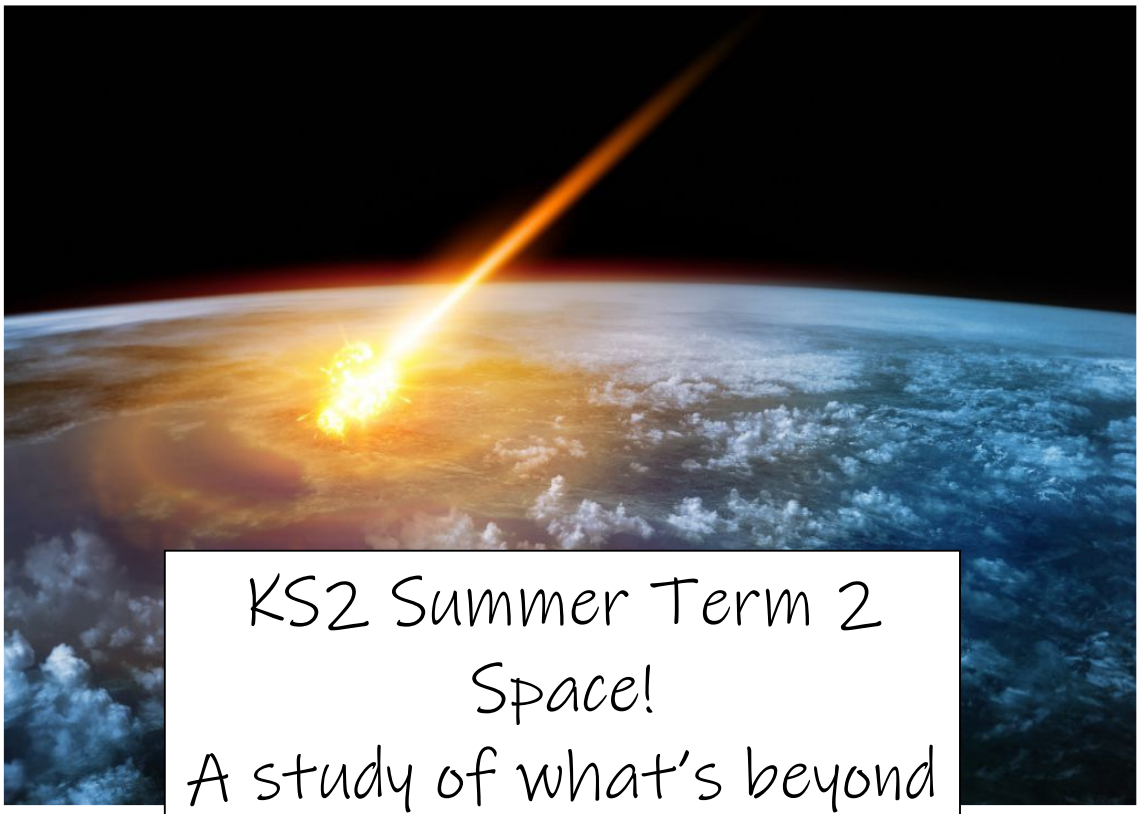
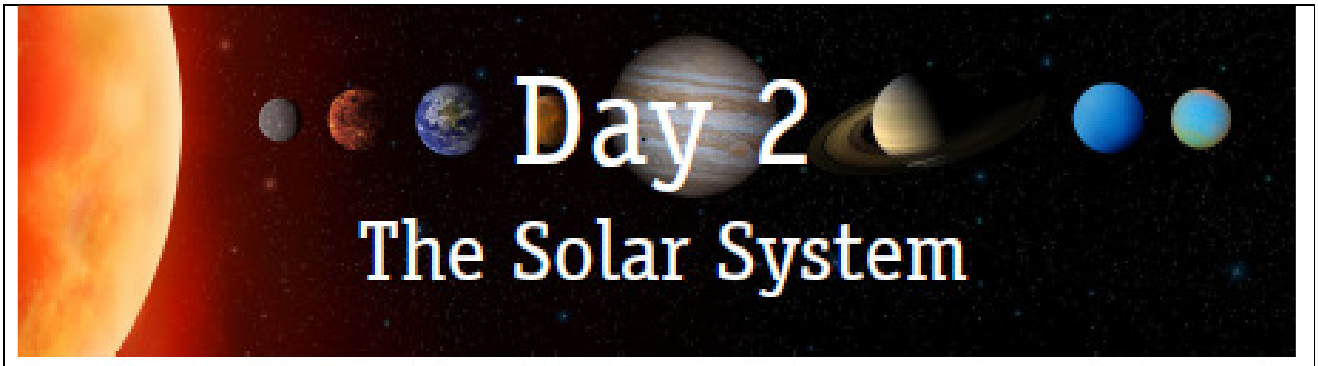
Home Learning

Priestley Primary School



KS2 Summer Term 2
Space!
A study of what's beyond our world.



Day 2
The Solar System

Introduction

The solar system is our **Sun** and *everything* that travels around it. There are **planets**, **moons**, **comets**, **asteroids**, and even dust and gas. All these objects travelling around the Sun are held in the Sun's **gravity**, making the Sun the center of the solar system. Even though the distances between the Sun and the planets are enormous, gravity is great enough to hold the planets in **orbit** around the Sun.

Questions to guide explorations and experiments

- What is the solar system?
- What is a planet? What planets are in the solar system?
- Why do the Earth and other planets revolve around (orbit) the Sun?
- What else revolves around the Sun?
- How big is the solar system? How big are all the planets?

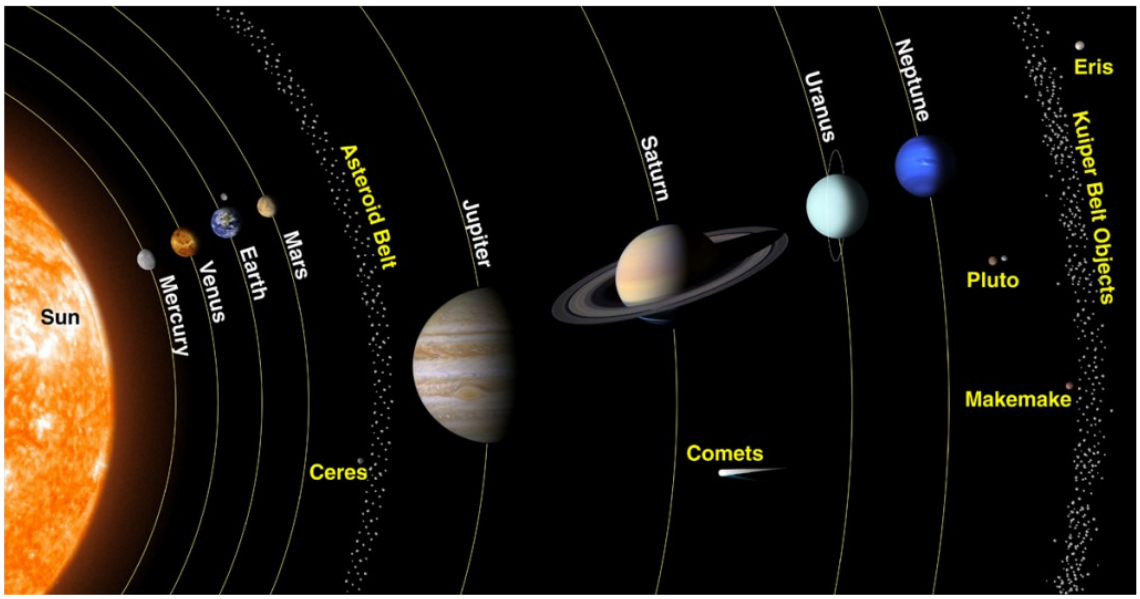
Books and activities

- **Books:** fiction, nonfiction and poetry all about our solar system
- **Activities:** explore the size of the planets in our solar system and how far they are from the Sun

Home Learning Project

Choose one of the following planets from our Solar System – Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

Research your chosen planet:



Create your own fact file about the planet, you may wish to include the following:

- ✓ Distance from the Sun
- ✓ Neighbouring Planets
- ✓ Number of moons
- ✓ Size of the planet
- ✓ Length of a year
- ✓ Weather

Space Words

Asteroid
A rocky space object that can be a few feet wide to several hundred miles wide. Most asteroids in our solar system orbit in a belt between Mars and Jupiter.

Axis
An imaginary line that goes through a planet's center from top to bottom. A planet spins (rotates) around its own axis.

Comet
A frozen mass of gas and dust that orbits the Sun and may form a long, bright tail when it is flying close to the Sun.

Dwarf planet
A non-satellite body that is in orbit around the Sun, has sufficient mass to have a nearly round shape, but is not the dominant body in its orbit.

Elliptical orbit
The oval (not round) pattern that describes how the planets in our solar system move around the Sun.

Gravity
A force that pulls matter together; a force that pulls people and objects toward the ground.

Moon
A natural satellite that orbits a larger object. Earth has one Moon, the one we see in the night sky.

Orbit
The curved path followed by an object in space as it goes around another object; to travel around another object in a single path.

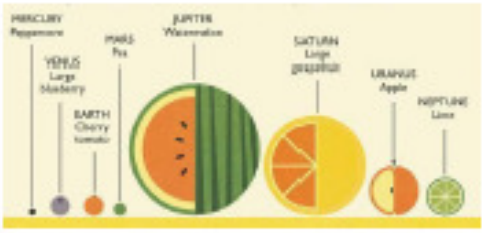
Planet
A celestial body that (1) is in orbit around the Sun, (2) has sufficient mass to have a nearly round shape, and (3) it is the dominant body in its orbit.

Revolve
To move in an orbit or circle around a fixed point. The Earth revolves around the Sun.

Rotate
To turn around a center point—or axis, like a wheel turns on a bicycle. The Earth rotates from day to night.

Satellite
An object that orbits another object. A moon is a natural satellite.

Scale
Scale is the implied relationship (or ratio) between a model and the actual object. A scale model is a representation of an object that is larger or smaller than the actual size of the object being represented.



Solar system
The Sun and all of the planets, comets, asteroids, and other space bodies that revolve around it.

Star
A giant ball of hot gas that emits light and energy created through nuclear fusion at its core.

Sun
The star in the center of our solar system. Like all stars, the Sun is composed of a great burning ball of gases. It is made of 92.1% hydrogen and 7.8% helium.

Create your own glossary of words linked to the Solar System- Present it in an interesting way.

Day 2: The Solar System

2

Writing About the Solar System

Writing helps kids process and solidify new knowledge and gives them an opportunity to use new vocabulary and concepts. Offer one or more of these prompts or questions to get your Space Rangers writing. Look at your list of solar system words for inspiration.

Inspired by music

In the early 20th century, composer Gustav Holst wrote a seven-part suite for an orchestra called *The Planets*. Each part was inspired by and named after one of the seven planets in our solar system and their astrological character:

- Mars, the Bringer of War
- Venus, the Bringer of Peace
- Mercury, the Winged Messenger
- Jupiter, the Bringer of Jollity
- Saturn, the Bringer of Old Age
- Uranus, the Magician
- Neptune, The Mystic

Talk about a planet and what we know about it. Ask the kids to listen to a portion of the piece about that planet and imagine that they ARE the planet. Does the music suit them? How do they feel when they hear the music? What is the planet thinking or what is happening on or to the planet as the music is playing?

Listen to the music by clicking on the links below to hear the music.

Mars - The Bringer of War
https://youtu.be/Jmk5frp6-3Q

Venus - The Bringer of Peace
https://youtu.be/EE6_PacCnRw

Mercury - The Winged Messenger
https://youtu.be/RkiiAloL6aE

Jupiter - The Bringer of Jollity
https://youtu.be/Gu77Vtja30c

Saturn - The Bringer of Old Age
https://youtu.be/MO5sB56rfzA

Uranus - The Magician
https://youtu.be/aDFGmiXnLjU

Neptune - The Mystic
https://youtu.be/v4wuV14QlNM

Gustav Holst's Planets - The Full Suite
https://youtu.be/be7uEyyNIT4

Writing About the Solar System 2

Writing prompts

Write about a planet — from the planet's point of view! Give a first-person account of a planet, providing details about your place in the solar system. What do you want everyone to know about you?

Imagine that you are a reporter assigned to get the inside story about how Pluto feels about its status change to dwarf planet.

Play with words

Write a list poem about the solar system. Create a thoughtful list that focuses on the relationship between the Sun and all the other objects in the solar system. Create additional Planetary Poetry using other poetic forms:
https://www.jpl.nasa.gov/edu/teach/activity/planetary-poetry/

Travel the solar system

You've just opened a new travel business to take passengers on tours of the solar system. Create a detailed itinerary (what's going to happen on the trip) that gives passengers information about the planets they will be visiting, how long it will take them to get there, and what they should pack!

Planet puppet show

Share your knowledge of the solar system with others! Write an original script or adapt one of the books you read about the solar system and use the planet models you created to put on an out-of-this world performance filled with fun facts about the planets and their place in our solar system.

Sun

The sun is a massive ball of gas and the largest body in the solar system.

Diameter	863,400 miles (1,390,000 km)
Surface Temperature	10,800° F (6,000° C)
Interior Temperature	27,000,000° F (15,000,000° C)
Rotational Period	25–36 days
Estimated Age	4.5 billion years
Primary Chemical Component	Hydrogen

Mercury

Mercury is the closest planet to the sun and the smallest in the solar system.

Diameter	3,031 miles (4,880 km)
Natural Satellites	0
Distance from the Sun	35,974,272 miles (57,910,000 km)
Rotational Period	58.65 days
Orbital Period	87.97 days
Surface Temperature	354° F (179° C)
Main Atmospheric Component	Helium

Venus

The second planet from the sun, cloud-covered Venus rotates from east to west.

Diameter	7,518 miles (12,103 km)
Natural Satellites	0
Distance from the Sun	67,234,920 miles (108,200,000 km)
Rotational Period	243.0 days
Orbital Period	224.7 days
Surface Temperature	899° F (482° C)
Main Atmospheric Component	Carbon Dioxide

Earth

The only planet with liquid water on its surface, it is the only planet to support life.

Diameter	7,924 miles (12,756 km)
Natural Satellites	1
Distance from the Sun	92,933,000 miles (149,600,000 km)
Rotational Period	23 hours, 56 mins
Orbital Period	365.2 days
Surface Temperature	354° F (179° C)
Main Atmospheric Component	Nitrogen

Mars

The fourth planet from the sun is a barren, rocky, rusty red world.

Diameter	4,220 miles (6,794 km)
Natural Satellites	2
Distance from the Sun	141,050,000 miles (227,940,000 km)
Rotational Period	24.62 hours
Orbital Period	687 days
Surface Temperature	-81° F (-63° C)
Main Atmospheric Component	Carbon Dioxide

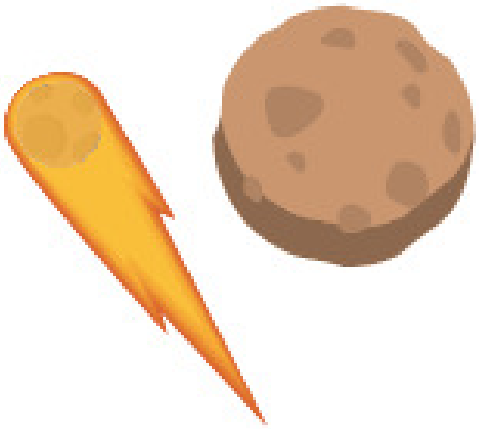
Asteroids and Comets

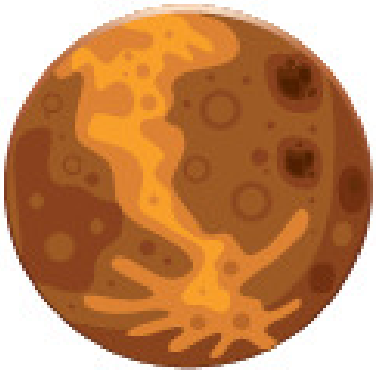
Asteroids are big space rocks left over from when the solar system formed about 4.6 billion years ago. Most asteroids orbit the sun within the main asteroid belt between Mars and Jupiter.

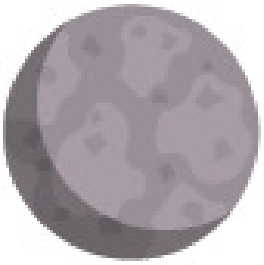
Number of known asteroids: 794,770

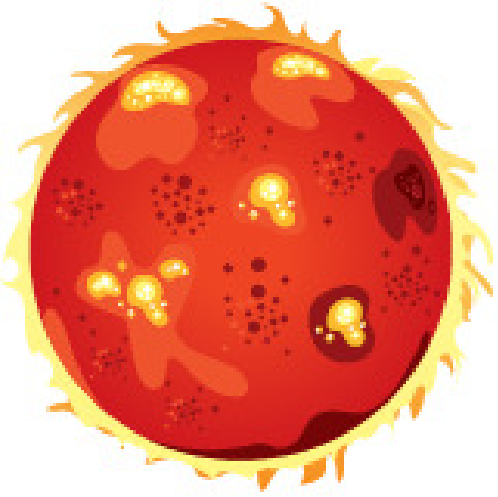
Comets are the oldest, most primitive bodies in the Solar System. They are huge snowballs of frozen gases, rock, and dust that orbit the sun. When close to the sun, a comet heats up, and its dust and gases form a tail that stretches for millions of miles.

Number of known comets: 3,570









Jupiter

Almost twice the size of all of the other planets combined and has a giant red spot.

Diameter	88,823 miles (142,984 km)
Natural Satellites	64 known
Distance from the Sun	482,546,000 miles (778,330,000 km)
Rotational Period	9.84 hours
Orbital Period	4333 days
Cloud Temperature	-185° F (-121° C)
Main Atmospheric Component	Hydrogen

Saturn

Saturn, a gas giant with three main bands of rings, is called the jewel of the solar system.

Diameter	74,565 miles (120,536 km)
Natural Satellites	62
Distance from the Sun	884,740,000 miles (1,429,400,000 km)
Rotational Period	10.25 days
Orbital Period	29.46 years
Cloud Temperature	-193° F (-125° C)
Main Atmospheric Component	Hydrogen

Uranus

The only planet that rotates on its side, Uranus is a featureless blue-green sphere.

Diameter	31,755 miles (51,118 km)
Natural Satellites	27
Distance from the Sun	1,783,487,000miles (2,870,990,000 km)
Rotational Period	17.3 hours
Orbital Period	84 years
Cloud Temperature	-315° F (-193° C)
Main Atmospheric Component	Hydrogen

Neptune

A giant blue sphere with unusual cloud features and a thin, dark system of rings.

Diameter	30,744 miles (49,492 km)
Natural Satellites	13
Distance from the Sun	2,798,136,000miles (4,504,300,000 km)
Rotational Period	15.8 hours
Orbital Period	165 years
Cloud Temperature	-315° F (-193° C)
Main Atmospheric Component	Hydrogen

Pluto

Pluto is officially classified as a dwarf planet and has an oval and tilted orbit.

Diameter	1,473 miles (2,370 km)
Natural Satellites	5
Distance from the Sun	3,673,537,000miles (5,913,520,000 km)
Rotational Period	6.3 days
Orbital Period	248 years
Surface Temperature	-382° F (-230° C)
Main Atmospheric Component	Methane

Moon

Our moon is the 5th largest of the 190+ moons orbiting planets in the solar system.

Diameter	2,160 miles (3,476 km)
Natural Satellites	0
Distance from the Earth	238,800 miles (384,400 km)
Rotational Period	27.32 days
Orbital Period	27.32 days
Surface Temperature	0° F (-17° C)
Main Atmospheric Component	Hydrogen

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Rotational Period	27.32 days
Orbital Period	27.32 days
Surface Temperature	0° F (-17° C)
Main Atmospheric Component	Hydrogen

Day 3
The Moon

Introduction

The Moon is about 4.5 billion years old. Scientists think that a large asteroid hit the Earth, and the hot, melted rock thrown into space formed the Moon.

The Moon is Earth's nearest neighbor and our only natural satellite. It takes 27 days for the Moon to revolve around the Earth — in fact, the Moon's orbit around Earth inspired our calendar month. Humans have always been interested in the Moon because it affects our tides, we can observe it change throughout the month (the phases of the Moon), and we can even see the Moon's many craters without a telescope.

On July 20, 1969, two astronauts walked on the lunar surface for the first time, part of the three-man American crew of the historic Apollo 11 mission. We're celebrating the 50th anniversary of Apollo 11 this year!

Questions to guide explorations and experiments

- What is the surface of the Moon like? Where do all the craters come from?
- What are the phases of the Moon? How do they relate to the Moon's orbit?
- How did humans get to the Moon and what was it like when the first astronauts walked on the surface of the Moon?
- How high can I jump on the Moon?
- How do scientists study Moon rocks and other things we've brought back from space?

Books and activities

- **Books:** fiction, nonfiction, and poetry all about our Moon and the Apollo missions
- **Activities:** explore the surface of the Moon, the phases of the Moon, and the historic 1969 Apollo 11 mission.

Space Words

Apollo 11
The historic mission where humans first walked on the Moon.

Asteroid
A rocky space object that can be a few feet wide to several hundred miles wide. Most asteroids in our solar system orbit in a belt between Mars and Jupiter.

Astronaut
A person trained to participate in space flights.

Atmosphere
The layer of gases surrounding Mars, Earth, and other planets, held in place by gravity.

Comet
A frozen mass of gas and dust that orbits the Sun and may form a long, bright tail when it is flying close to a sun.

Command Module (Columbia)
The Apollo 11 spacecraft that orbited the Moon while the Lunar Module was on the lunar surface. "Columbia" was piloted by astronaut Michael Collins.

Crater
Large round holes in the ground. A bowl-shaped cavity caused by an asteroid impact.

Crescent Moon
The Moon as it appears early in its first quarter or late in its last quarter, when only a small arc-shaped section is lit up by the Sun.

Erosion
The wearing away of a planet's surface by wind or water.

Exosphere
The outermost part of the atmosphere of a planet.

Far Side of the Moon
The side of the Moon that always faces *away* from Earth.

Full Moon
When Earth is located between the Sun and the Moon, the Moon appears fully lit up and appears like a bright, full circle.

Gibbous Moon
The appearance of the Moon between a Half Moon and a Full Moon.

Gravity
A force that pulls matter together; a force that "pulls" people and objects towards the ground.

Half Moon
The phase when one-half of the Moon appears lit up.

Lunar
Having to do with the Moon, for example, the lunar landscape.

Lunar cycle
The Moon's continuous orbit around the Earth. It takes 27 days, 7 hours, and 43 minutes for our Moon to complete one full orbit around Earth.

Lunar eclipse
When the Moon's reflected light is hidden by the Earth's shadow when the Earth passes between the Moon and the sun.

Space Words

Lunar Module (Eagle)
The Apollo 11 "Eagle" was the first manned spacecraft to land on the Moon. It carried two astronauts, Neil A. Armstrong and Edwin E. "Buzz" Aldrin, Jr., the first men to walk on the Moon.

Maria (Seas)
The dark areas of the Moon that can be seen from Earth.

Meteor (shooting star)
The flash of light in the night sky when a small piece of space dirt burns up as it passes through Earth's atmosphere.

Moon
A natural satellite that orbits a larger object. Earth has one Moon, the one we see in the night sky.

Near Side of the Moon
The side of the Moon that always faces towards Earth.

New Moon
When the Moon is between Earth and the Sun, the Moon receives no direct sunlight and appears like a dark circle.

Orbit
The curved path followed by an object in space as it goes around another object; to travel around another object in a single path. The Moon orbits the Earth.

Phases of the Moon
The different ways the Moon looks from Earth over about a month.

Revolve
To move in an orbit or circle around a fixed point. The Earth revolves around the sun.

Rotate
To turn around a center point—or axis, like a wheel turns on a bicycle. The Earth rotates from day to night.

Satellite
An object that orbits another object. A moon is a natural satellite.

Saturn rocket
The vehicle that launched the Apollo 11 spacecraft and astronauts to the Moon for the first historic Moon walk.

Sea of Tranquility
The lunar landing site for the Apollo 11 mission, the first time man walked on the Moon.

Tides
The rising and falling of the surface of the ocean that occurs twice a day, caused by the pull of the Moon and sun.

Waning Moon
Waning means to decrease or diminish. The Waning Moon phase starts after a Full Moon, and is always illuminated on the left.

Waxing Moon
Waxing means to increase. The Waxing Moon phase starts after a New Moon, and is always illuminated on the right.

Create your own glossary of words linked to the moon - Present it in a way that is out of this world!

Activity 2: Phases of the Moon

Introduction

When we look at the Moon over the course of many days, it seems to change its shape — from a full circle to a half-circle to a crescent shape and then gradually back to a full circle again.

The Moon isn't really changing shape — it just appears that way from Earth. Here's why: It takes about four weeks for the Moon to orbit once around the Earth. During this time, the Moon's position in relationship to the Earth and the Sun is constantly changing. As the Moon orbits around the Earth, the part of the Moon that faces the Sun will be lit up. We call the different shapes that are lit up during orbit the "phases of the Moon."

What we sometimes call "moonlight" is really sunlight reflecting off the Moon's surface. The Moon itself puts out no light at all!

Get kids thinking

Invite the kids to describe what the Moon looks like to them and how it changes.

It takes 27 days for the Moon to revolve around the Earth. Talk about how the Moon's phases are an example in nature of a recurring and predictable cycle.

Ask kids: What is the lunar calendar? The lunar calendar is based on the monthly phases of the Moon. Lunar calendars are still used by many cultures for religious festivals and holidays. Examples include Ramadan, Easter, and Chinese New Year.

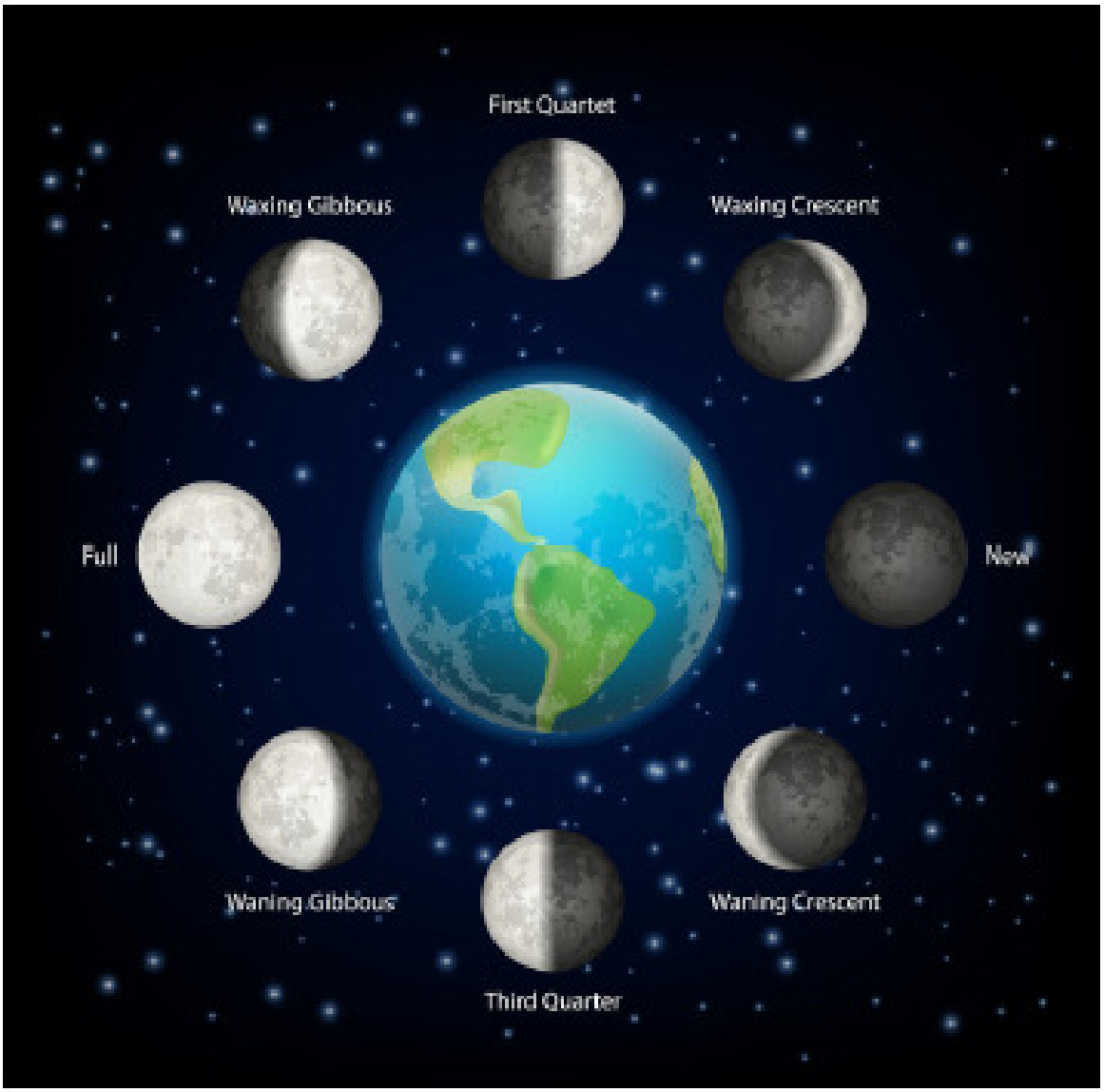
Show kids the composite photograph of the 8 phases of the Moon (see the next page). Talk about the position of the Earth in relationship to the Moon and why we always see the same side of the Moon (and never the far side).

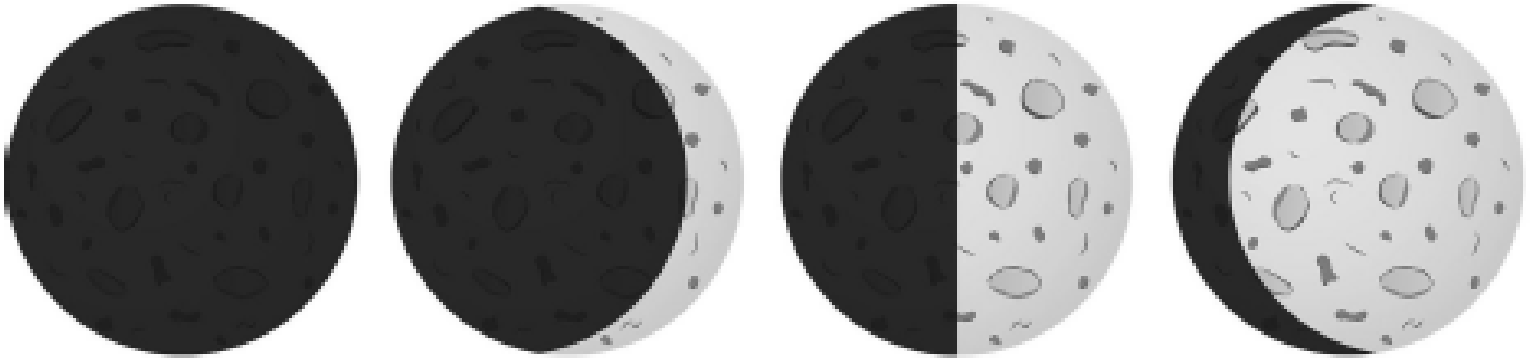
Watch: An animation of the phases of the Moon from NASA's Jet Propulsion Lab: https://www.jpl.nasa.gov/edu/teach/activity/moon-phases/

Ask questions about Moon phases. What makes the Moon shine? How light or dark is it on a full Moon night versus a new Moon/no Moon night? Do you know any stories about the Moon?

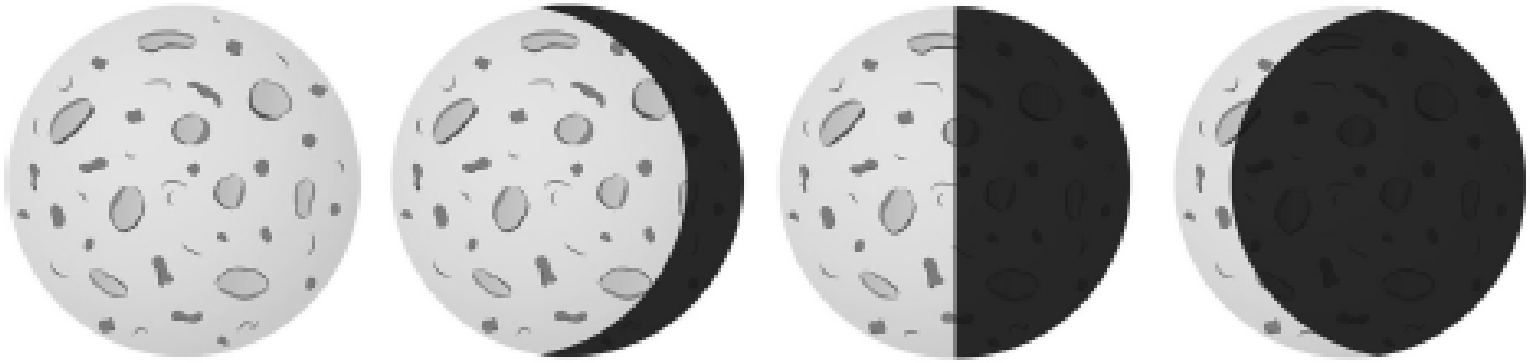
Kids can try one or both of these activities to learn about the phases of the Moon.

Phases of the Moon





1. New Moon
2. Waxing Crescent
3. First Quarter
4. Waxing Gibbous

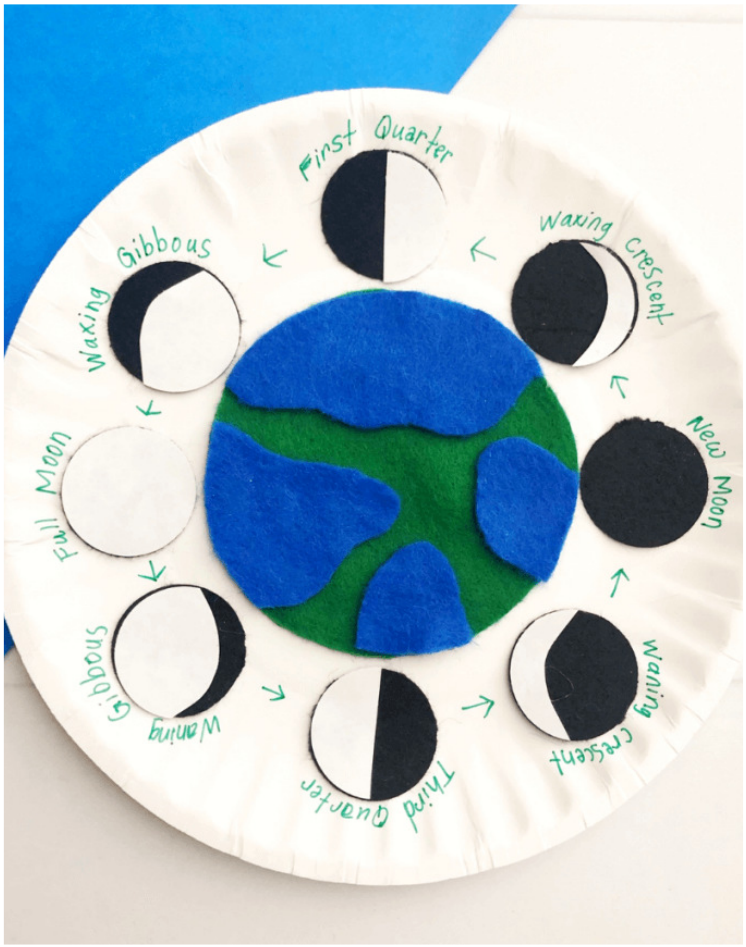


5. Full Moon
6. Waning Gibbous
7. Third Quarter
8. Waning Crescent

Home Learning Project

The moon phases are the shape of the directly sunlit portion of the Moon as viewed from Earth. The phases gradually change over the period of a month, as the positions of the Moon around Earth and of Earth around the Sun shift.

Research the phases of the moon and create your own way to show how they phases change.



Now you know about the phases of the moon, can you keep a moon diary for the next two weeks tracking which phase the moon is in each day?

3

Activity 3: Apollo 11 Landing Humans on the Moon

Introduction

On July 20, 1969, millions of people gathered around their televisions to watch two American **astronauts** do something no one had ever done before. Wearing bulky space suits and back-packs of oxygen to breathe, **Apollo 11** astronauts Neil Armstrong and Edwin "Buzz" Aldrin became the first human beings to walk on the Moon.

After they stepped onto the **lunar** surface, Armstrong said these famous words: "That's one small step for a man, one giant leap for mankind."

Supplies

- Copy of the book *Moonshot: The Flight of Apollo 11* by Brian Floca
- Photograph of the first footprint on the Moon (see large version on page 67)

Get kids thinking

Show this photograph to the kids and ask if they know what it is. **It's a very special footprint.** *This is a footprint of man's very first step on the Moon.*

Photo © NASA

Together, read the picture book ***Moonshot: The Flight of Apollo 11*** by Brian Floca. The book is readily available at public libraries.

Alternative book options:

- *Countdown: 2979 Days to the Moon* by Suzanne Slade
- *One Giant Leap* by Robert Burleigh

The words in *Moonshot* are very simple and expressive; they combine with detailed illustrations to tell the incredible story of how we landed men on the Moon for the first time. It will give the kids a sense of what it felt like from the point of view of the astronauts as well as all the new technology that made it possible.

Please click on the link below to listen to the story Moonshot: The Flight of Apollo 11 by Brain Floca https://youtu.be/LAo8JdPPKeE

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Activity 3: Apollo 11 Landing Humans on the Moon

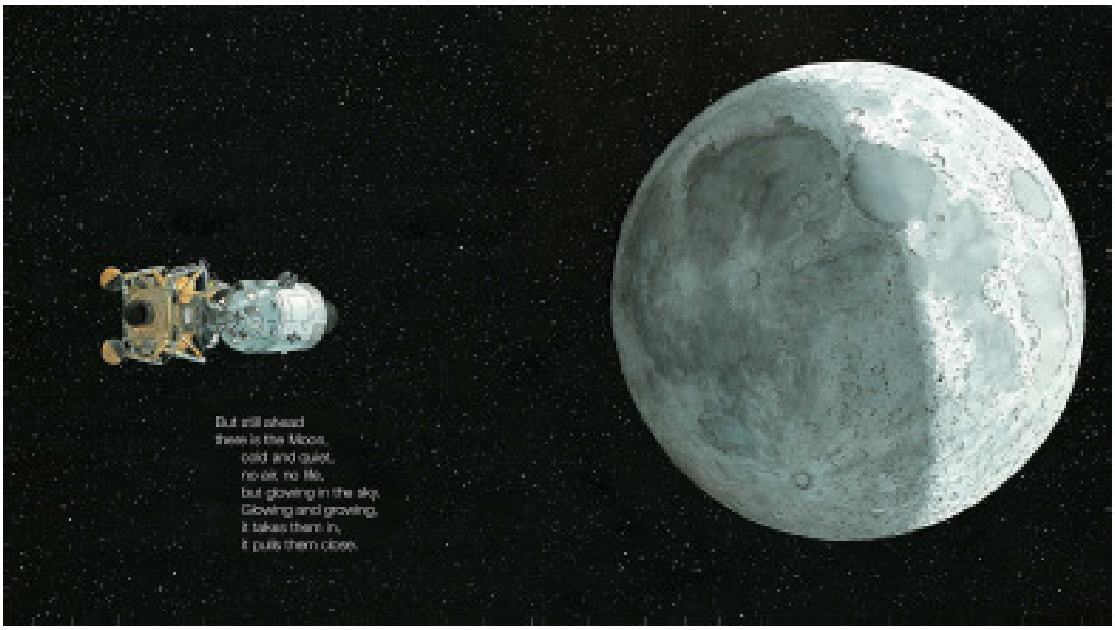


Illustration © Brian Floca

Let's get started!

After reading *Moonshot* together, have a group discussion about the book. Here are some suggestions for questions you can ask to get kids talking:

- What kind of spaceships did the Apollo astronauts need to land on the Moon and safely return to Earth?
- What do you think it felt like when the Saturn rocket lifted into the air?
- What did the astronauts experience while they were riding in the spaceship? Why does everything float?
- Some things went wrong during the landing. What did the astronauts do?
- What was it like to walk on the Moon?

Activity 3: Apollo 11 Landing Humans on the Moon

- How do the illustrations in the book help you understand how the astronauts feel?
- The sky looks dark, blank, and starless on the Moon? Can you guess why? Tell the kids that when you see the daytime blue sky on Earth you're seeing sunlight scattering off the air (atmosphere). There's very little atmosphere on the Moon, so nothing to scatter the light, so the sky appears black.
- What do you think everyone who watched the landing felt when they saw a man on the Moon for the first time?
- How might a visit to the Moon change the way you see our planet Earth?
- What do you think it would be like to travel in to space? Would you like to go to the Moon?
- Why is exploring the Moon — and space — important?

Footprints frozen in time

Return to the photo of the footprint. Tell kids that this footprint will be there for millions of years! **Ask kids:** Do you have a theory about why? If the kids are stuck, remind them what they learned about craters and why they never disappear on the Moon — because there is no wind, rain, plants, or animals to erase them. Only a meteor strike could destroy the footprints, and that's not likely!

First footprint on the Moon

Apollo 11 astronaut Neil Armstrong's first footprint on the Moon, July 20, 1969
(Photo © NASA)

Activity 4: How High Could You Jump on the Moon?

Introduction

Gravity is an important scientific concept, but one that is difficult to understand, even for adults. Having children use their own bodies to test gravity, and then compare how they would perform against gravity on the Moon is a great jumping off point for understanding that the effects of gravity are different in different parts of our solar system.

Supplies

- Large colored markers
- Measuring tape
- Chart paper, adhesive (PostIt® style) if possible
- Blue masking tape
- Small ball or beanbag (optional)

Day 3: The Moon 3

Activity 4: How High Could You Jump on the Moon?

1. Have a child stand facing the chart paper on the wall, holding a marker.
2. Ask the child to reach his hand over his head, as high as he can, and make a mark on the paper with the marker. This is the child's starting point.
3. Tell the child to take a small step back (no running starts!), bend his knees and jump as high as he can, making a mark on the paper at the highest point.
4. Have the child measure the distance between his starting mark and his jumping mark. This is how high he jumped. Have him write down his measurement.
5. After every child who wants to try has had a turn to jump, have your students calculate how high their jump would have been on the Moon by multiplying their measurement by 6.

For older children, encourage them to do the math on paper. For younger children who have not yet learned how to multiply, you can use a calculator. The resulting Moon jump measurement is how high their feet would be off the ground if they had jumped on the Moon. You can have each child record this height on the paper on the wall, measuring from the floor to their Moon jump measurement.

Ask kids:

- Were you surprised by the results?
- Could anyone jump over their own head on the Moon, or farther than their own height?
- Who jumped the highest/farthest?
- What do they think it would be like to walk on the Moon?
- What would it be like to play basketball, soccer, or another sport?

Reinforce the idea that the reason they can jump higher on the Moon is because gravity is weaker there; and the reason that they can't jump as high on Earth is because gravity is stronger.

Activity 5: Astronaut Glove Box

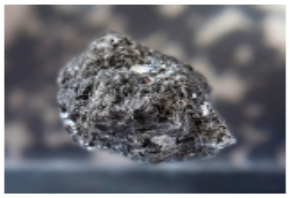
Introduction

Apollo astronauts have brought back more than 800 pounds of Moon rocks and soil to Earth. We are still studying the rocks and soil to learn more about the origins of the Moon and the Earth. One recent and surprising discovery is that most of the craters on the Moon came from a single, catastrophic event.

A scientist at NASA still remembers handling her first Apollo sample decades ago, wearing three sets of gloves and working in a nitrogen-filled glove box. "Just to pick it up was really exciting," she says, "because I was picking up a piece of the Moon."

Supplies (for each glove box)

- Large cardboard box for examining rocks
- Utility knife (adults only)
- Rubber gloves (small size for small hands)
- Duct tape
- Small plastic bowls (optional)
- Magnifying glass
- Small ruler
- Rocks of various sizes and shapes
- Plastic wrap
- Clipboard and paper
- Pen or pencil



Moon rock from Apollo 14 mission, 1971 © NASA

Get kids thinking

We didn't know anything about the Moon rocks when we first collected them. Could they cause disease in humans or be dangerous in some other way?

Day 3: The Moon 3

Activity 5: Astronaut Glove Box

Let's get started!

In this activity, kids will get a chance to examine "Moon rocks" using a glove box, and record what they observe.

Adults can build the glove box ahead of time, or if you have a small group you can let the kids help with the construction.

Step one should be done by adults only: First, cut the lid flaps off of the cardboard box. Then cut two round holes on both sides of the box — holes large enough for kids to fit their hands through but small enough that you can tape the gloves to them (see next step).

Place the gloves through the holes you've cut, and position them for little hands — and make sure to put the left glove in the left hole and the right glove in the right hole! Tip: If you point the thumbs inwards and slightly up the hand position will feel more natural to the kids.

Use duct tape to form a complete seal on the outside of the box where the gloves went in.
Ask kids: why is a complete seal so important to scientists and astronauts?

Fill the box with rocks, magnifying glass, and the optional small plastic bowls (for sorting rocks into categories by size, color, roughness, etc.).

Cover the top of the box with plastic wrap and seal with duct tape.

Have kids observe the rocks feel the rocks with their hands, measure the rocks, and sort into the bowls. While two kids are manipulating the rocks, two other kids can be taking notes about what their lab partners are seeing in the glove box. Then switch places.

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3

Writing About the Moon

Imagining the lunar landscape

Look at the photo of the lunar landscape (see page 76). Select one of the places on the Moon that sounds interesting to you. Sea of Rains? Ocean of Storms? Archimedes? Imagine what it would be like to be there. Think about how the air feels, what colors you see, what the landscape features feel like.

Write a **cinquain poem** about your lunar landscape.

Cinquain (pronounced sin-cane) is a five-line poem that uses descriptive words about the natural world. A cinquain poem doesn't rhyme. The structure for a cinquain looks like this:

Line 1: One word title, a noun that identifies your topic

Line 2: Two adjectives that describe your topic

Line 3: Three "ing" verbs that describe action

Line 4: A phrase that describes something about your topic

Line 5: A noun that is a synonym or another way to name your topic

Example:

tree
white, tall
reaching, bending, fluttering
leaves and twigs in the wind
aspen

Option: Write a descriptive paragraph about your place in the lunar landscape. Use interesting words! Add a drawing of what your lunar landscape looks like.

The lunar landscape

Design a Moon mission patch

Did you know? A unique patch is designed for every NASA mission!

Following the tradition set by earlier missions, astronauts Neil Armstrong, Buzz Aldrin and Michael Collins — the Apollo 11 crew — were given the task of designing their mission patch. This patch was important because the mission was so historic!

Here's the patch they designed:

The eagle represents both the United States and the Lunar Module and the olive branch is there as a symbol of peace.

Here are more examples of NASA mission patches:

Tell kids to imagine that they are astronauts going on a new mission to the Moon — Apollo 18. Their challenge is to design their own mission patch.

Encourage kids to think about the elements they want on the patch and what they mean. Have kids make a few sketches, then choose their final idea and draw the patch in pencil first, then fill in with color.

Day 5
Space Exploration

Introduction

People have been observing what's out there in space since before recorded history. Astronomers first focused their eyes and then their telescopes on stars, comets, and planets. But to really get out there and look around, a practical way to escape the Earth's gravity had to be invented.

Advancements in rocket technology made leaving the Earth, to better understand it and our place in the solar system, possible. The ability to accelerate objects to the velocity needed to escape Earth's gravity and travel away from the planet made space exploration a reality.

Questions to guide explorations and experiments

- How can humans observe and explore space?
- What is gravity? How do we experience gravity on Earth? Is there gravity in space?
- How does a rocket get into space?
- What else revolves around the Sun?
- What kinds of challenges and work are involved in getting people into space?

Books and activities

- **Books:** fiction, nonfiction and poetry all about telescopes, gravity, rockets, astronauts, and exploring space
- **Activities:** explore and make tools for observing and getting to space; discover the challenges of becoming and being an astronaut

Home Learning Project

Space exploration Ten Facts

1. The first person in space was Yuri Gagarin from the Soviet Union, who travelled into orbit around the Earth in 1961.
2. The first man to walk on the Moon was an American called Neil Armstrong in 1969.
3. The Moon is the only place in space apart from Earth that humans have set foot on.
4. People who fly into space are called astronauts. They must be very careful about what they eat and what exercise they do to stay healthy while they are in space.
5. A spacecraft needs to travel at 11,000 miles per hour to get into orbit around the Earth.
6. Spacecraft use huge rockets to carry them into space.
7. The most famous type of spacecraft was the Space Shuttle. There were five Space Shuttles and one prototype – between them they flew 135 missions into space.
8. Out of billions of people who live on Earth, only 535 have been into Orbit, and only 12 have ever walked on the Moon.
9. The International Space Station is the biggest space station ever built. It can hold a crew of six people.
10. In 2012 a machine made by NASA called 'Curiosity' landed on Mars to see if it could find evidence of any creatures or plants having ever lived there.

Activities

Use the ten facts above to create a quiz, a poster, a leaflet or a knowledge organiser about space exploration.

Home Learning Project

Did You Know?

- Space starts 100 kilometres (62 miles) above the surface of the Earth.
- The first man to walk on the moon was Neil Armstrong. He was an American who travelled there in 1969 on NASA's Apollo 11 mission. As he stepped onto the Moon he said, "That's one small step for man, one giant leap for mankind."
- A satellite is what we call a machine that is launched into orbit around the Earth. Some satellites do things like taking photographs or broadcasting TV channels, and others are used by scientists.
- The first satellite was called Sputnik I and was launched by the Soviet Union in 1957. It circled the Earth for three months.
- When a space mission includes people, we call it a manned space expedition. When it only includes machines, we call it an unmanned expedition.
- Nobody has ever stepped on any object in space apart from the Moon, but we have sent machines to investigate Mars, Jupiter, Saturn and many other places.
- There is no air in space, so astronauts must take air with them from Earth so that they can breathe. If they want to go outside their spacecraft, they must wear special airtight clothes called a space suit.
- A space station is a place built in space so that astronauts can live and work in space.
- There is so little gravity in orbit around the Earth that instead of walking on the ground, astronauts in the space shuttles or on the International Space Station float in the air. This is called weightlessness.
- Astronauts must exercise every day to keep their muscles strong while they are in space. They also must eat specially prepared foods that are nutritious, easy to prepare and don't make a mess when you eat them in space. Ice cream is too messy to eat in space so astronauts must have it freeze-dried so that they can eat it for dessert!

Activity

Create your own 'Did You Know' fact cards and illustrate them to help you remember the facts.

Home Learning Project

Words to know for space exploration:

Astronaut – a person who has travelled in space
Curiosity – a large rover sent to Mars by NASA to look for signs of life
ESA – the European Space Agency, which consists of all the countries in Europe working together on missions to explore space
NASA – the North American Space Agency, which is the organisation from the USA that explores and investigates space
Orbit – When something goes into orbit, it is high enough that it keeps circling the Earth, instead of falling back to the ground.
Rocket – Rockets burn a lot of fuel to get to very high speeds very quickly. You have to do this if you want to get from the surface of the Earth into orbit.
Rover – a mobile robot sent to land on another planet or moon and explore
Satellite – a machine put into orbit around the Earth, and often used for science or communications
Spacecraft – a vehicle for travelling in space or into space
Space Shuttle – Made by NASA, this is the most famous type of spacecraft to be made.
Space station – a permanent structure in space where astronauts can live and work
Spacesuit – special airtight clothes that keep an astronaut safe and warm outside their spacecraft
Sputnik – the first satellite to be put into orbit around Earth
Voyager I and Voyager II – spacecraft that were sent to explore the outer parts of the Solar System

Activities

Create your own glossary of space exploration words. Make them into small fact cards and illustrate them with pictures to help you remember them.

Home Learning Project

Space explorers – create your own fact cards

Name: ..... Date: .....

Here are some famous astronauts. Use the Internet or reference books to find out more about them and complete each fact file.

Yuri Gagarin

The first person ever in space

Place and date of birth: .....

.....

Name and date of first space mission:

.....

.....

Name of space vehicle on first mission:

.....

Date of death: .....

Alan Shepard

The first American in space

Place and date of birth: .....

.....

Name and date of first space mission:

.....

.....

Name of second space mission:

.....

Date of retirement from NASA: .....

Neil Armstrong

The first man on the Moon

Place and date of birth: .....

Name and date of first space mission: .....

.....

What did he famously say when he stepped on to the Moon? .....

.....

.....

Name one other mission he completed: .....

.....

Buzz Aldrin

The second man on the Moon

Place and date of birth: .....

.....

Name and date of first space mission: .....

.....

Name of one other space mission: .....

.....

What job did he do before he became an astronaut? .....

Home Learning Project

- **The Sun is 93 million miles from the Earth. The light from the Sun only takes 8 minutes to travel to the Earth, but it would take Usain Bolt – the fastest man on Earth – 450 years to run from the Sun to the Earth.**
- The Earth travels around the Sun in a loop that is shaped a bit like an oval. We call this the Earth's **orbit**.
- **The Earth is always spinning around** – sometimes from where you stand on the Earth you can see the Sun (this is the daytime) and sometimes the part of the Earth where you are is facing away from the Sun so it is dark (this is the nightime). It takes 24 hours for the Earth to spin all the way around, and we call this a day. Find out more about night and day.
- There are eight planets that orbit around the Sun. In order, going from the closest planet to the Sun, to the one that is farthest away, they are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. There is a lot of difference between the planets. **Some planets like Earth are made of rock, and some like Jupiter are made of gas.** The hottest planet is Venus where the average temperature is 460°C, and the coldest is Uranus, which is -220°C.
- The biggest planet is Jupiter. Jupiter is made of gas and is so big that you could fit 1,321 planets the size of Earth inside it. There is even a storm on Jupiter that is bigger than Earth – this storm has been blowing for hundreds of years and is called the 'Great Red Spot'.
- Saturn is famous for having rings of small pieces of ice and dust around it. Like Jupiter, it is made of gas and is much bigger than Earth.
- **The Moon is a ball of rock that orbits around the Earth**, in the same way that the Earth orbits around the Sun. It is much smaller than the Earth and takes 28 days to complete one orbit. The Moon is 239,000 miles away and is the only place in the Solar System that man has travelled to apart from Earth.

Use these Top Facts about Space and create a poster or leaflet .

Home Learning Project

SPACE POETRY

When I'm An Astronaut

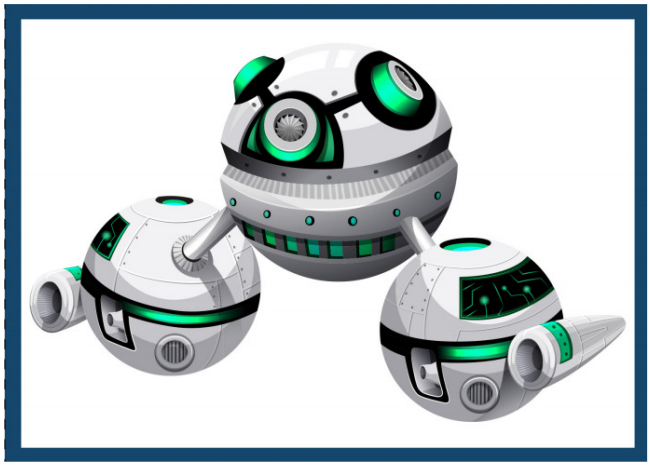
First, I'll get into my spacesuit.
Then I'll bravely wave good-bye.
Next, I'll climb into my spacecraft
Built to sail right through the sky!
In command inside the capsule,
I will talk to ground control.
When we've checked out
all the systems,

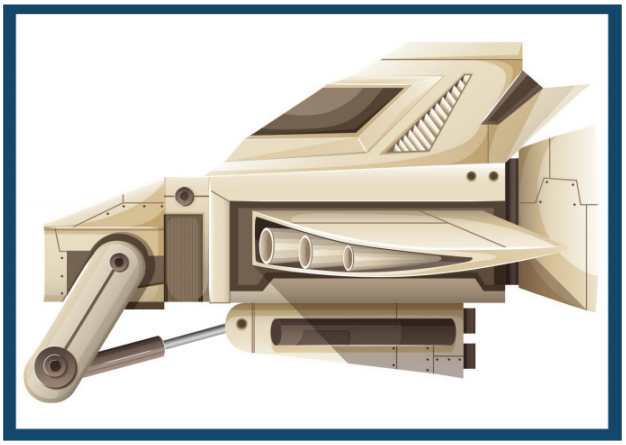
I'll say, "Let the countdown roll!"
And it's 4-3-2-1 - - blast off - -
With a smile upon my face,
I'll spin loops around the planets
up, up, up in outer space!

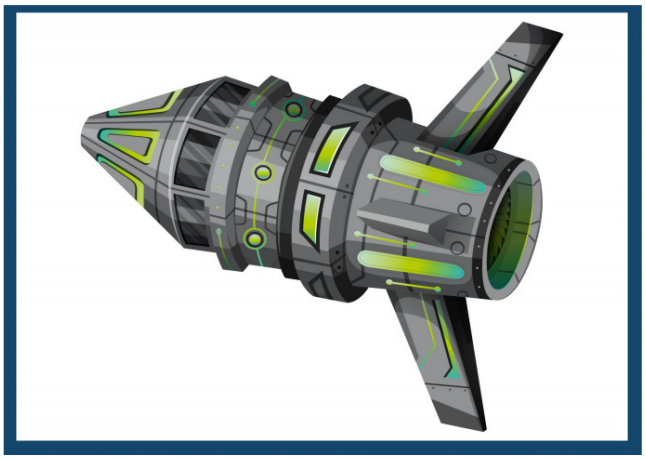
What words can you think of linked to Space?
Use them to create your own poem/song/rap

Home learning Project

Design and make a model spaceship or rocket using a variety of junk materials. Investigate different ways to make and join their structures, using taping, gluing and tying. Explore ways of making a structure sturdier so that it can stand alone.



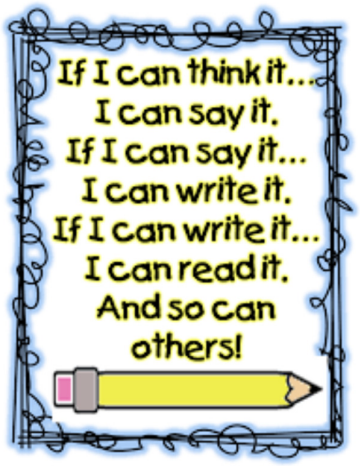




Home Learning Project

Imagine you were in Space, think about the following things:

- What would you hear?
- What would you see?
- What would you smell?
- What would you taste?
- Who would you be with?
- What objects might you come across?



Be creative and write your own description

Modelled Write

"Curiously, I stepped out of my towering craft. I could smell a fantastic odour coming from what seemed to be a cosmic flower bed. I saw massive craters that dug two miles beneath the ground. Thick amethyst smoke cuddled at my feet. I quickly sprinted forward; I suddenly fell into a pit of lime green slime. I struggled and squirmed but I only sank deeper. I closed my eyes in hope of survival. With a thud I landed. I opened my eyes once more and saw a cave. The walls were blacker than the blackest segment of obsidian ore. Before long, I reached a mossy wall covered in vines that led to the surface. Once I climbed back up, I reached the other side of the planet. Sunlight reflected off of the silver water. Magenta trunked trees with butterscotch yellow leaves stood hunchbacked casting a shadow. A whirlpool of stars dazzled and glimmered. In a blink of an eye, a beacon like light burst out of space."

Write your own description using all the features listed.

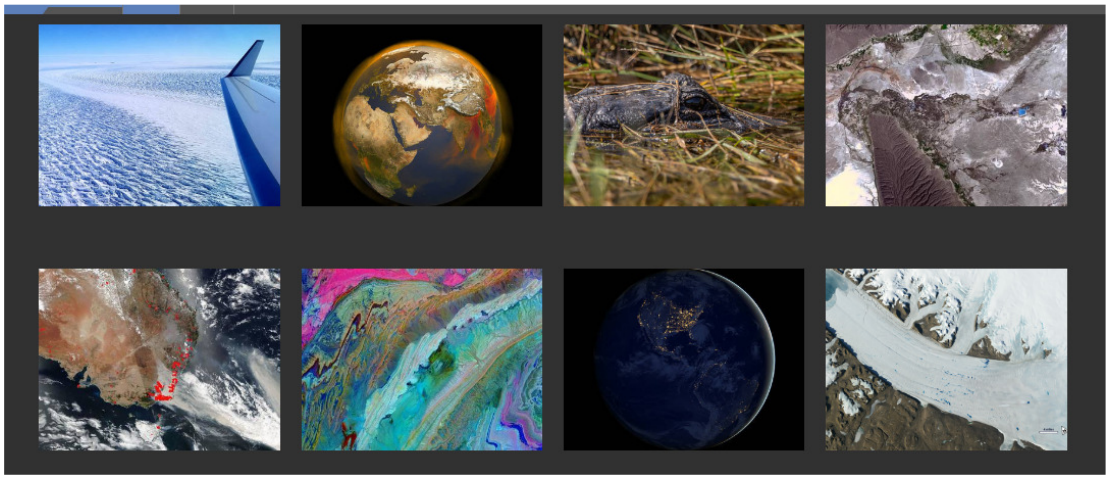
Prepositions, Adjectives, Powerful verbs, Adverbs, Metaphors/Similes, Personification & Alliteration.

Home Learning Project

Get a rocket's eye view.

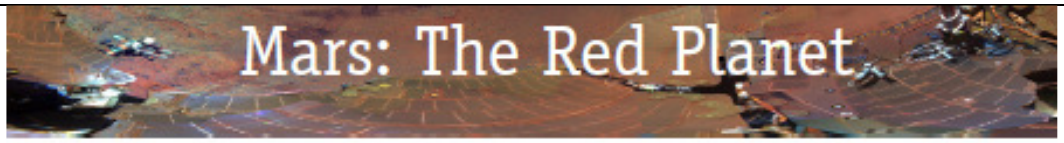
Visit the NASA website to see and discuss images of Earth from space. Explore the Earth from above on mapping websites, identifying basic geographical features such as a sea, ocean, land, island, forest, city, lake and river.

Try to spot similar features on other planets in a selection of aerial photographs, such as Martian riverbeds and mountains on Venus.



Home Learning Project

Find some recycled materials at home create your own space collage.
Have a look at some of the examples to inspire you!



Mars: The Red Planet

Introduction

Let's explore one of the planets that has really captured our imaginations: **Mars**. Mars has been known since ancient times because you can see it without a telescope. The **planet** is covered in rocks and sand, colored red by **iron oxide**. Mars has **volcanoes**, though they are not active. We once thought there might be life on Mars, but space **orbiters**, **landers**, and **rovers** have revealed a cold **desert** world. Scientists are still looking for clues that would tell us if Mars has (or once had) the right conditions to support even small life forms, called **microbes**.

Questions to guide explorations and experiments

- Why is Mars called the Red Planet?
- What do we know about volcanoes on Mars? What happens when a volcano erupts?
- What kinds of spacecrafts have landed on Mars? How do space engineers get them to land without crashing? How do the Mars rovers move around?
- What if humans traveled to Mars? What would we need to bring in order to survive?
- If we met a Martian, what would it look like?

4

Activity 3: Landing on Mars

Introduction

To learn about the Red Planet, our NASA scientists and engineers have sent **landers** and **rovers** to the surace of Mars. So far, the U.S. has had eight successful Mars landings.

Imagine this: your rover is approaching Mars, going at high speed and you need to land it gently on the surface of the Red Planet, with the spacecraft and all of its equipment safe and sound. The **atmosphere** on Mars is very thin, so it doesn't help slow the rover down much.

Supplies (for each child)

- Heavy weight paper or card stock cut into 8-inch triangle (see template on page 96)
- Hole puncher
- 2 large paper clips
- 4 lengths of string, each 18-24 inches long (longer strings for a higher drop point)
- 12" x 12" piece of newspaper
- 12" x 12" piece of cloth
- 12" x 12" piece of plastic wrap or plastic trash bags
- Adhesive tape or packing tape
- Consistently-sized small plastic toy vehicles, crayons, or larger rubber erasers
- Stopwatch, clock with a second hand, or timer on cell phone
- Notepad, pen or pencil

Get kids thinking

Engineers at NASA have explored many new ways to slow down the landers for a safe arrival.

Ask kids: can you think of anything that might slow down a Mars lander to make it safe for landing? A parachute does the trick! It opens up after the lander enters the Mars atmosphere, catches air as it floats, creating drag (working against the downward pull of **gravity**) — that slows down the landing.

Activity 3: Landing on Mars

If you have Internet access, watch this video from NASA and the Jet Propulsion Lab (JPL), **We Brake for Mars:** https://www.youtube.com/watch?v=9h1NtQJ59kM

NASA and JPL are testing a supersonic parachute under Mars-like conditions for future exploration.

Ask kids: have you ever seen a parachute in action? What did you observe?

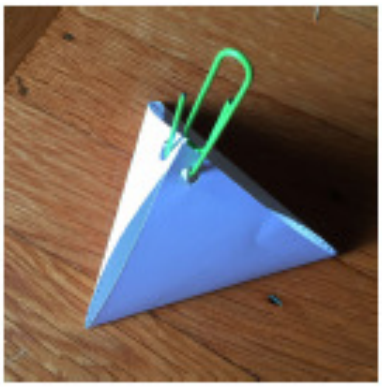
Let's get started!

In this challenge, kids will explore which material makes the best parachute for a slow, soft landing of their Mars lander.

Recommended: Have an adult demonstrate how to assemble the "lander" and then attach the test parachute. It's best to do this activity on a day that isn't windy.

First, build the lander with the triangle cut from heavy weight paper. Take one of the triangle corners and fold it over so that its point is in the middle of the triangle's other side. Crease the fold well, then unfold it. Repeat with the two remaining corners. Use the hole punch to create one hole near the tip of each point. This is your lander!

Next, place the small toy vehicle, crayon or large eraser (the "payload" or scientific equipment) in the lander. Insert the paper clip through the three punched holes to form a little carrier.



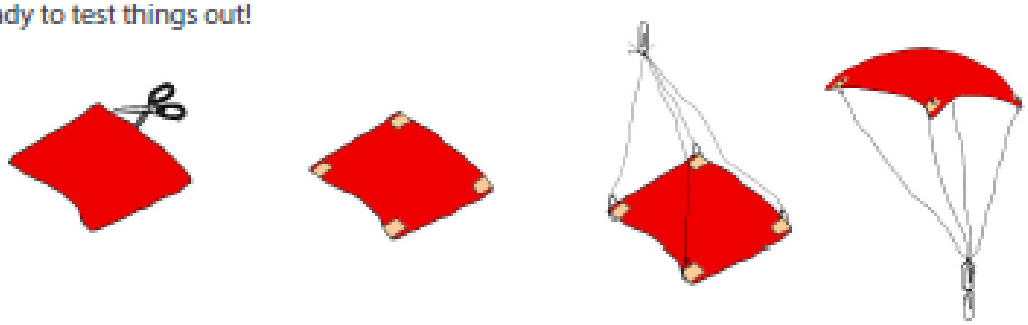
Activity 3: Landing on Mars

Then, gather the four strings and tie together in a knot at one end. Attach a large paper clip to the knotted end.

The newspaper, cloth, and plastic wrap are your test parachutes. **Ask kids:** predict which material will create the slowest landing and write it down in your notepad.

Have kids choose one material for the first test run and tape the ends of each string to a corner of the test parachute — being careful not to tangle up the strings.

Finally, attach the lander to the parachute by interlocking the two paper clips. Now you're ready to test things out!



Find a high place — stairwell, balcony, edge of a deck — to toss your lander and time it to see how long it takes to reach the ground. Record the observations in your notepad.

Repeat with the two other parachute materials.

Ask kids: Which parachute slowed down the lander the most? Is that what you predicted? What other materials might make a better parachute and why?

Option B: You can also do this experiment using raw eggs in the lander, instead of plastic toy vehicles, crayons, or erasers. This will also test how soft the landings really are! Warning: it can get messy, so use a dropcloth to catch any broken eggs.

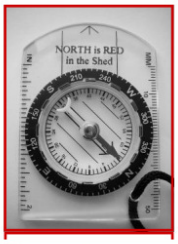
More activities

Egg Drop Challenge (Buggy and Buddy)
https://buggyandbuddy.com/egg-drop-challenge-free-planning-printable-2014/

Design Squad: Soft Landing (PBS Kids)
https://pbskids.org/designsquad/build/soft-landing/

Home Learning Project

You are going to be the first team of astronauts to land on Mars in 2030. You have travelled in a rocket for 7 months and you are now in orbit around Mars. Mission control have told you that you will be going down to the surface of Mars for 8 hours tomorrow. You need to plan what you are going to take with you. Because the landing shuttle can't be too heavy you are only allowed to take 6 items. Look at the items you are allowed to choose from. Decide what items your team will take. Mission control needs to know why you need these items more than the others. Remember to explain why.




Solar panels

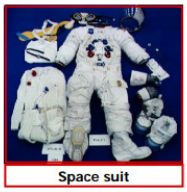

Two-way radio (walkie talkie)


Sunglasses


Rucksack


Family Photo

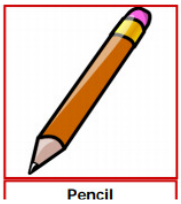

Picnic


Space suit


Spare Oxygen


Laptop


Biro Pen


Pencil


Sandwiches

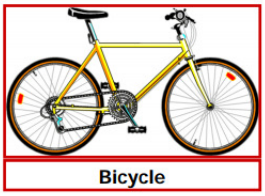

Spade


Pick-axe


Watch


Mobile phone


Mars Rover


Bicycle

Toothbrush


Empty Containers


Hiking Boots


Drinking Water

4

Writing About Mars

Writing helps kids process and solidify new knowledge and gives them an opportunity to use new vocabulary and concepts. Offer one or more of these prompts or questions to get your Space Rangers writing.

Journey to Mars travel guide

The journey from Earth to Mars takes about 6 months or longer. What will you need to pack on your trip to get there? What kind of gear will you need when you get there?

What is different on Mars compared with Earth?

- There's less gravity so you weigh less and would float (If you weigh 65 lbs on Earth, your weight on Mars would be 24 lbs).
- It's cold and can be windy and dusty.
- There's no oxygen to breathe.
- There's no food on Mars.

More questions about going to Mars:

- Where would you get water?
- What's there to see on Mars?
- What will you do on Mars?
- How will you travel around?
- Where will you live?
- What will you do on the long journey back to Earth?

You can have the kids use the template provided on the following 4 pages or create your own design.

If you have Internet access, watch *Max Goes to Mars*, a story read by astronauts from the International Space Station!

https://storytimefromspace.com/max-goes-to-mars-2/

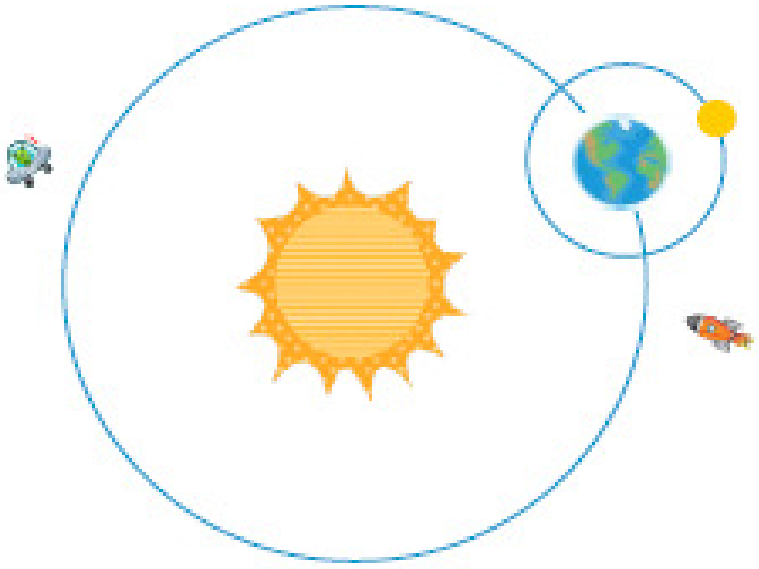
Home Learning Project

Earth, Sun and Moon research pack

L.O: I can explain the relationships between the Sun, Earth and Moon

Copy this simple diagram into your book- use a whole page. **Note the diagram is NOT to scale.** Use the words below to help you **label** the diagram. Cut out the captions below and stick them around your diagram.

Sun	**solar flare**	**sunspot**	**corona**	**orbit**	**Moon**
Earth	**atmosphere**	**land**	**ocean**	**plains**	**mountains**



The moon orbits the Earth once every 28 days.	The Earth spins on its axis once every 24 hours. As we turn away from the Sun, we enter night.	The Earth orbits the Sun once every 365 ¼ days.	The Sun is a star at the centre of our Solar System.
The Moon doesn't change shape; it is the Sun's light that makes it appear to wax and wane.	The Earth's tilt on its axis is what causes our seasons.	The Moon is about 320,000 km away from the Earth.	The Moon is only held in place by the gravitational pull of the Earth.
The Moon doesn't shine. It reflects the Sun's light.	The corona of the Sun is made from helium and hydrogen.	Water covers 70% of the Earth, the other 30% is covered by land.	The Sun is 15 million degrees hot at its centre.

Home Learning Project

This is Van Gogh's painting called 'Starry Night.'

Choose your own night sky or space theme and recreate the picture using pencil, collage or paint.

Home Learning Project

Stars and Constellations

This focuses on one of the most awesome things we can see in the night sky: stars and star patterns that we call constellations. Stars are big exploding balls of gas — mostly hydrogen and helium — held together by their own gravity. Astronomers think that there are 200 billion stars in the Milky Way, the galaxy where our own solar system lives.

Questions to guide explorations and experiments

- What is a star? Why do they shine and seem to twinkle?
- Where do stars come from?
- What is a constellation?

Why did people name patterns of stars and create stories about them?

Activity 1: Twinkle, Twinkle

Introduction

Stars are so far away from Earth that, even through large telescopes, they appear only as tiny points of bright light. Stars seem to twinkle because we see them through the layers of the atmosphere — the gases that surround our planet.

The movement of air and dust in the atmosphere bends, or refracts, a star's light in different directions. Because the light is scattered by the time it reaches our eyes on Earth, stars appear to twinkle. You might think of it as the light traveling a zig-zag path to our eyes, instead of the straight path the light would travel if Earth didn't have an atmosphere.

Supplies

- 12-inch x 12-inch square of aluminum foil
- 2-quart glass bowl
- Water
- Flashlight
- Pencil (optional)

This activity works best in a darkened room

Get kids thinking

In this activity, kids will be exploring why stars appear to twinkle.

Ask kids: Have you ever looked at stars in the night sky? What have you observed?

Have you ever looked up high in the night sky at the stars and then moved your head down closer to the horizon. Do the stars seem to change?

Stars closer to the horizon will appear to twinkle more than stars higher up in the sky because there is a lot more atmosphere between you and a star near the horizon.

Activity 1: Twinkle, Twinkle

Let's get started!

Demonstrate this activity in front of the kids, and then let them try it themselves in small groups. Crumple your square of foil, then open it up, and place it on a table or on the floor. Fill your clear bowl with tap water and place it on top of the crumpled foil.

Darken the room by turning off the lights. Hold the flashlight about 12 inches above the bowl. Look at the foil through the undisturbed water. **Ask the kids:** What does the reflected light look like?

Now using your finger or a pencil, tap the surface of the water gently. Look at the foil through the moving water. **Ask the kids:** How does the reflected light look like now?

What happened? The light rays reflecting from the foil when there was a movement in water appears to blur or twinkle.

Why? The movement of the water causes the depth of the water to vary. The light rays twinkle because they bend or refract in different direction when it passed through the different depths of water.

This is similar to the light rays from the stars. They appear to be twinkling when you are observing from Earth because they refract differently as the light rays move through the different thickness of air in the atmosphere. The scientific word for this twinkling phenomenon is scintillation.

More activities

Do Stars Really Twinkle (video)
https://www.youtube.com/watch?v=_-GfIT6jK44

Activity 2: Explore Constellations Three Ways

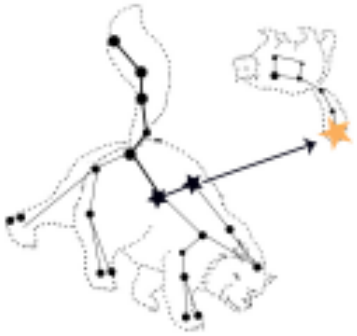
Introduction

A constellation is group of stars that make up an imaginary shape in the night sky.

In ancient times, people saw patterns of stars in the night sky that seemed to make recognizable shapes. Some of them are named after mythical heroes like Hercules and Orion the Hunter. Other star patterns are named after animals, like Ursa Major — the big bear.

The star patterns became a way to preserve stories, like the legend of Perseus rescuing the princess Andromeda from a sea monster named Cetus.

As astronomers began mapping the night sky, these star patterns were included in the maps and called "constellations." There are 88 official constellations, according to the International Astronomical Union. At different times of the year, different constellations can be seen in the sky.



Sailors have used constellations to help with navigation for thousands of years. It's pretty easy to spot Polaris (North Star) once you've found Ursa Minor (Little Dipper).

Get kids thinking

- Have you ever looked for the Little Dipper and the North Star in the night sky?
- Can you guess why we see different constellations in the summer night sky than we see in the fall, winter, or spring? In the summer, we can see Hercules the Hero but we can't see Orion the Hunter (we see Orion in the winter sky).
- Do you know any stories about constellations, like the stories of Hercules, Orion the Hunter, or Pegasus the winged horse?

This would be a great time to read a story about constellations, such as this Native American tale about the creation of the Big Dipper such as *Her Seven Brothers* by Paul Goble. Or you could read one of the stories from these books by Jaqueline Mitton: *Zoo in the Sky* or *Once Upon a Starry Night.*

Activity 2: Explore Constellations Three Ways

Option 1: Sidewalk Chalk Constellations

Supplies

- Summer sky constellation template and constellation card templates (provided)
- Buckets of sidewalk chalk
- Plastic buckets with rocks, pebbles, bottle caps (these are the "stars" in your constellation)

Let's get started!

In this activity, kids will build a favorite constellation outside using rocks, pebbles, bottle caps, and chalk.

Print out a copy of the summer sky constellation chart for each child. Also print out enough of the individual constellation pages so that the kids will have some options when they choose their constellation for this activity. The templates can be found after page 23.

Get everyone together in a circle, pass around the summer sky constellation charts, and talk about the different constellations on the chart. **Ask the kids:** Can you identify any of the animals or characters?

Tell the kids that you've set out copies of different constellations on the table, and invite the kids to select one that they would like to "build" outside.

Time to head outside! Bring the buckets of rocks, pebbles and bottle caps outside where there's lots of sidewalk space. Show the kids how to draw their constellation on the sidewalk, starting with the pebbles, rocks, and bottle caps (these are the "stars") and then use the chalk to connect the stars and complete their constellation. Thing big! And don't forget to have the kids write the names of their constellations in chalk next to their creation.

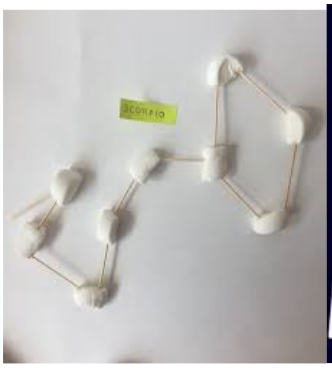
Activity 2: Explore Constellations Three Ways

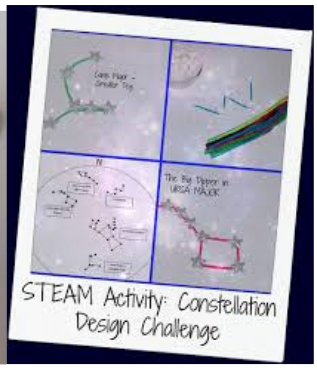
Option 1: Sidewalk Chalk Constellations

As a group, take a walking tour of your "night sky" and encourage each child to identify their constellation, and share a story about their animal or character if they know one.

To extend this activity, you can encourage the kids to create their own constellations — the "sky's the limit" when it comes to using their imaginations!

Photo © Creekside Learning





Use whatever you can find to create a constellation- sticks & stones or mini marshmallows & chocolate matchsticks. An edible constellation!!

Writing About Stars

Writing helps kids process and solidify new knowledge and gives them an opportunity to use new vocabulary and concepts. Offer one or more of these prompts or questions to get your Space Rangers writing.

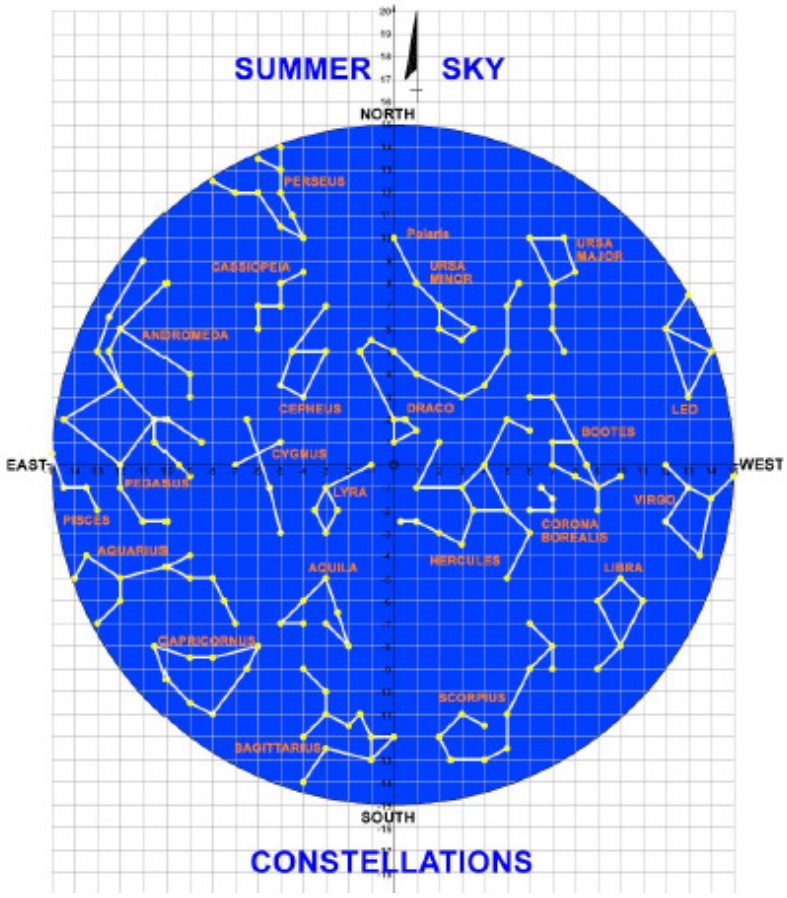
Write a constellation myth

Talk about what a myth is — a made-up story that explains the existence of something in nature, such as where thunder comes from or how the Milky Way formed. Myths often feature supernatural and heroic characters who have the power to make amazing things things happen.

Next, read a constellation myth to the group, and tell the kids that they'll be writing their own constellation myths.

Give the kids a copy of the Summer Star Chart (see the next page) and paper, pens, pencils, and/or markers for writing and drawing.

Look together at the stars on your star chart. What kinds of patterns do the kids see? Ask each child to find a cluster of stars and design a new constellation with its own modern-day myth. The constellation myth should explain how and why this particular constellation is in the sky.



Myths

https://www.youtube.com/watch?v=Jf8Nh4iOkcI – Myth of Orion

https://www.youtube.com/watch?v=bH2mCcivliQ – The Never Ending Bear Hunt

https://www.youtube.com/watch?v=dtBqbMfuq1I – The Star That Does Not Move

https://www.youtube.com/watch?v=5x-LtgO2avY – Quillwork Girl and her Seven Brothers

Information

https://www.youtube.com/watch?v=SjBGpA2Muyc – Constellation Song

https://www.youtube.com/watch?v=Hm2MKez7atI -Science report on the Night Sky

https://www.youtube.com/watch?v=MZffhapfOgg – Super Stars

https://www.youtube.com/watch?v=BbzCA0Lgf3Y – Constellation Location

https://www.youtube.com/watch?v=M41yLjQ2ot0 – Seeing Stars

Writing About Stars

Blackout poetry

Blackout poetry is like a treasure hunt since you find hidden meanings and secret messages in unlikely places. It also creates a beautiful "night sky" — with words as the twinkling stars of your poem.

Create an example for the kids as you explain the activity.

Supplies (for each child)

- Old newspapers or magazines
- Thin and thick black markers
- Highlighters (optional)

How to

1. Select a newspaper or magazine page.
2. Look at all of the words on the page.
3. Go back over the page, and with a thin black marker draw a box around the words that you want in your poem.
4. Color in (black out) the rest of the words on the page with the thick black marker, leaving just the words you selected.
5. Highlight all or some of the words, if you like, to create a more colorful effect.

Home Learning Project

Useful Links:

- Have an adventure on Mars and play games and try activities to find out about Mars exploration
- Answer questions about the scientific advancements that led to Apollo 11's successful mission to the Moon in CBBC's Moon Mayhem quiz
- Do you have what it takes to be an astronaut? Try some space challenges to find out!
- A spaceship craft activity to help you think about constructing a real spacecraft
- Find out how to play basketball in space!
- Build a model of the Hubble Space Telescope
- Examine NASA's spacesuits
- Go on a space walk by seeing space from the perspective of an astronaut in space
- Learn some space-themed songs
- Use National Centre for Earth Observation resources to think about what Earth looks like from space
- Launch a virtual spacecraft and send it into orbit
- Loads of brilliant online space games, from Mission Mastermind to Galaxy Hunter
- What's your Martian age?
- Find out how long would it take to travel to an exoplanet with the interactive Interstellar Trip Planner
- Learn loads about space while completing hands-on mission modules on the Destination Space UK website
- Make your own paper models of spacecrafts
- Video Links see below
- https://youtu.be/Qd6nLM2QlWw
- https://youtu.be/joq-IUFNkrw
- https://youtu.be/SeC22-94PMw
- https://youtu.be/evIsmxM5c7o