Explore The Sky - GOLD AWARD - KATHRYN PRATOR

LINKS

1. Amateur Astronomers: Girl Scouts are Heading Your Way!
    a. Tells what to focus on for each age level to keep them engaged and excited to learn more
2. Girl Scouts science badges list
    a. List of Girl Scout SPACE SCIENCE badges - with description
3. Girl Scouts Space Sciences Badge Resources | Night Sky Network
    a. Girl Scouts space science badge resources
4. Generation Genius: Online Science Videos & Lessons For K-8
    a. Science videos - Includes lesson plans, teachers guides, activities, and different ways to test what they've learned. (Not Free)
5. Free Astronomy Curricula
    a. Lesson plans for all ages, activities, and additional resources
6. Better Lesson - Activities, Lessons, Resources
    a. Lessons and activities for all ages and topics
7. First Woman
    a. First Woman graphic novel with Interactive activities
8. Home | NASA Space Place – NASA Science for Kids
    a. Activities and lesson plans for all ages
9. The Size of Space
    a. Shows the size of space
18. NASA Solar System Exploration: Home
    a. Interactive website about the solar system
19. Cosmic Coloring Compositor – National Radio Astronomy Observatory
    a. Color your own Galaxy
20. Mars for Kids - NASA Mars
    a. Mars interactive games
21. NASA Coloring Pages
    a. Nasa Coloring pages
22. Girl Scout Star Party Activities and Resources
    a. How to host a Star party - materials, activities, resources
23. Sky & Telescope | Astronomy News, Tools & Resources - Sky & Telescope
    a. Guide to Astronomy, Resources, Activities, Information
24. NASA Space Place Art Challenge!
    a. Monthly Space art activity
25. Learning Space With NASA at Home – NASA Jet Propulsion Laboratory
    a. NASA project, lessons, videos - all for at home
26. Activities for Students
    a. NASA activities - individual, group, outside projects
27. Girls Go To Mars Activities, Videos, and PPT

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10. If the Moon Were Only 1 Pixel - A tediously accurate map of the solar system
    a. Scale model of the universe (Shows distance between planets, stars, and moons)
11. Overview | Planets – NASA Solar System Exploration
    a. Solar system exploration
12. NASA Imagine Mars - Mars Survival Kit - NASA Mars
    a. Mars lesson plans
13. Astronomy
    a. Crash Course videos on Astronomy
14. Explore
    a. Activities and resources for different topics
15. Overview | Beyond Our Solar System – NASA Solar System Exploration
    a. Solar system exploration - videos, information, activities
16. https://mo-www.cfa.harvard.edu/OWN/pdf/mit/HandsOnActivities.pdf
    a. Giant list of Hands-on Astronomy Activities
17. Famous Astronomers and Astrophysicists
    a. List of Important Historical Astronomers and Astrophysicists
    a. Activities with Badge opportunity for those in Northern California
28. https://www.jpl.nasa.gov/edu/share/mission-to-mars-student-showcase/
    a. Mission to mars showcase
    b. Kids from all over the world showcasing their art, projects, experiments
29. The Connectory
    a. Find events, programs, activities near you
30. (STEM) Lesson Plans
    a. Lesson Plans for K - 8th grade - Includes activities
31. EngineerGirl - Homepage
    a. Women in engineering
32. X-STEM Videos | USASEF
    a. Webinars all about STEM
33. A Virtual Tour of the ISS
    a. Virtual tour of the International Space Station
34. The Nine Planets of The Solar System | Eight Planets Without Pluto
    a. Information on the planets, their moons, and dwarf planets
35. Homeschool Astronomy resource for K-12 Students
    a. Homeschool Astronomy resources

All Activities - Individual, Group, Outdoor Activities (Total - 90 Activity Links)

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DAISIES (K - 1)

TOPIC	ACTIVITY IDEAS	LESSON LINKS	GIRL SCOUTS BADGE
1. Constellations a. Why they were created b. What we can tell from them c. Who made them and when 2. What we see in the sky a. Differences between them b. Where is that light coming from c. How far away is that light coming from d. What we can see day vs night 3. Observing the moon a. How it was created b. How the moon affects earth c. Why does it follow us 4. Observing the stars a. Names b. What different stars can tell us c. North Star 5. Observing the sun a. How we can do so safely b. How the sun affects earth c. What is it made of 6. Solar System a. What is it b. How many planets do we have c. How big is it 7. Planets a. What is it b. What are they made of c. How big are they	1. Create your own constellation a. Draw one b. Use a cub or paper plate to punch holes into - making your own constellation c. Marshmallow constellation i. Use Marshmallows as stars and toothpicks to connect 2. Moon Journal a. Kids journal the moon every night, shading in a circle to show the moon's phase b. Create a flip book out of the drawings 3. Moon Crater Experiment a. Rocks, marbles, balls drop into flour to create craters. b. See how size, weight, height of drop affect craters i. Have kids make predictions 4. Create a piece of artwork using inspiration from what you see in the night sky	1. Sky Tellers Lesson 2. Basic life ingredients PBS 3. Constellation Crash Course Kids 4. Sun Crash Course Kids 5. The Moon - Mensa for Kids 6. Constellations - BrainPop 7. Outer Solar System - BrainPop	• SPACE SCIENCE EXPLORER ○ When you've earned this badge, you'll have explored and observed the Sun, Moon, and stars. • Sky Book ○ Moon Sky book ○ Space Science Badge activity

VOCABULARY TO NOTE				HISTORIC FIGURES TO NOTE
1. Constellation 2. Astronomer	3. Phases 4. Telescope	5. Astronomy 6. Solar system	7. Galaxy 8. Universe	1. Galileo 2. Neil Armstrong 3. Issac Newton

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BROWNIE (2 - 3)			
TOPIC	**ACTIVITY IDEAS**	**LESSON LINKS**	**GIRL SCOUTS BADGE**
1. Star vs. planet a. Temperature, surface, light, energy, 2. Star maps a. different constellations b. why they were created 3. Moon a. Learn about the phases of the moon 4. Rotate vs Revolve a. What those affect 5. Planets + Pluto a. Size 6. Gravity a. What is it b. How does it affect us c. Why is it so important	1. Create your own constellation a. Draw one b. Use a cub or paper plate to punch holes into - making your own constellation c. Marshmallow constellation i. Use Marshmallows as stars and toothpicks to connect d. Constellation cube e. Use the stars from a real constellation and connect in different ways to create a new one and come up with a legend for it. 2. Modeling Earth's rotation, Earth, and Orbit	1. Lunar cycle PBS 2. Sun Lesson PBS 3. Solar system size NASA 4. Weather lesson PBS 5. Constellation Location Crash Course Kids 6. What Are the Moon's Phases? 7. Defining Gravity: Crash Course Kids 8. Pluto Facts | Nine Planets	• SPACE SCIENCE ADVENTURER ○ When you've earned this badge, you'll know how to investigate the Sun, Moon, planets, and stars. • Moon Project ○ Moon Art ○ Space science badge activity

VOCABULARY TO NOTE		HISTORIC FIGURES TO NOTE
1. Gravity 2. Atmosphere 3. Comet 4. Asteroid 5. Meteor 6. Rotation 7. Revolution 8. Orbit	9. Crater 10. Satellite 11. Axis 12. Dwarf Planet 13. Scale 14.	1. Galileo Galilei 2. Nicolaus Copernicus 3. Issac Newton 4. Johannes Kepler 5.

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JUNIOR (4 - 5)			
TOPIC	**ACTIVITY IDEAS**	**LESSON LINKS**	**GIRL SCOUTS BADGE**

1. Navigating by the stars
2. Seasons
  a. Affected by Solstice and Equinox
3. Weather
  a. Climate
4. Movement in the Solar system
  a. Earth's Rotation
5. Planets + Moons
  a. Why moons follow planets
  b. How they affect each other
  c. Different moons for each planet (why some have more than 1)
6. Lunar Topography
  a. How craters were created
7. Comet vs Asteroid vs Meteor
  a. Difference between them
	1. Kids will model the Earth and learn how orbit affects what we see
	2. Track Constellations
	3. Longer days, shorter nights
	  a. How tilt is responsible for shifting light + change in seasons - Using shadows
		1. Climate Lesson PBS
		2. Theories PB
		3. Daylight lesson PBS
		4. Seasons and the Sun Crash Course kids
		5. Explore - Earths Climate - Background Information
		6. Earth's Rotation & Revolution: Crash Course Kids
		7. Moon Features for Kids - Lunar Features
		8. Celestial navigation
			• SPACE SCIENCE INVESTIGATOR
			  ○ When you've earned this badge, you'll understand that the Earth orbits the Sun, and how far away the Sun, Moon, planets, and stars are from our home planet, Earth.
			• Mars Rover
			  ○ Badge Activity
			  ○ Space science badge activity

VOCABULARY TO NOTE		HISTORIC FIGURES TO NOTE
1. Lunar eclipse 2. Solar eclipse 3. Solstice 4. Equinox 5. Topography 6. Climate	7. Scientific Method 8. Light-year 9. Nebula 10. Diameter 11.	1. Neil Armstrong 2. Gene Cernan 3. Margaret Hamilton 4.

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CADETTES (6 - 8)			
TOPIC	**ACTIVITY IDEAS**	**LESSON LINKS**	**GIRL SCOUTS BADGE**
1. Mars 2. Why teach Astronomy a. The history of astronomy b. What we are learning now c. Why we should learn about astronomy for the future 3. Eclipses 4. Navigating by the stars a. History of navigation using stars 5. Solstice vs Equinox 6. Black Holes a. How are they created b. What does it affect 7. Galaxies a. How many? b. How big c. How were they created d. What are they made up of 8. Global Warming a. What is it b. How does it affect you 9. International Space Station a. History 10. Light a. How we are seeing into the past	1. Modeling Eclipses with size + distance 2. Make a model of the Solar System a. Model using Play Doh - or objects relative in a scale 3. Make your own sundial	1. Environmental change PBS 2. Astronomy and culture PBS 3. Mars Crash Course 4. Eclipses Crash Course 5. History and Timeline of the ISS 6. At the Core of Climate Change PBS 7. Solar & Lunar Eclipses Video for Kids | 6th, 7th & 8th Grade Science 8. Black Holes: Facts, Theory & Definition	• SPACE SCIENCE RESEARCHER ○ When you've earned this badge, you'll understand more about the amazing properties of light and how you use it to make discoveries about the Universe and space science. • Spinner activity ○ Newton's disk ○ Space science badge activity

VOCABULARY TO NOTE		HISTORIC FIGURES TO NOTE
1. Sun Dial 2. GreenHouse gases 3. Black Hole 4. Neutron Star 5. SuperNova 6. Star Cluster	7. Field of view 8. Emit 9. Spectrum 10.	1. Carl Sagan 2. Neil Degrasse Tyson 3.

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SENIORS (9 - 10)			
TOPIC	**ACTIVITY IDEAS**	**LESSON LINKS**	**GIRL SCOUTS BADGE**
1. Prograde and retrograde planetary motion 2. Hubble Space Telescope 3. Astronomy through the years d. Greco-Roman astronomy e. 17th Century astronomy f. 19th Century - today astronomy 4. Astrology a. Fact vs Fiction b. Zodiac signs c. Science vs Pseudoscience d. Why the were created 5. Laws of motion a. Laws of planetary motion b. Laws of motion and gravity 6. Telescopes a. Types of telescopes b. Development of telescopes 8. The Celestial Sphere 9. Space exploration a. History and Future 10. Light a. What are you seeing right now	1. Build Your own Telescope 2. Make your own Space experiment 3.	1. Global warming effect PBS 2. Hubble Telescope PBS 3. Activities and Lessons about Astrology 4. Orbits and Kepler's Laws NASA 5. A Brief History of Space Exploration 6. Seeing in the Dark - Light as a Cosmic Time Machine 7. Who Invented the Telescope? 8. Basics of Space Flight 9. The Sky Above	Astronomy	• SPACE SCIENCE EXPERT ○ When you've earned this badge, you'll understand more about the Universe-your place in it and how light is used to make discoveries about it. • Stardust Project ○ Supernova activity ○ Space science badge activity

VOCABULARY TO NOTE	HISTORIC FIGURES TO NOTE
1. Pseudoscience 2. Prograde 3. Retrograde 4. Observable Universe 5. Photon 6. Hubble Deep Field Galaxies 7. Gas Giant 8. Oort Cloud 9. Terrestrial planet	1. Edwin Hubble 2.

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AMBASSADORS (11 - 12)			
TOPIC	**ACTIVITY IDEAS**	**LESSON LINKS**	**GIRL SCOUTS BADGE**
1. Hubble space telescope a. Discoveries made by telescope 2. The Sun a. Age b. Energy c. Structure d. Role of the sun 3. Past, Current, and Future space missions 4. Star life cycle 5. Stellar remnants 6. Spectroscopy 7. Matter in the universe 8. Electric and magnetic fields 9. Big Bang Theory a. What are the major theories of creation 10. Energy and Nuclear reactions a. Heat Transfers	1. Research one famous Female Astronomer / Astrophysicist 2. Make up your own planet and come up with ideas on how it could be habitable for a new Earth 3. Design your own telescope.	1. Habitable planets PBS 2. Hubble Space Telescope curriculum 3. The formation and life cycle of stars - BBC 4. 60 Years and Counting - Human Spaceflight 5. space exploration - Major milestones 6. The Origin of the Universe 7. Stephen Hawking's (almost) last paper: putting an end to the beginning of the universe 8. What if the Universe has no end?	• SPACE SCIENCE MASTER ○ When you've earned this badge, you'll understand more about space science and how you can be a part of NASA now and in the future. • Habitat for Aliens ○ Build a habitat ○ Space science badge activity

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I have been in Girl Scouts since I was in kindergarten. Being 18 as of 2021 and having graduated High School, my time as an active Girl Scout is coming to a close. With this being my last year in scouting, I wanted to finish it by earning the highest award Girl Scouts has to offer. Through my many years, I have learned leadership, teaching, communication, and problem-solving skills through the different events I have helped out in and lead. I have been in different leadership teams where we hosted multiple events for not only kids but also adults. I've learned through different workshops of welding, art, music, automotive maintenance, and my favorite, S.T.E.M. Alongside my father, a Solar System Ambassador for JPL and former staff member for the Gilbert Rotary Centennial Observatory (GRCO) in Gilbert, AZ, I have helped host star parties for Girl Scouts, different Middle Schools, and my local YMCA.
My time in Girl Scouts helped show me that as long as I put my mind to it, I can accomplish whatever I set out to earn. I am truly thankful for all the friends, memories, and things I have accomplished during my time. Girl Scouts has always given me a safe space to continue growing not only my mind, but my connections with others. If you are a current scout and are deciding whether or not to stick with it till the end, I highly encourage it as it has given me many opportunities I previously would not have gotten. If you are looking into scouts for you or your family, the experiences they will gain from their time is something you won't be able to find anywhere else.

I hope that through this website, others will continue to grow curious and never stop questioning the world around us.
This website has topics for each age level that should help kids start to understand the basics, and going up each age group; it will continue to build on different concepts. The topics and lessons given are mainly just stepping blocks to help get the ball rolling. Wether or not you decide to continue learning more is up to you.
I want to help groups of all ages better understand the vast universe we live in. Especially during this pandemic, it can be hard to navigate and find the tools needed to explore more of this field. Not knowing what sites to trust or having information that doesn't make sense because experts mainly use them with

a better knowledge of this field is something I want to help with. With this website, I want to help everyone find the activities and information appropriate for their age and interest group.
Whether you're just starting to look into the field of Astronomy and S.T.E.M., or you're looking for some activity ideas for your group, there will be something here for you to look into to gain a better understanding of the endless amount of information out there to explore.

I would also like to thank all those that have helped me with this project, you have all given me some great information and helped in a vital way to make sure I am giving out good information that can help others begin to explore this field.
Claude Haynes - Project Advisor with the Gilbert Rotary Centennial Observatory
Joanne Hartley - Project Mentor for Girl Scouts

Those that helped answer questions about working with kids and catering to different learning styles : Jennifer H. , Andrea L., Julie F. , Mary F. , Samantha N., and Olivia S..

And finally I want to thank my parents for pushing me to continue with Girl Scouts throughout the years. I would have missed out on so many memories, friendships, and experiences that I wouldn’t have gotten elsewhere.