



GALAXY GAZERS

Activity Guide



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Welcome

Welcome to Galaxy Gazers, an event presented by the BC Program Committee. This activity guide is designed especially for Sparks and Embers, to go with kits available in April 2024.

Feel free to supplement your unit's exploration of space with a guest speaker, a field trip to a planetarium, science centre, and other related opportunities in your community.

Send us photos of your unit doing space activities: bc-program@girlguides.ca

Kit Contents

- Colour-Your-Own Solar System craft
- Mini Glow-in-the-Dark Star Stickers for the ceiling or walls
- Galaxy Play Tent
- Star Finder Planisphere
- Glow-in-the-Dark Constellation Cards
- Star Gazer

Girls First

We suggest Areas and Themes in Girls First to match these space-theme activities. Since the Sparks and Embers programs are flexible, you may find other matches for these activities. Feel free to assign the activities as you see fit.

Experiment and Create – Science Lab



- Make a Straw Rocket
- Moon Phases
- Distances Between Planets

Experiment and Create – Art Studio



- Make a Moon Crater
- Make a Sundial
- Make a Comet
- Make Universe Slime
- Flashlight Constellation
- Space Bookmark
- Space Pictionary
- Light Up Constellation Jar
- Colour Your Own Solar System

Into the Outdoors – Nature Discoveries



- Skyview Lite App

Be Well – My Physical Self



- Race to the Planets Game
- Going into Space Game
- Moonwalk Freeze Dance
- Star Catchers Game
- Grab a Star from the Galaxy Game
- Martians Tag
- Saturn Says Game
- Space Yoga

Be Well – My Mighty Mind



- Would You Rather Space Game
- Space Storytime Reading

Galaxy Gazers

This 2024 event is a provincially-supported Space theme for Sparks and Embers. Girls will learn about constellations, galaxies, comets, and facts about the Sun and planets in our Solar System. This is intended as a legacy project, so kits include items that units can use over and over. The activity guide can be used by any GGC group to create a Space-themed meeting or camp.

Sparks and Embers are inquisitive and enjoy learning about the world around them; creating a day or meeting where they can explore the Moon, learn about black holes, or find out how a rocket works will excite and engage them. All participants will enjoy these activities and learn a lot about Space and the Universe beyond. Guiders can re-use the activity guide for future meetings and groups, adding new tools to their personal repertoire. Make sure to take advantage of the good photo opportunities too.

Fun Space Facts

1. The **Universe** is made up of galaxies, solar systems, stars, planets, dust, black holes, and nebulae.
2. The Universe formed 13.8 billion years ago and is continuing to expand.
3. The **Sun** is a star. It is the closest star to us and provides light and warmth.
4. The **Moon** is a naturally-formed satellite that orbits around the Earth. It is about 384,400 km away from us. From Earth, we can only see the same side of the Moon. However, the Moon doesn't always *look* the same to us—it appears to change shape. These different shapes are called **phases** and include the crescent moon, half moon, and full moon. Phases are due to the changing way that the Sun's light illuminates the Moon while it orbits the Earth.
5. There are 8 planets in our Solar System. Starting from the Sun at the centre, they are in the following order: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. The first 4 planets (Mercury, Venus, Earth and Mars) are known as the **terrestrial planets** because they are rocky and solid in composition. The next 2 planets (Jupiter and Saturn) are called the **gas giants**, and the outer 2 planets (Uranus and Neptune) are called the **ice giants**. You cannot walk on the gas giants or ice giants because they do not have a solid surface.
6. **Exoplanets** are planets found outside our Solar System. Exoplanets orbit around a star, just as we orbit around the Sun.

7. Different words are used to describe Space explorers from different countries: **astronauts** (North America and parts of Europe), **cosmonauts** (Russia), **taikonauts** (China), and **spationauts** (France).
8. When an astronaut travels far enough away from Earth, they can float in their rocket, space station, or when doing a space walk. They are beyond Earth's gravitational force.
9. In 1961, the first person in Space was Yuri Gagarin, a Russian cosmonaut. He circled the earth 108 times!
10. Neil Armstrong, an American astronaut, was the first person to walk on the Moon, in 1969. He is well-known for his first words said stepping onto the Moon: "That's one small step for Man, one giant leap for Mankind."
11. Neil Armstrong's footprints will be on the Moon's surface for 100 million years.
12. Earth and our Solar System are part of a galaxy called the **Milky Way**. Our galaxy has about 100 billion stars that look so bright across the sky, people thought they looked like spilled milk! It would take you 1000 years to fly across the Milky Way.
13. Have you ever seen a shooting star and made a wish? What you are seeing isn't really a star—it's a small piece of rock or dust. When it enters the Earth's atmosphere, it burns up to make the light you see and is called a **meteor**.
14. The Sun is very large— you could fit 1,000,000 Earths into it.
15. For many years, we thought Earth was the only planet with water. Untrue! We recently found that there was intermittent running water on Mars too.
16. **Comets** are the leftover "stuff" from the formation of our Solar System over 4.5 billion years ago. Comets are made of sand, ice, and carbon dioxide.
17. For a rocket to get into Space, it must travel 28,350 km/hr. The top speed of a race car is 375 km/hr.
18. A **star** is formed from a giant cloud of dust and gas.
19. Stars are fueled by the **fusion** of hydrogen and helium. Fusion occurs in our Sun and this produces light and heat. When a star runs out of hydrogen, fusion stops.
20. There are more stars in the Universe than there are grains of sand on all the beaches combined on Earth! That is at least a billion trillion.
21. We often say Space and Universe to describe the same thing. Did you know they are different? Outer Space describes the region between planets. The Universe is used to talk about the planets within that Space, as well as all the other regions with no planets.
22. Have you ever wondered why Space looks black but the sky looks blue? In the daytime, the sky is blue because of Earth's atmosphere—all those gas molecules and other particles scatter the white light from the Sun. Blue wavelengths scatter more which makes the sky look blue (and also explains how water can look blue, as light also scatters in water). When the Sun is low in the sky, at sunrise and

sunset, the light travels further at a low angle and the blue light scatters away; red light is less scattered, so the sky changes to orange and red. Space is black because there is no atmosphere, so no particles to scatter light. Nearby stars look like bright white lights spots against the black of Space.

23. We get some cold weather in the winter, but can you even imagine -271° C. That is how cold it is in most parts of Outer Space.
24. There is no sound in Space. Sound travels through vibrating particles and there are virtually no particles in space.
25. There is a massive water cloud floating in space. This cloud is so large that it contains 140 trillion times more water than all the oceans on Earth combined.

Solar System Facts

	Planet	Type of Planet	Number of Satellites (Moons)	Characteristics
1	Mercury	Terrestrial	0	<ul style="list-style-type: none"> • Closest planet to the Sun • Smallest planet in the Solar System • Has thousands of craters • Fastest planet to orbit the Sun. This gives it a short year: 88 Earth days to go around the Sun • Spins slowly, so each day is long: 176 Earth days = 1 Mercury day • This means that 1 Mercury day = 2 Mercury years • Thin exosphere made of oxygen, sodium, hydrogen, helium and potassium • Has water-ice at its poles
2	Venus	Terrestrial	0	<ul style="list-style-type: none"> • Second planet from the Sun • Known as “Earth’s twin sister” because it is similar in size • Hottest planet (464° C) due to a thick and dense atmosphere that traps heat • Atmosphere is carbon dioxide and sulfuric acid • Rotates in the opposite direction from Earth and most other planets • Short year: 225 Earth days to go around the Sun

				<ul style="list-style-type: none"> • Spins slowly, so each day is long: 1 Venus day = 243 Earth days • 1 Venus day is longer than 1 Venus year • Has mountains and volcanoes
3	Earth	Terrestrial	1 Moon	<ul style="list-style-type: none"> • Third planet from the Sun • Atmosphere is mostly nitrogen and oxygen • 1 day = 23.9 hours (to spin around) • 1 year = 365 days (to orbit the Sun) • Has liquid water • Can support life
4	Mars	Terrestrial	2 Phobos Deimos	<ul style="list-style-type: none"> • Fourth planet from the Sun • Known as the “Red Planet” • Iron minerals in the soil and atmosphere make it appear red • 1 Mars year = 2 Earth years • Dust storms cover the entire planet and last for months • Like a cold desert • Has seasons, volcanoes, canyons and weather • Atmosphere is carbon dioxide, nitrogen, and argon • Sunsets are blue • Evidence of water on Mars • Humans have sent space rovers to explore the surface of Mars
5	Jupiter	Gas Giant	95, incl. Io Europa Ganymede Callisto	<ul style="list-style-type: none"> • Fifth planet from the Sun • Largest planet in the Solar System • Has the “Great Red Spot”, which is a giant storm the size of Earth that has lasted hundreds of years • Short day due to fast spin: 1 Jupiter day = 10 Earth hours • Long year: 1 Jupiter year = 12 Earth years to go around the Sun • Atmosphere is hydrogen and helium • Has stripes and swirls that are clouds of ammonia and water • Has strong winds (cyclones and anticyclones) • No solid surface, as it is made of gas • Has faint rings around it

				<ul style="list-style-type: none"> • Has auroras due to its magnetic field
6	Saturn	Gas Giant	146, incl. Enceladus Titan Phoebe	<ul style="list-style-type: none"> • Sixth planet from the Sun • Famous for 8 rings of ice and rocks • Second largest planet in the Solar System • Atmosphere is hydrogen and helium • No solid surface, as it is made of gas • Long year: 1 Saturn year = 29 Earth years to go around the Sun
7	Uranus	Ice Giant	27, incl. Titania Miranda Ariel Oberon Umbriel	<ul style="list-style-type: none"> • Seventh planet from the Sun • Axis has a unique tilt, so it spin on its side • Rotates in the opposite direction from Earth and most other planets • Long year: 1 Uranus year = 84 Earth years to go around the Sun • Has a rocky core but is mostly icy fluid • Has 13 faint rings (dark inner rings, brightly coloured outer rings) • Atmosphere is mostly hydrogen, helium, and methane gas • Looks blue-green due to methane • Cold and windy
8	Neptune	Ice Giant	14, incl. Triton Nereid Thalassa	<ul style="list-style-type: none"> • Eighth planet from the Sun • The most dense giant planet • Has six rings • Long year: 1 Neptune year = 165 Earth years to go around the Sun • Short day: 1 Neptune day = 16 Earth hours • Atmosphere is mostly hydrogen, helium, and methane • Looks blue due to methane • Dark and cold • Strong winds

Planet	Distance from the Sun (km)	Orbital Distance (AU)
Mercury	57,900,000	0.4
Venus	108,200,000	0.7
Earth	149,600,000	1
Mars	227,900,000	1.5
Jupiter	778,600,000	5

Saturn	1,433,500,000	9.5
Uranus	2,872,500,000	19
Neptune	4,495,100,000	30

How Long is a Day?

Each planet spins around on its axis. One day is defined as the time it takes for one rotation. These are the approximate numbers of hours:

Mercury: 1408 hours

Venus: 5832 hours

Earth: 24 hours

Mars: 25 hours

Jupiter: 10 hours

Saturn: 11 hours

Uranus: 17 hours

Neptune: 16 hours

Pluto (no longer considered a planet): 153 hours

Colour Your Own Solar System Mobile

Supplies:

- Colour Your Own Solar System set (includes paper Sun and planets, plus links)
- Coloured pencils or markers

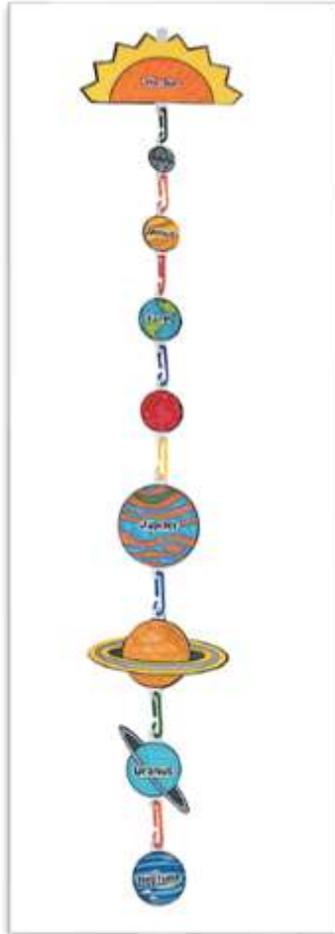
Instructions:

1. Give each person a Solar System set.
2. Colour the Sun and planets with coloured pencils or markers.
3. When everyone is done colouring, use the links (provided) to attach the planets in the correct order from the Sun. The Sun is at the top of the mobile (see picture).

Order to place the planets:

Sun – Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

4. Discuss facts about the planets from the Activity Guide.



Source: <https://www.orientaltrading.com/color-your-own-solar-system-educational-craft-kit-makes-12-a2-13765399.fltr>

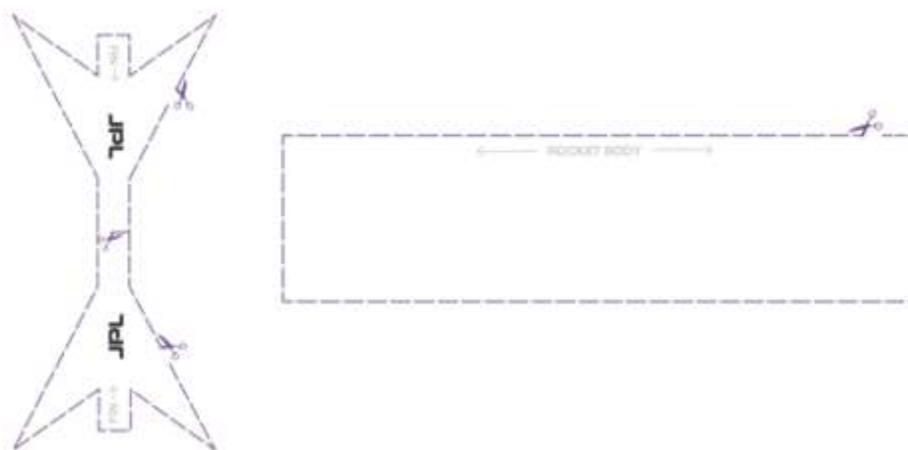
Make a Straw Rocket

Supplies:

- Pencils
- Scissors
- Tape
- Plastic straw
- Metre stick
- Rocket template

Instructions:

1. Use scissors to cut out the rectangular part of the rocket, which is the body tube. Wrap this piece lengthwise around a pencil to form a tube. Use tape to secure the tube.
2. Cut out the two fin pieces. Line up the bottom of the rectangle located between the two fins with the end of the body tube. Use tape to attach the fin to the body tube.
3. Repeat this step with the other fin on the opposite side. Make a “fin sandwich”.
4. Bend each fin so they are 90 degrees to each other (at right angles). Look at the back of the rocket, and you should see that fins form a “+” sign.
5. Fold the top of the body tube around the tip of pencil to make a nose cone.
6. Remove the pencil from the body tube. Replace it with a plastic straw.
7. Clear an area for the launching of the rockets. Make sure it is clear and people are not in the way.
8. To launch the rocket, blow into the straw.

Rocket Template (Source: jpl.nasa.gov/edu/learn)**Moon Phases**

The Moon orbits the Earth. As it goes around our planet, the Sun illuminates the side that faces it; the other side of the Moon remains dark, because it faces away from the Sun. As the Moon travels through its orbit, we can see different phases, which are due to the amount of sunlight that reflects off the Moon.

Different Phases of the Moon



Source: <https://spaceplace.nasa.gov/oreo-moon/en/>



Source: <https://moon.nasa.gov/moon-in-motion/phases-eclipses-supermoons/moon-phases/>

New Moon: We cannot see the Moon because its illuminated side faces the Sun but away from us.

Waxing Crescent: Waxing means that the Moon is looking bigger. Only a tiny sliver of the Moon is visible on the right. Most of the Moon is still facing away from Earth.

First Quarter: We see half of the illuminated side of the Moon— it looks like a half Moon.

Waxing Gibbous: Most of the Moon's illuminated side is visible from Earth.

Full Moon: The entire Moon's day-side is visible. We see a full Moon.

Waning Gibbous: Waning means that the Moon is looking smaller. Most of the Moon's illuminated side is visible from Earth.

Third Quarter: We see half of the Moon's side that is illuminated by the Sun. This is the opposite half compared to the First Quarter Moon.

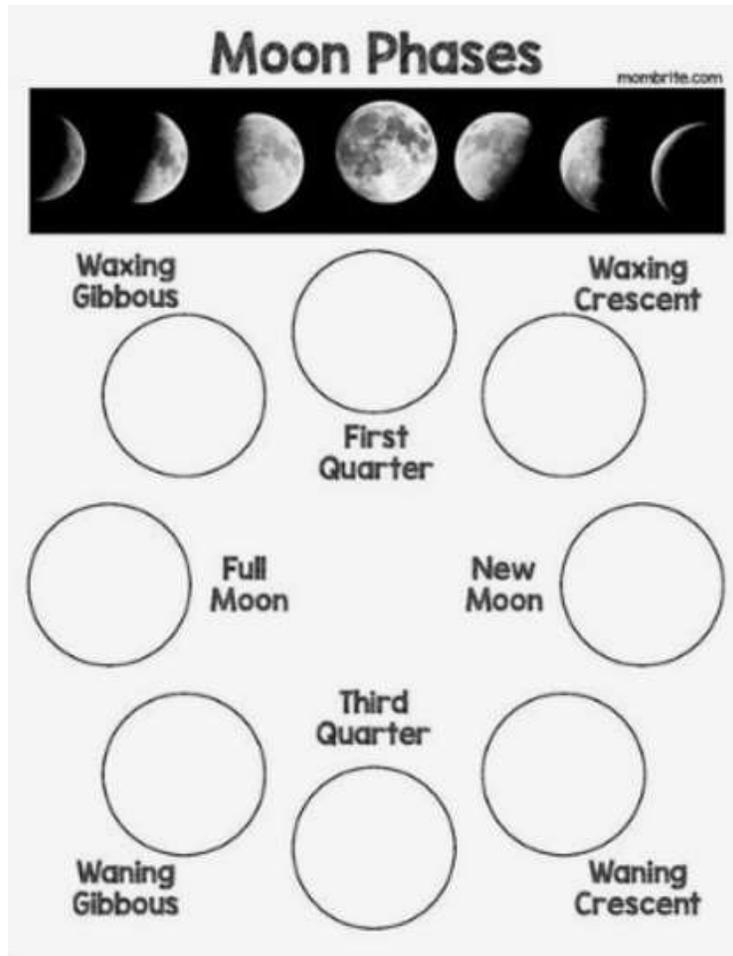
Waning Crescent: We see a tiny sliver of the Moon on the left. Most of the Moon is now facing away from Earth.

Supplies:

- 8 Oreo cookies
- Craft stick

Instructions:

1. Carefully twist off the top of the Oreo cookie exposing the white cream filling. Try to leave as much cream filling on the cookie as possible.
2. Use the craft stick to scrape off part of the cream filling to show different phases of the moon. Use one cookie for each of the phases of the Moon.
3. Place each Oreo cookie on the Phases of the Moon sheet provided below.



Source: <https://www.mombrite.com/oreo-cookie-moon-phases/>



Source: <https://www.mombrite.com/oreo-cookie-moon-phases/>

Make Moon Craters

The Moon is covered in craters with lines coming out from the centre. These lines are called “ejecta patterns” meaning “rays”. The craters were formed when rocks from Outer Space crashed onto the surface of the Moon. As the rocks smashed down, the soil was sprayed out along the ejecta pattern rays. Some meteorites hit the surface at a perpendicular angle, coming straight down, while others were at a lower angle.

Supplies:

- Round cake pan
- Baking sprinkles
- Flour
- Cocoa
- Spoon
- Sifter or sieve
- 2-3 small rocks of different sizes

Instructions:

1. Place some flour into the cake pan. Spread it evenly so about 2 cm (1 in) covers the bottom of the pan.
2. Add some sprinkles to the flour layer.
3. Use a sifter and pour cocoa into it. Sprinkle a third layer of cocoa onto the flour and sprinkle layers. The cocoa will make a more even layer on top.
4. Place the pan on a flat surface like a table.
5. Hold a rock about eye level over the cake pan.
6. Drop the rock. Observe what happens upon impact, when the rock hits the flour surface. The indentation is a crater. Describe the “ejecta pattern” that was created by the impact.
7. Repeat using different sized rocks at different heights and angles. Observe the different “ejecta patterns” from each impact.

Make a Sundial

A sundial can be used to tell the time of day, based on the position of the Sun.

Supplies:

- Paper plate

- Marker
- Scissors
- Ruler
- Straw
- Tape
- Compass
- Rock
- Pencil
- Clock with an alarm

Instructions:

Part 1 – Calibrate the Sundial

NOTE: This part must be done on a sunny day just before noon.

1. With a marker, write the number “12” anywhere along the edge of a paper plate.
2. Use scissors to poke a hole through the centre of the paper plate.
3. With a ruler and pencil, make a straight line from the centre hole to the number “12”.
4. Use tape to attach a straw in the hole. Make sure the straw is standing straight up.
5. Go outside just before noon. Place a compass on the ground and rotate it so the compass needle points to North.
6. Place the paper plate on the ground so the paper plate is oriented with the “12” pointing to North.
7. At noon, the shadow of the straw should fall over the number “12”. This is how you know that the sundial is correctly calibrated.
8. Use a rock to hold the paper plate down in the same spot. Make sure not to move the paper plate until Part 2 is completed.

Part 2 – Finish Building the Sundial

9. Predict where you think the shadow of the straw will appear on the plate at 1:00pm. Use a pencil to draw a line at this point on the paper plate.
10. Set the alarm on a clock or phone for 1:00pm. Determine how close your pencil line was to the actual shadow of the straw. With a marker, write the number “1” on the paper plate where the straw’s shadow actually hit the edge of the paper plate.
11. Continue to set the alarm on the clock or phone for every hour until 7:00pm (i.e., 2:00pm, 3:00pm, 4:00pm, 5:00pm, 6:00pm and 7:00pm). Use a marker to write the each number on the paper plate.
12. Starting the next day, continue to set the alarm on the clock or phone and mark the plate every hour. Start from 8:00am and finish at 11:00am.
13. Use your sundial throughout the day to tell time.

Make a Comet

Comets come in different sizes, shapes, and composition. A comet is made of ice, rock, and gas. A comet has a nucleus and a glowing coma that is found around the nucleus. The two tails of a comet result from the solar wind, which pushes dust and gas behind the comet, creating a dust tail and a gas tail.

Supplies:

- Wooden dowel (diameter similar to a chopstick)
- Metallic gold ribbon
- Metallic silver ribbon
- Metallic red ribbon
- Aluminum foil
- Scissors

Instructions:

1. Cut five pieces of metallic ribbon with different lengths: two long pieces (1 m), two medium pieces (50 cm), and one short piece (20 cm).
2. Tie all the ribbons together at one end. Attach them to the end of the chopstick.
3. Cut three square pieces of aluminum foil.
4. Hold all the ribbon pieces to one side. Gather all the aluminum foil around the dowel.
5. Scrunch one sheet of aluminum foil into a ball, but make sure the ribbons do not get wrapped in the aluminum foil. The ribbons should be off to the side.
6. Repeat with two more sheets of aluminum foil. If you would like the comet to be bigger, add more layers of aluminum foil.
7. Hold the dowel and move the comet around in a circular motion. The comet is flying with its tails trailing behind the nucleus.



Source: <https://spaceplace.nasa.gov/comet-stick/en/>

Make Universe Slime

The Universe is 13.8 billion years old and continues to expand at an accelerating rate.

Supplies:

- Clear Elmer's glue
- Contact lens solution
- Baking soda
- Water
- Red and blue food colouring
- 2 bowls
- Measuring cups: $\frac{1}{2}$ cup and 1 cup
- Measuring spoons
- Glitter (optional)
- Wax paper
- Spoon

Instructions:

1. Add $\frac{1}{2}$ cup Elmer's glue and $\frac{1}{2}$ cup water in a bowl. Stir with a spoon until mixed.
2. Add food colouring to the glue and water mixture. For a dark purple Universe, use 2 blue drops for each red drop (e.g., 6 blue drops and 3 red drops).
3. Stir in $\frac{1}{2}$ teaspoon of baking soda. Stir the mixture vigorously.
4. Now add 1 Tablespoon of contact lens solution.
5. You will see the slime start to form. Continue stirring until it comes together into a ball. Once it is becoming solid, use your hands to knead it.
6. Place the slime ball on a piece of wax paper. Flatten it to expose as much surface area as possible.
7. Sprinkle glitter over the slime. Light-coloured glitter works best because it stands out against the dark purple slime.
8. Fold the slime to mix in the glitter. Press and fold it until the glitter is spread evenly.
9. Play with your Universe slime. Stretch it to see it expand.



Source: <https://spaceplace.nasa.gov/universe-slime/en/>

Skyview Lite App

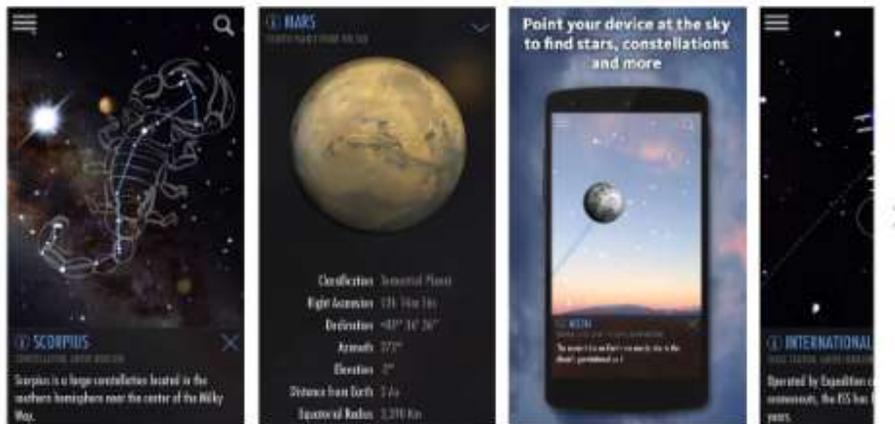
Use the Skyview Lite App on a cellphone or tablet for stargazing. You can see cool constellations, planets, stars, galaxies, and Hubble Telescope photos.

Supplies:

- Cellphone or tablet
- Skyview Lite app

Instructions:

1. Download the Skyview Lite app onto a cellphone or tablet.
2. Open the app.
3. Point the cellphone or tablet anywhere (e.g., at the sky, toward the ground, etc.). Images of planets, constellations, and galaxies will appear. Each image will be labelled with the corresponding name and give more details.



Glow-in-the-Dark Stickers

Supplies:

- Glow-in-the-dark star stickers
- Large poster paper
- Diagrams of different constellations

Instructions:

1. Have each person pick a constellation of their choice.
2. Give each person enough glow-in-the-dark stickers to create their constellation. For example, if the constellation has 10 stars, then they get 10 star stickers.
3. Each person places their glow-in-the-dark constellation on the large sheet of paper.
4. Once everyone is done, attach the large sheet of paper to the wall.
5. Turn off the light to see all the constellations glow in the dark.

ALTERNATIVE ACTIVITY: Instead of placing the glow-in-the-dark star stickers on a large sheet of paper, they can be placed inside a galaxy play tent.

Space Storytime

Supplies:

- Space-themed books
- Galaxy play tent

Instructions:

1. Gather a variety of space-themed books, including fiction and non-fiction.
2. In small groups, have a leader read a book of the group's choice.
3. You may choose to read inside a galaxy play tent if one is available.

Some Space-themed books:

- *There's No Place Like Space! All About Our Solar System*
- *Wesley Wanderlust: Stellar Space Adventure*
- *Here We Are*
- *The Darkest Dark*
- *Hello, World! Solar System*
- *The Magical Yet*
- *Neil Armstrong*
- *Luna Muna*

- *Pete the Cat: Out of This World*
- *I Love You to the Moon and Back*
- *8 Little Planets*
- *A Child's Introduction to the Night Sky*
- *Good Night Solar System*
- *What We'll Build*
- *Look Up With Me*
- *Thank You Moon*
- *You Are the First Kid on Mars*
- *Superluminous*
- *CatStronauts: Mission Moon*
- *The Magic School Bus Lost in the Solar System*
- *Moon! Earth's Best Friend*
- *How to Catch a Star*
- *There Was an Old Astronaut Who Swallowed the Moon*
- *On the Launch Pad: A Counting Book about Rockets*
- *Astronaut Handbook*
- *Simon and the Solar System*
- *Mousetronaut*
- *My Journey to the Stars*
- *Good Night Galaxy*

Flashlight Constellations

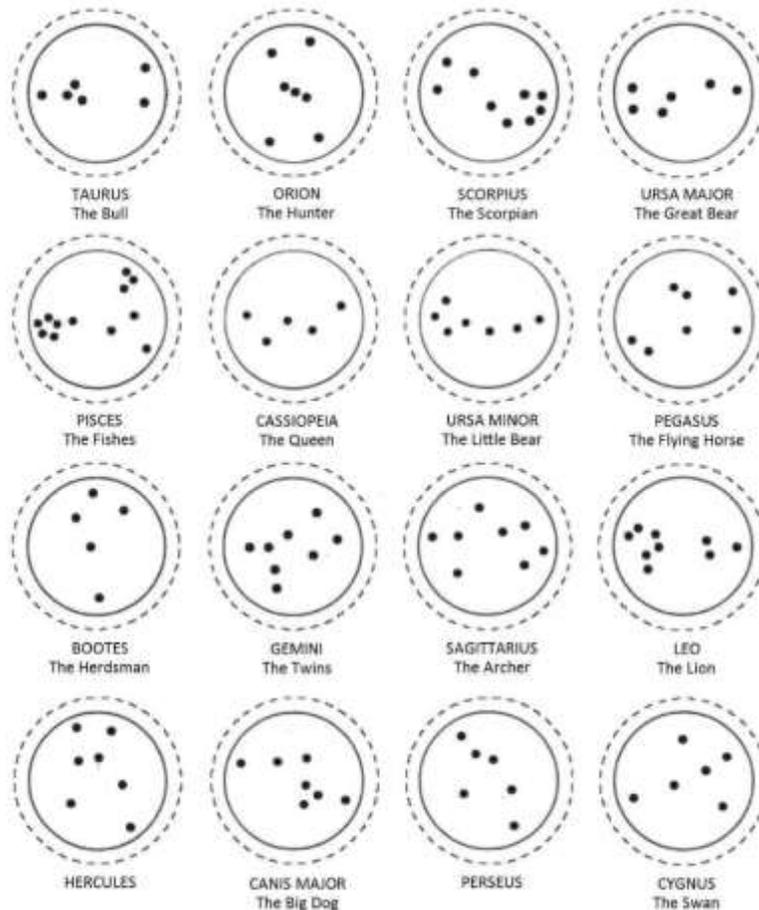
Supplies:

- Flashlight
- Scissors
- Pencil
- White cardstock
- Glue
- Metre stick
- Hole punch with tiny hole, or thumbtack
- Constellation chart

Instructions:

1. Use a flashlight to trace out circles onto white cardstock. Cut out the circles.
2. Create individual constellations with dots on each cardstock circle.
3. Use a hole punch to punch out the dots, which represent the stars.

4. Place the circular cardstock paper inside the front of the flashlight.
5. Turn on the flashlight and shine the image on the wall. You will see the constellation on the wall.



Source: https://www.montshire.org/images/uploads/files/mah_space_constellation-maker_2021.pdf

Light-Up Constellation Jar

Supplies:

- Clean glass jar with lid
- Aluminum foil
- Black paint
- Scissors
- Light source (e.g., battery-operated LED candle or fairy lights)

- Diagrams of different constellations
- Pen (to make large holes for constellation stars)
- Pencil or nail (to make small holes for other stars)
- Protective cardboard panel

Instructions:

1. Cut out a rectangular piece of aluminum foil so it fits into the jar. Use the glass jar as a guide to measure the height and the circumference.
2. Choose 2 or 3 constellations from the print-out.
3. Lay a constellation diagram on top of the aluminum foil. Place them on a cardboard panel to prevent damaging the table when you punch holes through the paper and foil.
4. With a pen, poke holes through the paper print-out and aluminum foil. Make a hole for each star in the constellation. Make sure the pen goes through the paper and foil—hold the foil up to a window to see if light is shining through the holes.
5. Repeat Steps 3 and 4 for a second or third constellation.
6. Use a sharpened pencil or nail to poke smaller holes all around the constellations.
7. Roll the aluminum foil up to insert into the glass jar. Now open up the roll so the foil lines the inside of the jar.
8. Turn on the LED candle and place it into the jar. You could also use fairy lights. The jar will light up so you can see the constellations and stars.



Source: <https://www.pinterest.ca/pin/571535008939870589/>

Distances Between Planets

Supplies:

- Marker
- Scissors
- Cardstock
- Hole punch
- Thumbtack
- Measuring tape
- 2 pieces of cardboard
- Yarn in 8 different colours

Instructions:

1. Cut out two rectangular labels (3 cm x 6 cm) in cardstock for each planet.
2. Punch a hole at one end of each cardstock label.
3. Use a marker to write the planet name on each label: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

Mercury	Venus	Earth	Mars
Jupiter	Saturn	Uranus	Neptune

4. Put the two pieces of cardboard on top of each other, names facing out.
5. Push the thumbtack through the centre of both pieces of cardboard. The plastic part of the thumbtack is the Sun.
6. You are building a scale model to show the relative distance of each planet from the Sun and each other. Use the following table as a guide:

Planet	Distance from the Sun (km)	Orbital Distance (AU)	Model Distance (cm)
Mercury	57,900,000	0.4	4
Venus	108,200,000	0.7	7
Earth	149,600,000	1	10
Mars	227,900,000	1.5	15
Jupiter	778,600,000	5	50
Saturn	1,433,500,000	9.5	95
Uranus	2,872,500,000	19	190
Neptune	4,495,100,000	30	300

NOTE:

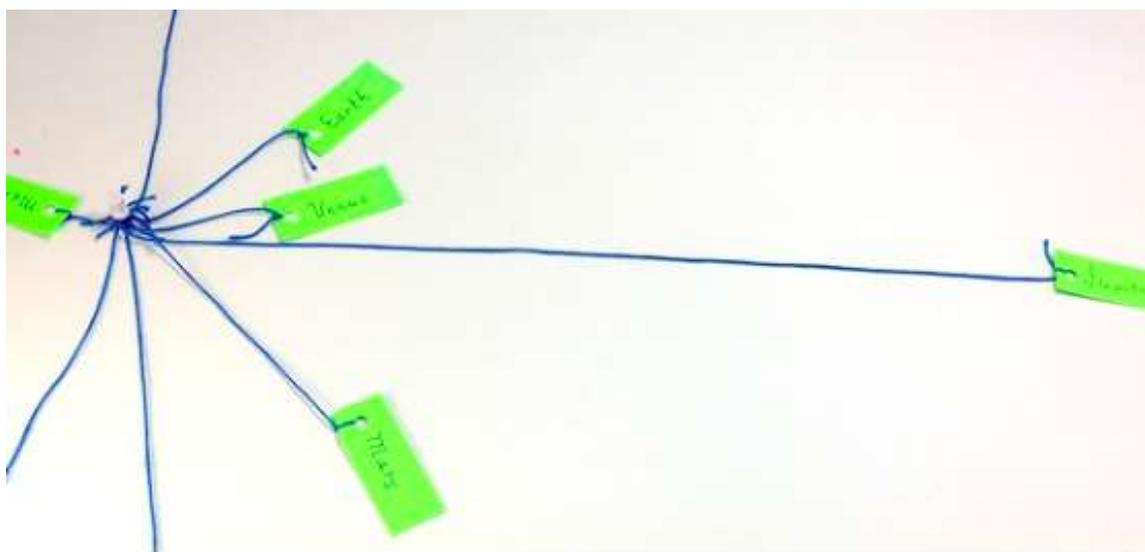
Orbital Distance: the average distance from the planet to the Sun as it orbits the Sun (measured in astronomical units)

Astronomical Unit (AU): one AU is equal to the distance from the Sun to the Earth

7. For each planet:

- Thread the yarn through the hole in the cardstock label. Tie a knot.
- Measure the yarn so it is the correct model distance for that planet. This represents the distance between the planet and the Sun.
- One end of the yarn is secured to the thumbtack and the other end is attached to the planet's label.

For example, place the Venus label 7 cm from the Sun (thumbtack) in your model.



Source: <https://www.sciencebuddies.org/stem-activities/planet-distances>

Space Bookmark

Supplies:

- Cardstock
- Hole punch
- Space-theme ribbon (e.g., stars, comets, etc.)
- Scissors
- Glue stick

Instructions:

1. Print out the space bookmark template (below) onto cardstock.
2. Cut out each individual bookmark.
3. Punch a hole at the top of the bookmark.
4. Add a Space-themed ribbon to the top of the bookmark.

**Martians Tag****Supplies:**

- Hula hoops
- Handkerchiefs

Instructions:

1. Place a hula hoop in the centre of the meeting space. This hula hoop represents Mars.
2. Scatter other hula hoops around the meeting space. These hoops represent Earth, a space shuttle, and the International Space Station.
3. Choose 2-4 people to be aliens (Martians). The aliens should wear handkerchiefs to identify them. The rest of the group are astronauts.
4. The aliens try to tag all the astronauts. When an alien tags an astronaut, the astronaut goes to the Mars hoop.
5. Astronauts can hide from the Martians inside a hula hoop, except the Mars hoop. These are “safe spots” for the astronauts.
6. To free a captured astronaut from Mars, uncaptured astronauts must tag them.

Grab a Star from the Galaxy Game**Supplies:**

- Hula hoop
- Music
- 10 star-shaped objects (e.g., balloons, wooden plaques, sponges, etc.)

Instructions:

This game is similar to musical chairs.

1. Place a hula hoop in the centre of the meeting space. This hula hoop represents a galaxy.
2. Place 10 star-shaped objects inside the hula hoop.
3. Have 11 players stand around the hula hoop. Make sure to have one more person than the number of star-shaped objects in the hula hoop for each round.
4. When the music starts, the players walk around the hula hoop.
5. When the music stops, each player tries to grab an object from the hula hoop, as fast as they can.
6. The person with no object is out.
7. Remove one object from the hula hoop.
8. Start the music for the next round.
9. At the end of each round, remove one object from the hula hoop. Continue until one person is left.

Star Catchers Game

Instructions:

1. Players form two lines that are 5 metres apart. Make sure everyone is in single file. These people represent “stars”.
2. Choose two people to be “star catchers”. The “star catchers” stand between the two lines.
3. To play, the leader says: “Star light, star bright, how many stars are out tonight?” Once the leader finishes speaking, the “stars” must run to the opposite line—trying not to be tagged by a “star catcher”.
4. The last two untagged stars are the winners and become the next “star catchers”.

Going into Space Game

Instructions:

1. Have everyone sit in a circle.
2. The first person starts the game by saying, “I’m going into space and I’m going to take _____.”
3. The next person in the circle then says, “I’m going into space and I’m going to take _____ (this is the item that the previous person said) and _____ (this second item is picked by the player).”
4. Each person in the circle continues to repeat the previous items and add their own new item at the end.
5. If a person says the items out of order or forgets an item, then this person sits out of the game. The last person left is the winner. (Alternately, everyone in the circle gives hints, so it becomes a cooperative game and everyone wins.)

Moonwalk Freeze Dance

Supplies:

- Music

Instructions:

1. When the music begins, everyone starts doing their idea of a moon walk.
2. When the music stops, the players freeze and stop what they are doing.
3. If a player keeps moving after the music stops, they are out of the game (or could start a new group). The last person left is the winner.

Race to the Planets Game

Supplies:

- 16 coloured plastic balls of various sizes (2 of each colour)
- 2 large yellow beach balls
- Sharpie
- Masking tape
- Whistle or other soundmaker

Instructions:

1. The balls represent planets in the Solar System. Use 2 balls of the same colour for each planet (so there are 2 of each planet): Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.
2. Place a piece of masking tape on each ball. Use the Sharpie to write the planet's name on the masking tape.
3. Hide all the balls randomly around the meeting space.
4. Place the 2 yellow beach balls in the centre of the meeting space. Each beach ball represents the Sun in the centre of the Solar System. There is one "Sun" for each team.
5. Divide the group into two teams: Team 1 and Team 2.
6. The leader signals the start of the game with a whistle or other soundmaker. Each team tries to find all 8 planets and bring them back to the Sun.
7. If a player finds a planet their team already has, they must return it to the original location where it was found.
7. Once all 8 planets are found, the team must work together to place the 8 planets in order from the Sun. The first team to place all 8 planets in the correct order wins.

"Saturn Says" Game

This is a version of "Simon Says".

Instructions:

1. One person is chosen to be Saturn, and all the other people are players.
2. Saturn stands at one end of the room, in front of all the players.
3. Saturn can give commands in two different ways:
 - i. Start the command **with** "Saturn Says", or
 - ii. Start the command **without** saying "Saturn Says".

4. Depending on how the command is phrased, the players decide to obey and do the action or not to obey.
5. Saturn tells the players what to do. For example, “Saturn Says stretch out your arms and legs to look like a star”, “Saturn Says twirl around like the Earth on its axis”, or “Saturn Says fly like a comet”.
6. The players should obey only those commands that start with “Saturn Says”. If Saturn states the command without saying “Saturn Says”, the players should stay still.
7. Players who do the actions incorrectly are eliminated.

Space Pictionary

Supplies:

- Poster chart paper
- Markers
- Cue cards with Space words
- Paper bag

Instructions:

1. Divide the group into teams of 4-5 people. Each team gets a piece of chart paper.
2. The people in each team number off from 1 to 5 (or whatever the number in each group) and remember their numbers.
3. To play the game, each “number 1” person reaches into a paper bag to select a cue card with a Space word. They read their cue card silently and hand it back to the leader.
4. Next, starting on “go”, the “number 1s” draw a picture that represents their word on their chart paper. Their teammates try to guess the word from the drawing.
5. The first team to guess their word wins.
6. Repeat with the “number 2” players drawing a new word.
7. The first group to get to 10 wins.

Space Yoga

Supplies:

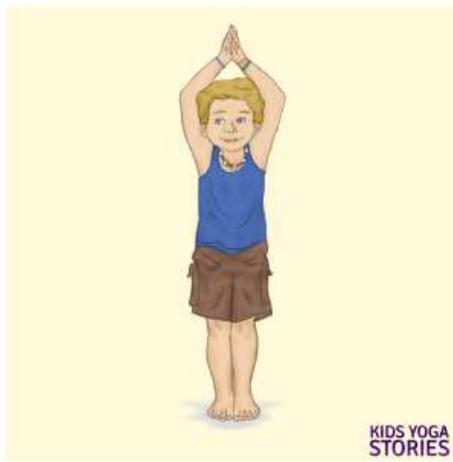
- Print-out of yoga pose instructions
- Yoga mats or gym mats

Instructions:

1. A leader should review the yoga poses ahead of time so they are familiar with all the poses before teaching them to the group.
2. Spread everybody out so they can see the person leading the yoga.
3. Each person should have their own mat.
4. The leader slowly describes the pose while demonstrating it to the group. Everyone copies the pose.

Pose #1 – Extended Mountain

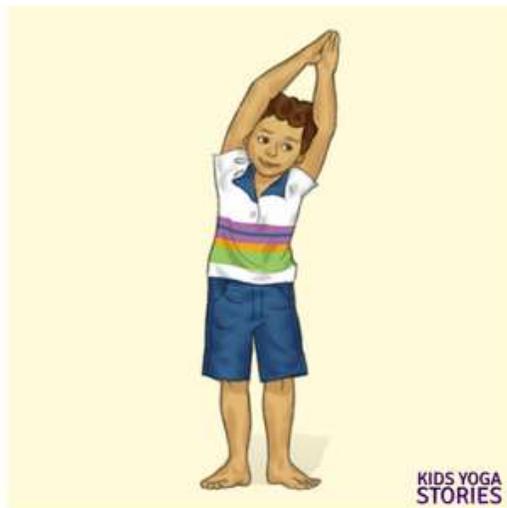
- Stand straight and tall with both legs together.
- Toes should be pointing forward.
- Slowly raise your head to look up at the ceiling.
- Bring your arms from your sides to up above your head. Place your palms together.
- Pretend to be the **Sun**.



Source: <https://www.kidsyogastories.com/outer-space-yoga/>

Pose #2 – Crescent Moon

- Stand with your legs about hip-width apart.
- Toes should be pointing forward.
- Arms are resting by your sides.
- Bring your arms up above your head and place your palms together.
- Bend your torso to the left.
- Pretend to be a **waxing crescent Moon**.
- Bring your body back to the centre so you are standing straight and tall.
- Bend your torso to the right side.
- Pretend to be a **waning crescent Moon**.



Source: <https://www.kidsyogastories.com/outer-space-yoga/>

Pose #3 – Warrior 3

- Stand on your right leg.
- Bend your torso at the waist.
- Extend your arms to the back but keeping them by your sides.
- Lift your left leg behind you.
- Pretend to be a **shooting star (meteor)** flying through the sky.



Source: <https://www.kidsyogastories.com/outer-space-yoga/>

Pose #4 – Extended Child’s Pose

- Bend your knees and kneel down on your mat.
- Sit on your heels.
- Slowly place your forehead down on the mat in front of your knees.

- Reach in front with your arms and place your hands flat on the floor.
- Take some deep breaths.
- Pretend that your arms are the tails of a **comet** flying through the Solar System.



Source: <https://www.kidsyogastories.com/outer-space-yoga/>

Pose #5 – Child’s Pose

- Bend your knees and kneel down on the mat.
- Sit on your heels.
- Slowly place your forehead down on the mat in front of your knees.
- Place your arms beside your body, extending them to the back.
- Pretend to be an **asteroid** in the Asteroid Belt of the Solar System.



Source: <https://www.kidsyogastories.com/outer-space-yoga/>

Pose #6 – Star

- Stand straight and tall with both legs as far apart as possible.
- Toes should be pointing forward.
- Bring your arms out to the side at shoulder height.
- Pretend to be a **star**.



Source: <https://www.kidsyogastories.com/ice-skating-yoga/>

Pose #7 – Rocket Ship

- Stand with your legs about hip-width apart.
- Feet facing forward.
- Bend your knees but keep your back straight.
- Bring your arms out in front of you, pointing toward the ceiling.
- Place your hands together.
- Pretend to be a **rocket ship**.



Source: <https://www.kidsyogastories.com/ice-skating-yoga/>