see the moon during the doub</li> </ul>
telescope of	• Indoor option:
binoculars	$\circ$ Put the poster of the full moon at one end of your meeting
	place.
There are 2	$\circ$ Have the girls stand at the other end with binoculars.
options	
included for	Materials:
this	Binoculars
requirement.	<ul> <li><u>Reserve binoculars separately from any of the three</u></li> </ul>
You only	service centers. There is a kit at each one.
need to do	<ul> <li>Moon poster, qty. = 2 (provided)</li> </ul>
one.	• Chart of creatures to be spotted on the moon, on pink paper. (qty =
	6) (provided)
	• Tape (troop provides)
	Preparation:
	Beserve binoculars
	<ul> <li>Decide whether to do indeer or outdoor option</li> </ul>
	Decide whether to do indoor of outdoor option.     Decide whether to do indoor of outdoor option.
	Activity
	1 If you are looking at the mean outside, ask the girls to try and spot
	these things:
	A really big orator equand by an impact
	a. A really by clater caused by an impact
	D. A crater that is an the well of enother crater
	C. A crater that is on the wall of another crater
	d. A starburst spray of focks that were thrown into the all when
	the crater was formed
	e. The dark areas which resulted from lava flowing into a crater
	f. Mountain ridges
	g. An area thar doesn't have any craters
	2. If you are doing the indoor option for observing the moon, place the
	two moon posters on the wall at one end of the room where you are
	meeting.
	a. Have the Brownies stand at the other end of your meeting
	room.
	b. Read the Brownies the short story about what the Peruvians
	see in the moon; it is on the pink page.

#2 P.	<ul> <li>c. Now have the Brownies use the binoculars to find the 10 creatures hidden on the poster of the moon. There is a sketch of each creature on the pink page with the Peruvian tale. You may need to place copies of that pink page in front of the girls so they know what they are looking for.</li> </ul>
# <b>Z - D</b> :	• Coll phonos with a sky viewing app downloaded; the more, the
Requirement	• Cell phones with a sky viewing app downloaded, the more, the better (troop provides)
: See more	<ul> <li>There are also web site options for all of these apps if you have</li> </ul>
than before	access to computers where you are having your meetings.
Activity:	Preparation:
See the	Listed below are a number of web apps and cell phone apps that will
stars with a	help you find and identify things in the night sky in order to be ready for
cen priorie	and determine if there is going to be anything to see during your
There are 2	meeting.
options	
included for	Based on what you learn, you will want to have a plan for what can be
this .	seen during your meeting. You will want to divide your girls into groups
requirement.	so that if they are looking at a computer screen or looking at a cell
need to do	phone screen that the group is small enough that everybody has a chance to see what it is you want to show them
one.	<ul> <li>Download a star viewing app. There are a number to choose from</li> </ul>
	including:
	<ul> <li>Sky Guide</li> </ul>
	<ul> <li>Stellarium</li> </ul>
	<ul> <li>You can use this website to determine, in advance, if you can see</li> </ul>
	the moon during your meeting time.
	https://www.timeanddate.com/moon/
	<ul> <li>The website allows you to put in your location and select a date.</li> </ul>
	$\circ$ It will tell you how much of the moon will be visible
	<ul> <li>Yes! You can see the moon during the day!</li> </ul>
	• You can use this website to determine, in advance, if you can see
	any planets during your meeting time.
	https://www.timeanddate.com/astronomy/night/
	<ul> <li>The website allows you to put in your location and select a</li> </ul>
	Date
	<ul> <li>If you want to see if you can spot the International Space Station,</li> <li>you can use the Spot the Station app and it will lot your phone's GPS</li> </ul>
	calculate a sighting opportunity for your location. Also, you can use
	the Spot The Station website, which calculates sightings for over

	<ul> <li>6,700 locations worldwide using data from Mission Control at NASA's Johnson Space Center in Houston, TX.</li> <li>Starlink is a network of communications satellites; there are over 6,000 in orbit as of May 2024. This website and app allows users to enter their city or coordinates and select "Find Visible Times" to see when Starlink satellites will be visible. Users can also set reminders for 30 minutes before a satellite is visible. Findstarlink.com</li> <li>To identify other satellites in addition to the International Space Station and Starlink satellites, look at the website and app called Satellite Tracker. It can show the exact position of any satellite above the Earth and send notifications when the satellite you're interested in will be passing over your location. The built-in "Sky view" feature allows you to point your device at the sky to see the satellite's movement and position in real-time.</li> <li>Suppose a plane goes by overhead while you're doing this activity. Then you can find out where the plane came from and where the plane is going if you download this app: FlightAware</li> </ul>
	Activity:
	<ol> <li>Based on how many computer screens or cell phone screens you are able to assemble for this meeting, you will want to divide your girls into that number of groups.</li> <li>Each group should work together to go through the lists of things that can be found in the sky at this time.</li> </ol>
#3 - A:	The objective of this activity is that the Brownie Girl Scouts learn the names
	of the four basic phases of the moon:
Requirement	Full Moon
: Model the	New Moon     First Overtee Meen
Meet the	First Quarter Moon     Third Quarter Moon
Moon Phases	Also, the Brownies should understand where the Earth, Sun and Moon are positioned to create what they see.
Activity: Oreo Moon Phases	Then, depending on how things are going, introduce the words and concept of a 'crescent' moon and a 'gibbous' moon. Lastly, the Brownies also can learn the terms 'waxing' and 'waning'.
There are 3 options included for this requirement. You only need to do one.	<ul> <li>Materials: <ul> <li>4 Oreo cookies per Girl Scout (troop provides)</li> <li>Double stuff cookies are better</li> <li>There are reports that cookies that are at room temperature will twist off more easily.</li> <li>You may wish to 'twist off' the cookies and bag them in advance.</li> </ul> </li> </ul>



Each phase repeats itself every 29.5 days. There are 8 phases that the moon goes through. This activity focuses on four of them.

#### **Beginning Discussion**

Have the girls sit and talk a bit about the moon itself. Here are some facts that would be essential for the Girl Scouts to know.

- The moon moves around the Earth.
- The moon is smaller than the Earth.
- The moon does not make its own light, like the sun. It reflects light from the sun and that is why we can see it.
- Depending on where the sun is, and where we are standing, and where the moon is this causes the reflected light to change.
- The shape of the reflected light goes through a pattern that repeats.
- The shapes of the reflected light have names, which we are going to learn today.
- Since we just had an eclipse and the girls will have heard a lot about it, we might differentiate how an eclipse is different than the phases of the moon. The phases of the moon are created by what part of the moon's reflected light is visible to us where we are standing on the earth. The eclipse happens because the moon gets in the way of the sun and blocks its light. Both things involve the same three objects: the sun, the moon, and the person on the earth looking up. But they are quite different phenomena.

### A: Position of Sun, Moon and a Brownie standing on the Earth: Full Moon: Explain what the Full Moon is

It is the light completely reflecting back to the Earth.

- Use flashlight/balls to illustrate. You can have the girls actually hold the balls in place and the leader turns on the flashlight.
  - There are two sets of flashlights and balls so that you can break your troop up into two groups so more girls can actually hold the balls in position and the other girls are closer to the action and have a better chance of understanding what is going on.
- Flashlight representing the Sun. You may find that your cell phone light is brighter.
- Tennis ball representing the Earth.
- Hard plastic golf ball representing the Moon.
- Make sure the girls understand
  - Which ball is the moon
  - Which ball is the earth and where the girl is standing on the earth, looking at the moon. *This is key; the girls*

<ul> <li>have to imagine where they are on the earth, looking at the moon, to understand how the light reflects to create each phase. The chart that each Girl Scout has shows the relative position of the Sun, Moon, Earth and the child viewing the Moon.</li> <li>Once they understand the moon and their position on the earth, then turn on the flashlight. Walk them through how the light goes from the sun, past the earth, hits the moon, and then reflects back to their eyes.</li> <li>Try and help them understand that the entire surface of the moon will be illuminated by the sunlight, and so the entire circle will be lit and thus they will see a complete circle of light reflected back to their eyes.</li> <li>Tell them that this complete circle of reflected light is called the Full Moon.</li> <li>Take your time here,</li> </ul>
<ul> <li>B: Oreos: Full Moon:</li> <li>Each girl needs a sandwich bag of Oreo cookies, a plastic knife or a popsicle stick, and a worksheet of the positions of the moon.</li> <li>Have the girls find an Oreo cookie that has all of its frosting and place it on their paper on top of the circle labeled 'Full Moon'.</li> </ul>
<ul> <li>C: Position of Sun, Moon and a Brownie standing on the Earth: New Moon: Explain what the New Moon is</li> <li>Now we are going to work on the 'New Moon' but we aren't going to start by giving the Girl Scouts the words for this phase. Giving the phase the name 'New Moon' happens at the very end.</li> <li>Set it up first.</li> <li>Begin with the Earth. You should keep the Earth in the same spot as it was for the Full Moon activity above.</li> <li>However, now the Moon is on the opposite side of the Earth when compared to the Full Moon configuration. That is, it is between the Earth and the Sun.</li> <li>Establish where the person is standing on the Earth, looking to see the Moon. The person is standing on the other side of the Earth (when compared to the Full Moon configuration), looking toward both the Moon and the Sun.</li> <li>Take your time here, because here is the key question: How much light is <i>reflected</i> off the sun and towards the person looking at the moon. The right answer is "no light";</li> </ul>
looking at the moon, there will be lots of confusion. Take your time and see if you can get all of the girls to understand this key thought: 1. The Moon does not make

<ul> <li>its own light; 2. We only see the Moon when it reflects light; 3. In this set-up, <u>no</u> light is reflected.</li> <li>Then ask them what is means? Can they see the moon or not? The answer is that with no reflected light, the moon would not be visible. The name for this phase is a 'New Moon'. (The girls might think the word 'new' is a funny choice for this situation; if you get this question, then you can explain that it is because it is starting a <i>new</i> cycle of moon phases and thus gets the name 'new'.)</li> <li>(A clever girl may ask 'Why isn't this an eclipse, because an eclipse happens when the moon blocks the sun? And this is the situation during a New Moon?" The answer is that 'sometimes the Moon is above the straight line between the Earth and the Sun, and sometimes it is below. So it doesn't block the sun. But every once in a while it will line up exactly: a little more than 200 times a century. At any one point on Earth, there would only be a total eclipse every 3-400 years.)</li> </ul>
<b>D: Oreos: Full Moon:</b> Now have the girls find an Oreo cookie that has none of its frosting and place it on top of the circle labeled 'New Moon'.
<ul> <li>E: Position of Sun, Moon and a Brownie standing on the Earth: First Quarter Moon: Explain what the First Quarter Moon is Set up another situation between the Moon, the Earth and the Sun.</li> <li>Keep the Earth in the same place.</li> <li>Move the Moon counter-clockwise, a quarter turn around the Earth</li> </ul>
<ul> <li>Establish where the person is standing on the Earth, looking at the Moon.</li> <li>Reiterate where the Moon is, where the Earth is, and where the</li> </ul>
<ul> <li>person is. Turn on the flashlight to create the Sun.</li> <li>Ask the girls what part of the Moon is receiving Sunshine. <ul> <li>Remind the girls that the person on the Earth can only see the reflected light.</li> </ul> </li> </ul>
<ul> <li>So have them determine that only the right half of the moon would be receiving light that it can reflect to the Earth. (The other part of the Moon reflects light, but it doesn't bounce towards the Earth; it bounces away from the Earth instead.)</li> <li>So how much of the Moon reflects: Half of the Moon</li> </ul>
<ul> <li>We are going to give this moon phase a name: it's called the First Quarter.</li> </ul>

<ul> <li>So a clever girl is going to be confused by this. She can see <i>half</i> of the Moon. So why is it called a <i>quarter</i> moon? The answer is because the Moon is one-quarter of the way through the cycle of phases. Yes, it is very confusing. We have to live with it.</li> </ul>
<i>F: Oreos: First Quarter Moon</i> : Now have the girls find an Oreo cookie that has more than half of its frosting. Using their plastic knife, scrap off some frosting so that half of the cookie has frosting. Place it on top of the circle labeled 'First Quarter'.
<ul> <li>G: Position of Sun, Moon and a Brownie standing on the Earth: Third Quarter Moon: Explain what the Third Quarter Moon is Set up another situation between the Moon, the Earth and the Sun.</li> <li>Keep the Earth in the same place.</li> <li>Move the Moon counter-clockwise, to the opposite side of the Earth, between the Full Moon position and the New Moon position.</li> <li>Establish where the person is standing on the Earth, looking at the Moon.</li> <li>Reiterate where the Moon is, where the Earth is, and where the person is. Turn on the flashlight to create the Sun.</li> <li>Ask the girls what part of the Moon is receiving Sunshine. <ul> <li>Remind the girls that the person on the Earth can only see the reflected light.</li> <li>So have them determine that only the left half of the moon would be receiving light that it can reflect to the Earth. (The other part of the Moon reflects light, but it doesn't bounce towards the Earth; it bounces away from the Earth instead.)</li> <li>So how much of the Moon reflects: Half of the Moon.</li> </ul> </li> <li>We are going to give this a name: it's called the Third Quarter. <ul> <li>So, as. Before, a clever girl is going to be confused by this. She can see half of the Moon. So why is it called a quarter moon? The answer is because the Moon is three- quarters of the way through the cycle of phases. Yes, it is very confusing. We have to live with it.</li> </ul> </li> </ul>
<i>H: Oreos: Third Quarter Moon.</i> Now have the girls find an Oreo cookie that has more than half of its frosting. Using their plastic knife, scrap off some frosting so that half of the cookie has frosting. Place it on top of the circle labeled 'Third Quarter'.
<i>I.</i> Have the girl look at her Oreo Cookie diagram. Walk the girls through the entire cycle as it is on their diagram right now. Start with

the New Moon that has no reflected light at all. Next is the First Quarter, where half of the Moon is illuminated. Then the Full Moon, which is a complete circle of light. Lasty, the Third Quarter, where half of the Moon is illuminated again.
<ul> <li>J. Now we are going to introduce the ideas of Gibbous moons. Ask the girls to find a cookie with more than half of its frosting.</li> <li>Use the plastic knife to shape it so there is a banana shape missing from one of the sides, but it is more than half covered.</li> <li>Every moon phase has its own name, and so the name of 'the phase that is more that half-illuminated but not quite a Full Moon' is called 'Gibbous'.</li> <li>Another funny word that we don't hear anywhere else except for when we talk about the Moon. <ul> <li>The word 'Gibbous' comes from a Latin word that means 'hump'.</li> </ul> </li> <li>Where does it fit in this sequence? <ul> <li>Hopefully, the girls will determine that it goes between the Full Moon and the First Quarter, or between the Full Moon and the Third Quarter. (It doesn't matter which at this point.)</li> <li>On their worksheet, have the girls put this cookie half-way between. Tell them that the name of this phase is a 'Gibbous Moon'.</li> <li>From the discussion, the girls should realize that there are actually two Gibbous Moon phases. So they should take another cookie with most-but-not-all frosting and place it in the other Gibbous Moon spot on their worksheet.</li> <li>This is the status that the girls should have: one Gibbous Moon cookie between the Full Moon and the First Quarter, and the other Gibbous Moon between the Full Moon and the Third Quarter.</li> </ul> </li> </ul>
<i>K. Now we are going to introduce the ideas of Crescent</i> <i>moons.</i> Ask the girls to find a cookie that has no frosting at all, or just a little bit. Shape some frosting into a banana shape. The girl may need to use some of the frosting that she scraped off to create her First and Third Quarter Moon, and use that frosting to
<ul> <li>Ask the girls: You now have a cookie with a banana shape.</li> <li>Ask the girls: You now have a cookie with a banana shape. Where does it fit in this sequence?</li> <li>Hopefully, the girls will determine that it goes between the New Moon and the First Quarter, or between the New Moon and the Third Quarter. (It doesn't matter which at this point.)</li> </ul>

<ul> <li>Have the girls put this cookie half-way between. Tell them that the name of this phase is a 'Crescent Moon'.</li> </ul>
<ul> <li>From the discussion, the girls should realize that there are actually two Crescent Moon phases. So they should take another cookie with very little frosting on it and make a</li> </ul>
banana shape of the frosting. Place it in the other Crescent Moon spot.
<i>L. The Eight Phases of the Moon</i> Have the Girl Scouts look at their worksheet with the 8 cookies in their places. Out loud, as a group have them recite the names of the different phases starting from the new moon (which is the cookie without any frosting) and going counterclockwise. This will help the girls remember all of the names of the phases and their order.
<i>M. Optionally, understanding the words waxing and waning.</i> So tell the girls that we want to be able to tell them apart, because every moon phase has its own special name.
<ul> <li>Ask the girls to determine which of the two Crescent Moons occur as the amount of light being reflected each day is getting greater. That is, the amount of light is going from almost no light at all to more and more light.</li> </ul>
<ul> <li>Answer: the Crescent Moon that is between the New Moon and the First Quarter.</li> <li>So the word to describe that the amount of reflected light is increasing is: "waxing". So it is called the 'Waxing</li> </ul>
<ul> <li>Orescent'.</li> <li>It's an old-fashioned word that means 'to grow'.</li> </ul>
<ul> <li>So the other Crescent Moon has to have its own name too. The other Cresecent Moon is changing from a Quarter Moon to the New Moon, so the amount of light being reflected is getting less and less. The word for that is 'Waning' and it is called the 'Waning Crescent'.</li> </ul>
<ul> <li>Similarly, 'Waxing Gibbous' is the phase between the First Quarter Moon and the Full Moon.</li> </ul>
<ul> <li>The last phase is called the 'Waning Gibbous' and it is halfway between the Full Moon and the Third Quarter.</li> </ul>
Time to have fun! And eat our work!

#3 - B:	
Requirement : Investigate the Moon Activity: Create vour	
own Moon	Materials:
Craters	2 cake pans (provided)
Thora are 3	<ul> <li>Strainer (provided)</li> <li>An assortment of halls and objects (provided)</li> </ul>
options	<ul> <li>Comb for mixing and smoothing the flour to set up the pan for a</li> </ul>
included for	second use (provided)
this	<ul> <li>Four-page packet of photos of moon craters on white paper (quantity</li> </ul>
You only need to do one.	<ul> <li>= 6) (provided)</li> <li>Pictures of moon craters on blue paper (quantity = 12) (provided)</li> <li>Flour, at least 5 pounds per pan (troop provides) <ul> <li>Are you short on flour? You could use a bottom layer of oatmeal and then put the flour on top of it.</li> </ul> </li> <li>Powdered cocoa, at least 1 cup or more per pan (troop provides)</li> <li>1-2 cheap plastic tablecloths (troop provides)</li> <li>Paper towel for clean up (troop provides)</li> </ul>
	Preparation: None
	<ul> <li>Activity:</li> <li>1. Look at craters that are on the moon. There are 6 four-page packets of pictures of craters on the moon. Have the Brownies work in pairs and look at the pictures.</li> <li>a. If you want the Brownies to know the words to use when describing the craters, spend some time on page one where the different parts of the crater are assigned their proper terms.</li> <li>b. Have the Brownies look at pages 2, 4 and 5. Have them look at the craters. Ask them if they can tell: <ul> <li>i. Which craters are deeper than others?</li> <li>ii. Can you tell if the crater is deeper or if it just has a higher wall around it?</li> <li>iii. Which craters are the new craters?</li> <li>iv. Which craters are the widest craters?</li> <li>v. Which craters are the widest craters?</li> <li>v. Which craters are the widest craters?</li> <li>v. Have the Brownies look at pages 6 and 7. What are they seeing in these pictures that they did not see in other crater pictures?</li> </ul> </li> </ul>

<ul> <li>d. Thanks to <u>https://www.lpi.usra.edu/</u> for this photo packet.</li> <li>2. Create craters: This activity works best when the Brownies can really see what is going on. Therefore, it is suggested that only 5 Brownies work at each pan with an adult. If you aren't able to provide that kind of space, then one pan for your entire group will certainly work</li> </ul>
3. Spread out the plastic tablecloths to make clean up easier. You
might consider doing this whole activity on the floor.
4. Put the cake pan in the middle of the plastic and fill the cake pan up with flour to at least a depth of two inches or a little more. Try and make the flour as even as possible. (If you are short on flour, you might put a lower level of oatmeal in the pan first.)
5. Now sprinkle the cocoa powder as a top layer over the white flour. So put some of the cocoa powder into the strainer and shake it so you get a thin layer of cocoa that is fairly even across the top of the flour in the pan
6. Pick objects that are primarily round as impactors for the first time.
<ol> <li>Have the Brownies look at the balls that are going to be used as impactors and hitting the surface of the cocoa powder to make craters.</li> </ol>
<ul><li>a. Ask them to predict which of the objects are going to make the biggest craters and which ones are going to make small craters.</li><li>b. Ask them to predict which ones are going to make deep craters</li></ul>
and which ones are going to make shallow craters.
c. Ask them what else could change the kind of crater that is created by the object. (Hopefully, they will talk about dropping the object from a greater height and that would make a bigger crater. Perhaps they will say other things but hopefully you will get at least that answer.)
8. Decide how you are going to determine which Brownie gets which
object to create the craters in the pan.
a. At least two of the Brownies should have one of the marbles. The reason for that is then the marbles can be dropped from different heights and the Brownies can predict not only which one makes the bigger crater but even predict how much bigger of a crater it will create
9. Set a height from which everyone is going to drop their object.
(except for the Brownie that has the second marble.). 2 to 3 feet
might be a good starting height.
into the pan.
a. The objects should be dropped, not thrown.
b. Have the biggest, heaviest objects go near the end, not at the
beginning.

<ul> <li>c. Have the two Brownies that are dropping the marbles go back-toback. Have the Brownie that has that is dropping the marble from the greater height go second.</li> <li>d. For this first effort, try and have each crater created in its own spot.</li> <li>e. Pause after each crater is created. Have the girls discuss what they are seeing. <ol> <li>You can name the crater; for instance, you might call it 'Beth's crater'.</li> <li>How does the depth of the craters compare?</li> <li>How does the width of the craters compare?</li> <li>How does the width of the craters compare?</li> <li>What do you see about the material that's ejected from the crater?</li> <li>What do you see about the material that's ejected from the crater?</li> <li>What happened to the object that made the impact? Where did it end up?</li> <li>The Brownies looked at some pictures of craters prior to the start of this part of the activity. Do they see any features that are like what they saw in the pictures? Do they see any features that are different then the craters they observed on the pictures of the moon?</li> </ol> </li> <li>After each individual crater is created, remove the object that create dit. That's because, in reality, the object that creates the crater usually is completely obliterated upon impact.</li> <li>You can reset the surface and do another pass at dropping objects into the flour. There is a comb for mixing and smoothing the surface of the flour. You might need to refresh the cocoa top layer in order to do the activity a second time.</li> <li>Have the Brownies decide what new things they want to try if they do this activity a second time. There is a significant selection of items that are not just round. In every case, have the Brownies predict what they will see in their craters when they make these changes. Here are some ideas: <ol> <li>Look at the objects with a much different shape than the round objects that the Brownies have been using. Have the girls predict how much that's going to change what kind of crater re</li></ol></li></ul>
<ul> <li>b. Some of the objects are much heavier than the balls from the first effort.</li> </ul>
c. Start with the largest object and make a crater. Then using a smaller object, have it land on top of, or on the side of, the large crater. Observe what has happened where the two overlap.
<ul><li>d. Consider having the object come in at an angle instead of straight down.</li><li>e. Consider different heights than you've done before.</li></ul>

	13. Look at moon crater photo with new eyes. Hand out the picture	
	of craters on the moon on blue paper. Ask some questions of the	
	Brownies about what they see:	
	a What do you think formed these craters?	
	b. Which crater was made by a big object? A smaller one?	
	b. Which crater was findle by a big object: A smaller one:	
	C. Which claters might be older? Newer?	
	d. Did the craters you made in the flour bin look like the ones in the	
	photo? How are they similar? How are they different?	
#3 - C:	Materials:	
	<ul> <li>Laminated card with a photo of the full moon. (qty = 12) (provided)</li> </ul>	
Requirement		
: Investigate	Preparation:	
the Moon	None	
Activity:	Activity:	
find shanes	1 Hand out the cards with the photo of the full moon	
in the full	2 Ask the girls to try and find the suggested shapes in the photo of	
moon	2. Ask the gins to ity and into the suggested shapes in the photo of	
moon	the moon.	
<b>T</b> h	<b>-</b>	
There are 3	I hanks to www.calacademy.org	
options		
included for		
this		
requirement.		
You only		
need to do		
one.		
#4 _ Δ·	Brownies will identify common constellation patterns. They will create their	
	own constellations using the same star patterns. They will cleate their	
Doquiromont	own constellations using the same star patterns.	
	Matariala	
: Be a Star		
Gazer	<ul> <li>Copies of the Constellation Transformation pages (master provided;</li> </ul>	
	troop makes copies)	
Activity:	Pencils, colored pencils (troop provides)	
Transform a	• Sample, laminated (gtv = 12) (provided)	
Constellatio		
n	Preparation:	
	Make conjes of Constellation Transformation pages from master	
There are 3	- make copies of consideration transformation payes from the master in	
ontions	Depending on your copier, you may be able to leave the master in	
included for	the sleeve and just lay it on the copier bed.	
	<ul> <li>You may wish to make extras of each one so that</li> </ul>	
	the Brownies can pick the picture they want or do	
requirement.	more than one.	
You only		
need to do		
one.		



	Depending on ho or let the girls ch 7. Have the girls go 8. Have the Browni that says "now I 9. You can decide I 10. <i>Optional:</i> Your b write a four line t the constellation used to be " a They would crea objects. Here ar	by many copies you made, you can hand out copies oose something that they like. to work and design their new constellations. es fill in the name of their new drawing in the section am" how many drawings you want your girls to do. brownies can pick their favorite drawing and then transformation poem about what has happened to . That is, the first line would be the line that starts "I and the third line would be "now I am" te a second and fourth line that describes the two re some examples:
	l us Wit No Wit	sed to be a scorpion, th eight legs to scare you all. w I am a shark, th no legs at all.
	l us Wr Bu wh	sed to be a dog, no would always play with all. t now I am a boy, o plays only with his ball.
	l us Wit Bu Wit	sed to be a dragon, th breath so hot. t now I am a tadpole, th bright red spots.
	11. They can write the lines are already 4th lines and add	neir poem right on the page. The 1st and the 3rd there so they just have to make up the 2nd and the d them to their drawing.
#4 – B:	In graillude to La	arry Ledoisky, Nancy Ledoisky, et al.
Requirement : Be a Star Gazer Activity: Read a Star Story or Two	Materials:	Once Upon a Starry Night: A Book of Constellations Jacqueline Mitton, Christina Balit (Illustrator) (provided)
There are 3 options included for		

this requirement. You only need to do one.	Star Stories Constellations Tales From Around the World
	Nvirue by (class Cause)         Anita Ganeri         (provided)
	Preparation:
	stories that you would like to read to your Brownies. Some of the stories, especially those with Greek origins, may be a little uncomfortable for you to read to your Brownies. The nice thing about the Constellation Tales from Around the World book is it will allow you to tell some global stories that are not the Greek or Egyptian stories that are usually shared about constellations.
	Activity
	Story time! Spend some time reading stories to your Brownies about what ancient people or other cultures saw in the stars in the sky.
#4 – C:	Materials:
Requirement : Be a Star Gazer	<ul> <li>5 oz. paper drinking cups (troop provides)         <ul> <li>There are 6 possible constellation patterns that your Brownie can make as part of this constellation viewer. Therefore buy 6 five-ounce paper cups per Brownie.</li> </ul> </li> <li>Pre-printed constellation pictures (troop makes conjest master)</li> </ul>
Activity:	provided)
Constellatio	<ul> <li>There are 6 possible constellation patterns.</li> </ul>
n Viewer	<ul> <li>Scissors (troop provides)</li> </ul>
There are 3 options included for this requirement. You only need to do one.	<ul> <li>Pencils for writing names on the cups (troop provides)</li> <li>A bright, single-LED flashlight or a cell phone flashlight (one is provided; however troop provides any additional flashlights so there might be one per girl.)         <ul> <li>One of the flashlights provided for activity 3-A (the Oreo cookie moon activity) is a single LED flashlight. You can use that as a demo flashlight. However you may want to find a way to have more flashlights available for your troop.</li> <li>The concentrated light from a cell phone flashlight works amazingly well.</li> <li>Remember to take batteries out of the flashlight when you return this kit to Badgerland.</li> </ul> </li> </ul>



	7. There are six different constellation patterns; thus each Brownie
	can make 6 different cups.
	Thanks to <u>www.calacademy.org</u> .
#5 – A:	- Contraction
Requirement	
and Share	
A - 11- 14	
Constellatio	
n Snack or	Sc
Constellatio	otpius -
ii Dead Oran	
There are five	
troop star	
party or for a	
you invite	
daisies. Pick	
and choose as vou wish	Big Picture
and have a	Girls will have some diagrams of some common constellations. They will
good time.	pick a constellation and try to duplicate the pattern.
	There are two options for creating the patterns:
	• Snack: They will use mini-marshmallows for the stars. They will use
	<ul> <li>pretzel sticks to hold the marshmallows in place to create the picture.</li> <li>Craft: They will use beads for the stars. They will use pipe cleaners.</li> </ul>
	to hold the beads in place to create the pattern.
	Materials
	1. Snack version: bag of pretzel sticks (troop provides)
	2. Snack version: bag of white mini-marshmallows (troop provides) 3. Snack version: Bowl for each Brownie: A scoop of pretzel sticks per
	person – maybe 30. (troop provides)
	4. Snack version: Bowl for each Brownie: A scoop of mini-marshmallows
	5. Snack version: Napkin as a work area (troop provides)

6. Craft version: Beads, about 30 per Brownie (troop provides)
<ul> <li>Plain old pony beads of any color ~ or ~</li> <li>Star pony beads ~ or ~</li> </ul>
Glow-in-the-dark pony beads
<ol> <li>Craft version: 6-7 pipe cleaners per Brownie plus spares for those that become impossibly kinked. (troop provides)</li> </ol>
8. Craft version: bowl to hold the beads for each Brownie (troop provides)
9. Craft version: a paper plate for each Brownie to use as a work space to keep the beads contained. (troop provides)
10. Craft version: a guart-sized bag (troop provides)
11. Craft version: a few scissors to trim pipe cleaners. (troop provides)
12 Snack and craft version: A diagram sheet of constellations for each
Brownie (provided) (quantity = 12)
Preparation:
Obtain all the supplies.
• If doing the craft version, while names on the bags in advance.
Activity:
Snack version:
<ol> <li>Put a scoop of pretzel sticks (maybe 30) in a bowl and a scoop of mini marshmallows (maybe 30) in a bowl.</li> </ol>
2. Take a napkin.
3. Take a constellation sheet.
4. Unfold the napkin in front of you.
<ol><li>Pick one of the constellations as your pattern. Cassiopia is a great start.</li></ol>
6. Gather one marshmallow for each star in your constellation.
7. Start by placing the marshmallows down on the napkin to make
the constellation's pattern.
9 Use the pretzel sticks to connect the marshmallows together to
make a model of vour constellation.
10.Eat!
11. Repeat by picking another constellation.
Craft version:
12. Put 20 beads in a bowl.
13. Take a pipe cleaner.
14. Take a constellation sheet.

	15. Place a paper plate in front of each Brownie as a work area.
	16. Pick one of the constellations as your pattern. Cassiopia is a
	great start.
	17. Count out the number of stars in the constellation and place them
	on the plate.
	18. First, slide the beads on the pipe cleaners to match the positions of the stars.
	19. Bend the pipe cleaners to match the shape.
	20. Hints:
	<ul> <li>To stop the beads falling off the end of the pipe cleaner, fold over the end of the pipe cleaner and push the bead onto the thicker folded piece. This will help secure it.</li> </ul>
	<ul> <li>You can cut your pipe cleaners to different lengths as required for your constellation designs.</li> </ul>
	<ul> <li>For any cross over lines, you can fit two pipe cleaners through one bead.</li> </ul>
	The finished projects can go home in the labeled quart-sized bag.
#5 – B:	Materials:
<b>_</b> · · ·	• Copy of a Cootie Catcher for each Brownie. There are 4 versions.
Requirement	(Master provided; troop makes copies.)
: Celebrate	Scissors (troop provides)
and Share	<ul> <li>Pencils/markers or putting names on them (troop provides)</li> </ul>
Activity:	Proparation:
Constellatio	• Make conject of Cootie Catcher sheets from master. Depending on
n Cootie	vour copier, you may be able to leave the master in the sleeve and
Catchers	iust lav it on the copier bed.
	<ul> <li>Optionally, you may trim the copies into squares, especially if you</li> </ul>
	have a paper cutter.
	Activity:
	Write name at the corner.



	<ul> <li>Cardstock for making the headband. Any color. About <sup>3</sup>/<sub>4</sub> - 1 inch wide. Several pieces may need to be combined. (Construction paper is less sturdy but will work if that's what you have around.) (troop provides) <ul> <li>1 headband needed per Brownie</li> </ul> </li> <li>Scissors (troop provides)</li> <li>Pencils/markers or putting names on the headbands. (troop provides)</li> <li>A way to attach the pink inner ear to the green outer ear: glue sticks, double-stick tape or ordinary tape. (troop provides)</li> <li>A way to attach the green outer ear to the headband. Staplers are great but tape can work. (troop provides)</li> <li>A way to attach the headband segments together. Staplers are great but tape can work. (troop provides)</li> </ul>
	<ul> <li>Preparation:</li> <li>Make copies of outer ears on green paper and inner ears on pink paper from master. Depending on your copier, you may be able to leave the master in the sleeve and just lay it on the copier bed. <ul> <li>Notice that there are 2 sets of inner ears on the page so you need to make half the number of copies.</li> </ul> </li> <li>Cut strips of cardstock. Connect 2 or 3 together in advance but don't make it into a circle yet.</li> </ul>
	<ul> <li>Activity: <ul> <li>Write name on headband.</li> <li>Brownies cut out their inner and outer ears.</li> <li>Attach pink inner ear to outer ear.</li> <li>With an adult's help, make a headband circle that matches the size of the Brownie's head.</li> <li>Attach ears to opposite sides of the headband using the tab on the green outer ear. Bend so they stick out.</li> </ul> </li> </ul>
#5 – D:	• Time for a troop prioto op! Materials:
Requirement : Celebrate	<ul> <li>Two tent cards of women of color in NASA</li> <li>Two tent cards of Girl Scout astronauts</li> </ul>
and Share	Preparation:
Activity: See the tent cards about the Women	Activity: Set up these tent cards as part of a star party, whether it is just your troop or if you invite some Daisies to come along.
of NASA	

#5 – E:	Materials:
	<ul> <li>Pencils/Pens, 1 per Girl Scout (troop provides)</li> </ul>
Requirement	• Paper for creating poem, 1+ per Girl Scout. Can be scrap paper
: Celebrate	because there will be edits and changes and crossed-out sections
and Share	(troop provides)
Activity: Write Simple Poems Adapted from Nancy Lebofsky's blog entry titled "Putting the 'Verse" in the	<ul> <li>Alternatively, you may choose to create your poem as a troop or as groups of Brownies. If so, you might want big paper such as poster board in order to allow everyone to see the poem as it develops and to cross out and change words.</li> <li>Nice paper for copying the finished poem, 1 per Girl Scout. Can be letter sized paper, scrapbook paper, card stock, poster sized paper. (troop provides)</li> <li>Markers for writing completed poem on nice paper (troop provides)</li> <li>8 tent cards with instructions for poems that can be placed out on the table for the Girl Scouts to refer to as they work. (provided) <ul> <li>Two word poem</li> <li>Name poem</li> </ul> </li> </ul>
Universe,	
	Preparation:
	<ul> <li>Gather needed materials.</li> <li>Read the two suggested poem format options, copied below, and decide what fits your Girl Scouts. You may decide to streamline things and only provide one poem format choice to keep things simple.</li> <li>Decide if you are going to have girls work individually, in pairs, in small groups or altogether as a troop. All of those choices are good ones; you know your girls best.</li> </ul>
	<ul> <li>Activity: <ol> <li>Tell the Girl Scouts that they are going to write a poem.</li> <li>Place the tent cards with the directions of the kinds of poems that they can write out on the table.</li> <li>Read the 'rules' for the formats of poem(s) that you have chosen in advance. (Possibly, the troop as a whole might write one poem together, quickly, to help them understand how to be spontaneous in their writing.)</li> <li>The Girl Scouts will work on their poem.</li> <li>They may choose to copy their finished poem on pretty paper as a presentation copy.</li> <li>Share their poems: <ul> <li>Display them</li> <li>Read them aloud to each other, to another troop, or to their family</li> <li>Mail them to a grandparent or other family member with a note that they wante this poem about encoded</li> </ul> </li> </ol></li></ul>

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meeting and that they thought that this person would enjoy seeing their work.
For reference, here is the information on the table tent cards for the 2 kinds of poem formats:
Name Poems:
Choose a word about astronomy. Write each letter, one-by-one, from top to bottom on your paper. Each letter of your chosen word is the beginning letter of one line of the poem. Each line should relate in some way to your chosen word.
For instance, if your chosen word is "Saturn", then your poem could be:
Saturn
Awesome
l urning
Oranus s neighbor Bings
Nigs Nightly sight
<b>Two Word Poems</b> Pick a word or an idea about astronomy. Write a series of two word lines about it. It can be any number of lines, but should be at least 3 or 4.
Example:
Solar System
One star
Many moons
Chunky asteroids
Traveling together
Through space
To where?
Until when?
Until when? Adapted from Nancy Lebofsky's blog entry titled "Putting the 'Verse" in the
Until when? Adapted from Nancy Lebofsky's blog entry titled "Putting the 'Verse" in the Universe", dated 10/24/2019, https://www.vaticanobservatory.org/sacred-space-astronomy/putting-the-
Until when? Adapted from Nancy Lebofsky's blog entry titled "Putting the 'Verse" in the Universe", dated 10/24/2019, <u>https://www.vaticanobservatory.org/sacred-space-astronomy/putting-the- verse-in-the-universe/</u>

#6 - A:	Bonus activity: no materials provided in the kit but the details are here because this was just too much fun to pass up!
<b>Additional</b>	
Fun Idea	Pig Disture
run idea	
Activity: Send Postcards to	The girls are asked to draw a picture of why the Earth needs Space on the blank side. They put their address on the stamped side. The postcards are mailed to Club for the Future, part of Blue Origin. They are flown in space and mailed back.
Space	
	The Club for the Future
	<ul> <li>puts the post cards on a rocket.</li> </ul>
	<ul> <li>sonds it to space</li> </ul>
	<ul> <li>retrieves the postcards,</li> </ul>
	<ul> <li>stamps them 'Flown in Space',</li> </ul>
	<ul> <li>and mails them back to the girl.</li> </ul>
	Materials:
	<ul> <li>Postcards and stamps for each Brownie (troop provides)</li> </ul>
	<ul> <li>Keen the postcard stamps senarate so that if a girl needs to</li> </ul>
	o neep the postcard stamps separate so that if a gift needs to
	start over, then that stamp isn't wasted
	<ul> <li>Some markers or some colored pencils or some crayons (troop</li> </ul>
	provides)
	• Pencils/pens for addressing the postcards (troop provides)
	<ul> <li>Bigger envelope for mailing all the completed postcards to Club for</li> </ul>
	the Euture, and stamps for it (treap provides)
	the Future, and stamps for it (troop provides)
	Proportion
	Preparation:
	Obtain materials.
	Activity:
	1. On the printed side of the post card, ask the girls to put their name
	and address. Help them know where to place it On the bottom
	half of the pre-stamped side of the card.
	a It takes Daisies forever to write anything so it is recommended
	that you have them just put their name on the first line and
	and you have them just put their name on the first line and
	ask an adult to fill in the rest, to keep it legible!
	2. On the blank side, asked them to draw a picture of why the Earth
	needs Space (or really, why they need Space or what they would do
	if they got to travel to Space or really anything else about Space that
	they think is neat.)
	3 Add the stamp to the card once the Brownia has successfully
	departed her postoord
	uecorated her postcard.

	4. Mail them to
	Club for the Future
	35961 State Highway 54
	PO Box 1552
	Van Horn, Texas 79855-1552
	We have no idea how quickly the nectoards will be returned
	we have no idea now quickly the postcards will be returned.
End	Great! You have completed the Space Science Adventurer
	badge. Hope you had fun!
Supplies to	<ul> <li>Adding machine paper (#1 – A: Make a Pocket Solar System)</li> </ul>
be	• A set of stickers for each planet plus the sun. (#1 – A: Make a Pocket
replenished	Solar System)
by	<ul> <li>Flashlights batteries (#3 – A: Oreo Moon Phases)</li> </ul>
Badgerland	<ul> <li>Gluesticks (#4 – C: Constellation Viewer)</li> </ul>

gs space science planet names

gs BR space science my very excited monkey just slurped unicorn noodles gs BR space science my very exhausted monster jumbo saw ugly newts gs BR space science miss velociraptor eats macaroni just spinning under noon gs BR space science my very educated mother just served us nachos gs BR space science marys violet eyes make jim syay up nights gs BR space science my very easy method just speeds up nothing gs BR space science many very eraly men just sat under north gs BR space science men very easily make jugs serve useful needs gs BR space science mustard volcanoes erupt meaty juicy sandwiches up north gs BR Space Science moon craters