

National Aeronautics and Space Administration



ARTEMIS II

WATCH PARTY PLANNING GUIDE



www.nasa.gov | #Artemis

WELCOME

NASA wants you to celebrate the historic Artemis II mission with us!

Building on the success of the Artemis I mission, Artemis II will send four astronauts on an approximately 10-day mission around the Moon demonstrating a broad range of capabilities needed for deep space missions. On the Artemis II test flight, astronauts will travel farther from Earth and closer to the Moon than any human has been in more than half a century, building the foundation for future exploration missions to the lunar surface and Mars in the Golden Age of exploration.



On this first crewed Artemis mission, astronauts will launch atop NASA's SLS (Space Launch System) rocket and fly around the Moon, inside the agency's Orion spacecraft, confirming all the spacecraft's systems operate as designed with crew aboard in the deep space environment. Through the Artemis campaign, NASA will send astronauts to explore the Moon for scientific discovery, economic benefits, and to build the foundation for the first crewed missions to Mars — for the benefit of all.

NASA invites you and your organization to host a virtual or in-person Artemis II launch and/or splashdown watch party to allow everyone to be part of the excitement. This Artemis II Watch Party Planning Guide will help you plan your public or private* watch party, offering free NASA activities, videos, images, downloadable exhibit and display files, and other multimedia resources that will help you take your party to the next level.

Please register as an Artemis II virtual guest at the link below. Under "Registration," select "Online Participation" and under "Add-ons," select the "Artemis II Watch Party Host" option. Registration is FREE. Once you register with your email (and select the Watch Party add-on option), you will receive timely emails with communications on launch schedule changes, launch-related activities, and access to curated launch resources.

<https://nasa-artemis-ii.eventbrite.com/?aff=watchparty>

Contact Vanessa Lloyd (vanessa.c.lloyd@nasa.gov) with any questions about the Artemis II Watch Party Planning Guide.

**Private events are not open to the public, but to a select group of individuals. They may take place in, but are not limited to, schools and individual classrooms, after-school programs, home-school groups, scouts, and retirement homes.*

**Public events are open to everyone and may take place in, but are not limited to, museums, science centers, planetariums, libraries, pubs, and community centers.*



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LEARN ABOUT ARTEMIS

ARTEMIS CAMPAIGN

We're going back to the Moon for scientific discovery, economic benefits, and to inspire a new generation of explorers. While maintaining American leadership in exploration, we will build a global alliance and explore deep space for the benefit of all. Foundational programs will empower NASA and its partners to bring long-term exploration to the Moon so that humans can one day explore destinations like Mars.

ARTEMIS I MISSION

During **Artemis I**, NASA's super heavy-lift rocket, the SLS (Space Launch System), roared into the night sky and sent the Orion spacecraft on a 1.4-million-mile journey beyond the Moon and back. The uncrewed test flight was the first in a series of increasingly complex missions that are setting the stage for astronauts to set foot on the lunar South Pole for the first time and enable a long-term presence at the Moon and, one day, Mars.

ARTEMIS II MISSION

During Artemis II, astronauts on their first flight aboard NASA's SLS rocket and Orion spacecraft will venture around the Moon and return safely to Earth. Their mission will confirm all of the spacecraft's systems operate as designed with crew aboard in the actual environment of deep space. The Artemis II astronauts are NASA's Reid Wiseman, Victor Glover, and Christina Koch, and CSA (Canadian Space Agency) astronaut Jeremy Hansen.

The unique Artemis II mission profile will build upon the uncrewed Artemis I test flight by demonstrating a broad range of deep space exploration capabilities needed for missions to the Moon. This mission will prove Orion's critical life support systems are ready to sustain our astronauts on longer-duration missions ahead and allow the crew to practice operations essential to the success of Artemis III and beyond. During the mission, the Artemis II crew will also conduct lunar observations and complete a suite of experiments that will allow NASA to better understand how human health may change in deep space environments.

Leaving Earth

The SLS rocket will launch Orion and a crew of four astronauts from NASA's Kennedy Space Center in Florida. Orion will perform multiple maneuvers to raise its orbit around Earth and eventually place the crew on a lunar free-return trajectory, in which Earth's gravity will naturally pull Orion back home after flying by the Moon.

The initial launch will be similar to Artemis I as SLS lofts Orion into space and then jettisons the boosters, service module panels, and launch abort system before the core stage engines shut down and the core stage separates from the upper stage and the spacecraft. With crew aboard this mission, Orion and the upper stage, called the interim cryogenic propulsion stage (ICPS),

ARTEMIS BLOG

The Artemis blog is a source of information on Artemis launches and exploration progress, covering updates across our science, technology, and human exploration programs.

NASA+

Tune in to live broadcasts on NASA+, the agency's streaming platform. Watch real-time coverage of NASA events like launches and missions. Discover a wide range of topics, including Earth, the universe, the solar system, the latest news and events, technology, documentaries, and more!



NASA's SLS rocket, carrying the Orion spacecraft, lifts off the pad at Launch Complex 39B at the agency's Kennedy Space Center in Florida at 1:47 a.m. EST on Nov. 16, 2022.

will then orbit Earth twice to ensure Orion's systems are working as expected while still close to home. The spacecraft will first reach an initial orbit, flying in the shape of an ellipse, at an altitude of about 115 by 1,400 miles. The orbit will last a little over 90 minutes and will include the first firing of the ICPS to maintain Orion's path. After the first orbit, the ICPS will raise Orion to a high Earth orbit. This maneuver will enable the spacecraft to build up enough speed for the eventual push toward the Moon. The second, larger orbit will take approximately 23.5 hours with Orion flying in an ellipse between about 115 and 46,000 miles above Earth. For perspective, the International Space Station flies a nearly circular Earth orbit about 250 miles above our planet.

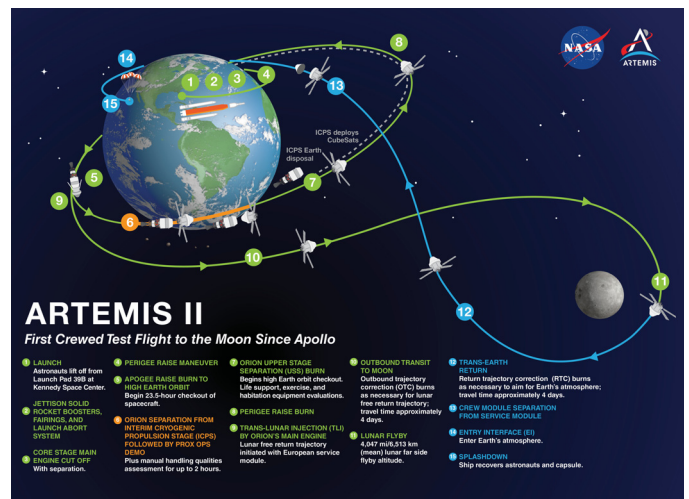
After the burn to enter high Earth orbit, Orion will separate from the upper stage. The expended stage will have one final use before it is disposed through Earth's atmosphere — the crew will use it as a target for a proximity operations demonstration. During the demonstration, mission controllers at NASA's Johnson Space Center in Houston will monitor Orion as the astronauts transition the spacecraft to manual mode and pilot Orion's flight path and orientation. The crew will use Orion's onboard cameras and the view from the spacecraft's windows to line up with the ICPS as they approach and back away from the stage to assess Orion's handling qualities and related hardware and software. This demonstration will provide performance data and operational experience that cannot be readily gained on the ground in preparation for critical rendezvous, proximity operations and docking, as well as undocking operations in lunar orbit beginning on **Artemis III**.

Checking Critical Systems

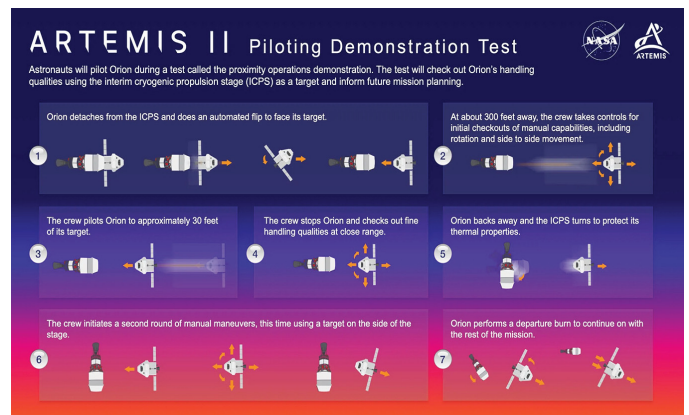
Following the proximity operations demonstration, the crew will turn control of Orion back to mission controllers at Johnson and spend the remainder of the orbit verifying spacecraft system performance in the space environment. They will remove the **Orion Crew Survival System** suit they wear for launch and spend the remainder of the in-space mission in plain clothes, until they don their suits again to prepare for re-entry into Earth's atmosphere and recovery from the ocean.

While still close to Earth, the crew will assess the performance of the life support systems necessary to generate breathable air and remove the carbon dioxide and water vapor produced when the astronauts breathe, talk, or exercise. The long orbital period around Earth provides an opportunity to test the systems during exercise periods, where the crew's metabolic rate is the highest, and a sleep period, where the crew's metabolic rate is the lowest. A change between the suit mode and cabin mode in the life support system, as well as performance of the system during exercise and sleep periods, will confirm the full range of life support system capabilities and ensure readiness for the lunar flyby portion of the mission.

Orion will also check out the communication and navigation systems to confirm they are ready for the trip to the Moon. While still in the elliptical orbit around Earth, Orion will briefly fly beyond the range of GPS satellites and the Tracking and Data Relay Satellites of NASA's **Near Space Network** to allow an early checkout of the agency's **Deep Space Network** communication and navigation capabilities. When Orion travels



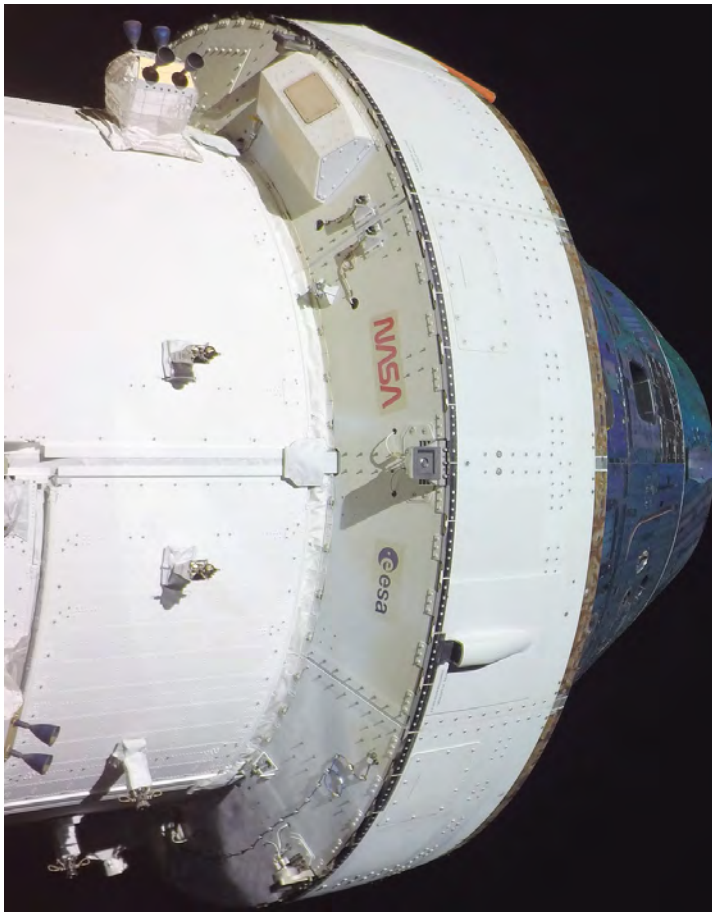
Map of the Artemis II journey and mission milestones.



Artemis II proximity operations demonstration.



Orion Crew Survival System.



During the Artemis I mission, the Orion spacecraft reached a maximum distance from Earth when it was 268,563 miles away from our home planet, surpassing the record for distance traveled by a spacecraft designed to carry humans.

out to and around the Moon, mission control will depend on the Deep Space Network to communicate with the astronauts, send imagery to Earth, and command the spacecraft.

After completing evaluation procedures, Orion will perform the next propulsion move, called the translunar injection (TLI) burn. With the ICPS having done most of the work to put Orion into a high Earth orbit, the service module will provide the last push needed to put Orion on a path toward the Moon. The TLI burn will send the spacecraft on an outbound trip of about four days and around the far side of the Moon, where it will ultimately create a figure eight extending over 230,000 miles from Earth before Orion returns home.

To the Moon and “Free” Ride Home

On the remainder of the trip, astronauts will continue to evaluate the spacecraft’s systems, including demonstrating Earth departure and return operations, practicing emergency procedures, and testing the radiation shelter, among other activities.

The Artemis II crew will travel approximately 4,600 miles beyond the far side of the Moon. From this vantage point, they will be able to see the Earth and the Moon from Orion’s windows, with the Moon close in the foreground and the Earth nearly a quarter-million miles in the background. The Artemis II crew could be the first humans to see some parts of the

Moon’s far side with the naked eye, depending on the spacecraft’s final trajectory as determined upon launch.

The crew will **conduct and document lunar observations** through photographs and audio recordings to inform scientists’ understanding of the Moon and share their experience of being far from Earth. **The astronauts will also complete experiments to gather information about how deep space travel influences the human body, mind, and behavior.**

With a return trip of about four days, the mission is expected to last about 10 days. Instead of requiring propulsion on the return, this fuel-efficient trajectory harnesses the Earth-Moon gravity field, ensuring that — after its trip around the far side of the Moon — Orion will be pulled back naturally by Earth’s gravity for the free-return portion of the mission.

Splashdown and Recovery Operations

Orion will re-enter the Earth’s atmosphere and deploy parachutes to slow down the capsule, allowing for a safe splashdown in the Pacific Ocean, off the coast of California. The Landing and Recovery Team will then be responsible for safely recovering Orion and the crew and returning them both to land. The astronauts will be recovered in either open water or the well deck of the ship depending on sea conditions and other factors on day of landing.

MEET THE CREW

Meet the astronauts who will venture around the Moon on Artemis II.

REID WISEMAN — COMMANDER

NASA Astronaut Reid Wiseman will serve as the commander for the Artemis II mission. Wiseman flew previously as a flight engineer aboard the International Space Station for Expedition 41 from May through November 2014, logging more than 165 days in space. Prior to this assignment, Wiseman served as chief of the Astronaut Office from December 2020 until November 2022.



VICTOR GLOVER — PILOT

NASA Astronaut Victor Glover will be making his second flight to space as the pilot of the Artemis II mission. Glover previously served as pilot on NASA's SpaceX Crew-1, which landed May 2, 2021, after 168 days in space. As a flight engineer aboard the space station for Expedition 64, he contributed to scientific investigations, technology demonstrations, and participated in four spacewalks.



CHRISTINA KOCH — MISSION SPECIALIST

Christina Hammock Koch [pronunciation: "Cook"] served as flight engineer on the International Space Station for Expedition 59, 60, and 61. Koch set a record for the longest single spaceflight by a woman with a total of 328 days in space and participated in the first all-female spacewalk.



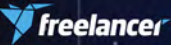
JEREMY HANSEN — MISSION SPECIALIST

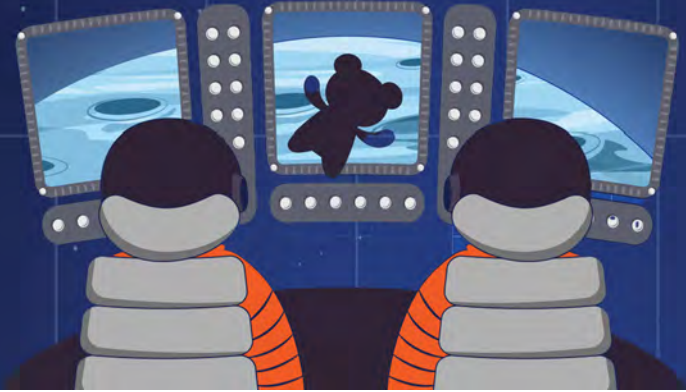
CSA (Canadian Space Agency) astronaut Jeremy Hansen earned his private pilot license and wings at the age of 17, and went on to become a fighter pilot and Colonel in the Canadian Armed Forces. On Artemis II, his first spaceflight, he will become the first Canadian to ever venture to the Moon.



MEET THE ARTEMIS II ZERO GRAVITY INDICATOR

MOON MASCOT

Credit: 



When astronauts Reid Wiseman, Victor Glover, and Christina Koch of NASA, and CSA (Canadian Space Agency) astronaut Jeremy Hansen launch to the Moon aboard Orion, flying with them will be a bonus plushie crewmember — the Artemis II Moon Mascot. This mascot will have the important job of serving as the visual zero gravity indicator for when the Orion spacecraft reaches the weightlessness of microgravity, while the rest of the crew are still held down by their seatbelts.

For the Artemis I mission, this zero gravity indicator was a **plush Snoopy doll**.

For Artemis II, NASA engaged the public for their creative ideas for a mascot. Earlier this year, the agency launched a contest for people around the world to submit designs for a zero gravity indicator, representing the significance of Artemis, the mission, or exploration and discovery while meeting specific size and materials requirements. After receiving more than 2,600 submissions from more than 50 countries, including from K-12 students, NASA selected 25 finalists with ideas spanning from Moon-related twists on Earthly creatures to creative visions of exploration and discovery. The finalists represent 10 countries: the United States, Canada, Colombia, Finland, France, Germany, Japan, Peru, Singapore, and Wales.

From these 25 final designs (right), the four Artemis II astronauts will select a winner, and NASA's Thermal Blanket Lab will fabricate the Moon Mascot for flight. The indicator will be tethered inside Orion before launch.

To learn more about the finalists, [CLICK HERE!](#)



"How to Know You're in Space" video.



Credit: NASA/collectSPACE

THE SCIENCE OF ARTEMIS II

With Artemis II, NASA is taking the science of living and working in space beyond low Earth orbit. While the test flight will help confirm the systems and hardware needed for human deep space exploration, the crew also will be serving as both scientists and volunteer research subjects, conducting lunar observations and participating in a suite of experiments that will allow NASA to better understand how human health may change in deep space environments. Results will help the agency build future interventions, protocols, and preventative measures to best protect astronauts on future missions to the lunar surface and to Mars. Artemis II science operations will lay the foundation for safe and efficient human exploration of the Moon and Mars.

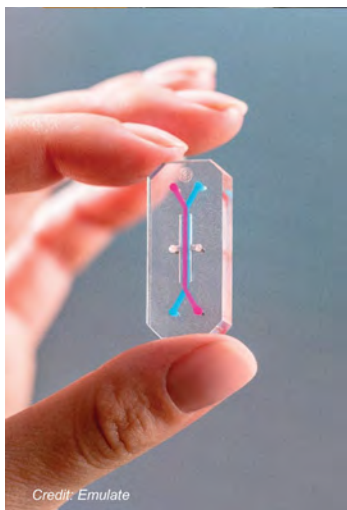
HUMAN HEALTH AND BIOLOGY

Artemis II astronauts will provide NASA researchers with an unprecedented glimpse into how deep space travel influences the human body, mind, and behavior. Studies will characterize the radiation environment and explore immune system function, cellular changes, sleep and behavior, and how spaceflight affects physiological systems. Results will help the agency build future interventions, protocols, and preventative measures to best protect astronauts on future missions to the lunar surface and to Mars. The studies focused on astronaut health planned for Artemis II are:

- **AVATAR (A Virtual Astronaut Tissue Analog Response):** This investigation will use organ-on-a-chip devices to study the effects of increased radiation and microgravity on crew health.
- **Radiation Studies:** Equipment will monitor radiation levels inside and outside the Orion capsule to help characterize the deep space environment.
- **ARChER:** A study on Artemis II will monitor participating astronauts' well-being, activity, and sleep patterns to learn more about human health and performance in deep space.
- **Immune Biomarkers:** Scientists will analyze blood and saliva samples from Artemis II crew members to see how deep space changes the immune system.
- **Artemis II Standard Measures:** Crews, including the Artemis II crew, are supplying a consistent set of health information to a data bank so that future researchers can learn more about astronaut health.



Astronauts' bodies change during spaceflight. NASA works to better understand the risks these changes pose and to develop strategies that keep astronauts healthy and productive.



AVATAR organ-on-a-chip device.



NASA astronaut and Artemis II Commander Reid Wiseman exits the side of a mock-up of the Orion spacecraft during a training exercise.



Dry saliva sampling, as shown here aboard the International Space Station.

THE SCIENCE OF ARTEMIS II CONTINUED

LUNAR SCIENCE

On the journey to the Moon and back, the Orion capsule will fly by the far side of the Moon — the side that always faces away from Earth. During this three-hour period, astronauts will analyze geologic features, such as impact craters and ancient lava flows, documenting their observations and sharing their experience of being far from Earth through photographs and audio recordings. Their observations collected from this unique vantage point will help scientists learn about the geologic history of the Moon, which can tell us about the history of our solar system. Additionally, Artemis II will demonstrate science integration into astronaut training and mission operations, paving the way for future human exploration of planetary surfaces.

CUBESATS

CubeSats from four international space agencies will fly aboard Artemis II inside the Orion stage adapter, a ring-like structure that connects the Orion spacecraft to the upper stage of the SLS (Space Launch System) rocket. Compact in size but large in potential, these four CubeSats contain technology demonstrations, or scientific experiments, that could enhance understanding of the space environment. They will deploy from the adapter into high Earth orbit, where they will conduct an orbital maneuver to reach their desired orbit.

- **ATENEA:** Argentina's Comisión Nacional de Actividades Espaciales's CubeSat will collect data on radiation doses across various shielding methods, measure the radiation spectrum around Earth, collect GPS data to help optimize future mission design, and validate a long-range communications link.
- **K-Rad Cube:** The Korea AeroSpace Administration will use a dosimeter made of material designed to mimic human tissue to measure space radiation and assess biological effects at various altitudes across the Van Allen Belts.
- **Space Weather CubeSat-1:** The Saudi Space Agency's CubeSat will measure aspects of space weather, including radiation, solar X-rays, solar energetic particles, and magnetic fields at a range of distances from Earth.
- **TACHELES:** The German Space Agency DLR will collect measurements on the effects of the space environment on electrical components to inform technologies for lunar vehicles.

While the CubeSats will detach from the rocket to study the environment around Earth, inside Orion, the crew will continue on their journey around the Moon and back.

WHAT WE CAN LEARN FROM THE MOON

Artemis will enable us to address high-priority science questions, focusing on those that are best accomplished by human explorers on and around the Moon. Using the unique attributes of the lunar environment and aided by surface and orbiting robotic systems, human exploration of the Moon will advance our understanding of how biology responds to the environments of the Moon and deep space; support safe, productive human space missions; and reduce risks for future exploration.

NASA has its sights set on the lunar South Pole area for the Artemis era of human lunar surface exploration. Extreme temperature fluctuations and contrasting lighting conditions make it a challenging location for Earthlings to land, live, and work, but the region's unique characteristics hold promise for unprecedented deep space scientific discoveries that could help us learn about our place in the universe and venture farther into the solar system.



Artemis II crew members Victor Glover (left) and Christina Koch, participate in crew lunar observations training in the Orion mock-up at NASA's Johnson Space Center in Houston.



NASA astronaut and Artemis II Mission Specialist Christina Koch examines the Orion stage adapter.



"Exploring the Moon's South Pole" video.

ARTEMIS PROGRAMS: FACT SHEETS AND INFOGRAPHICS

FACT SHEETS

ARTEMIS II CREWED TEST FLIGHT



EXPLORATION GROUND SYSTEMS



SPACE LAUNCH SYSTEM



ORION SPACECRAFT



INFOGRAPHICS



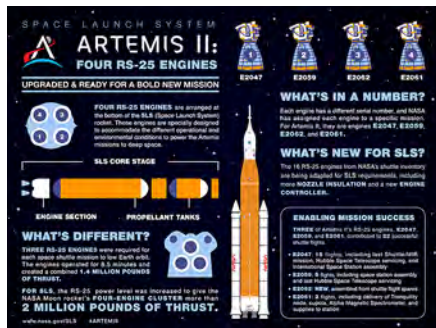
ROCKET PROPELLANT LOADING



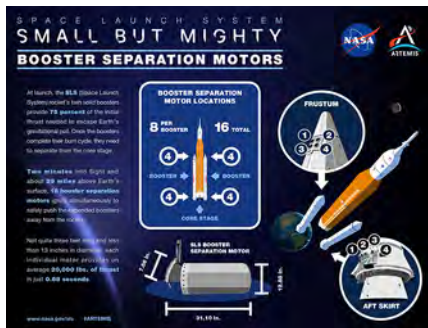
EMERGENCY EGRESS SYSTEM



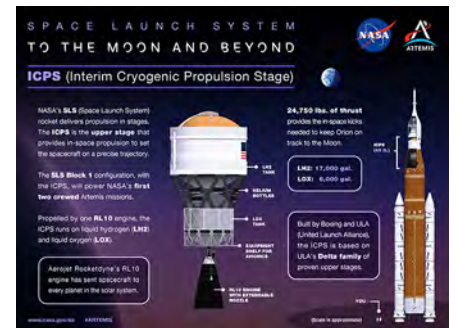
SPACECRAFT PROPELLANT LOADING



RS-25 ENGINES



BOOSTER SEPARATION MOTORS



TO THE MOON AND BEYOND



DESIGNED FOR DEEP SPACE



SPACECRAFT TESTING



ORION BY THE NUMBERS

BE A PART OF THE ARTEMIS II MISSION

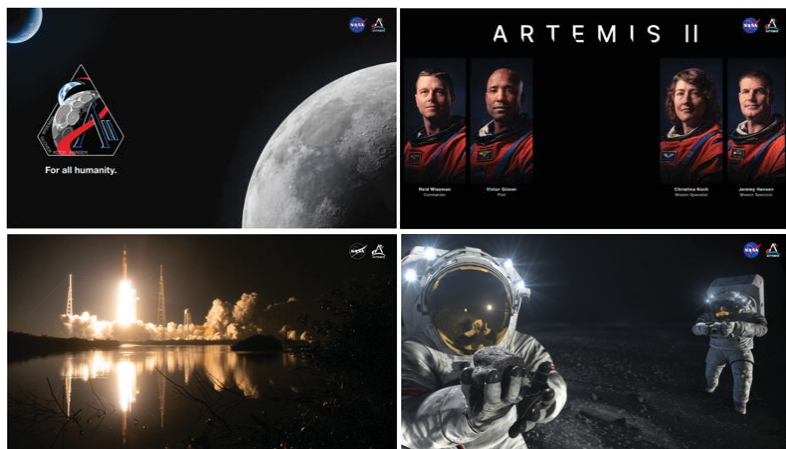
ARTEMIS II BOARDING PASS

Submit your name and a pin code to receive a boarding pass to the Artemis II mission! Your name will be included on an SD card that will fly inside Orion during Artemis II. You can download and save the boarding pass as a memento.



ARTEMIS MEETING VIRTUAL BACKGROUNDS

Scroll through to download your next virtual background for work, school, or just for fun, and learn about all things Artemis as the agency and its partners cross off milestones leading up to Artemis II and missions beyond.



The Artemis II rocket fully stacked and standing tall inside the Vehicle Assembly Building (VAB) at Kennedy Space Center (KSC). Ground teams hoisted the Orion spacecraft, named "Integrity", atop the SLS (Space Launch System) rocket, completing the assembly to its full height of 322 feet (98 meters).

EXHIBIT AND GRAPHIC DISPLAY RESOURCES



ARTEMIS GALLERIES AND IMAGES ON THE WEB

[NASA ARTEMIS IMAGE GALLERY](#)

[ARTEMIS II CREW](#)

[EXPLORATION GROUND SYSTEMS](#)

[SLS \(SPACE LAUNCH SYSTEM\)](#)

[ORION SPACECRAFT](#)

[EXTRAVEHICULAR ACTIVITY AND HUMAN SURFACE MOBILITY](#)

NASA MULTIMEDIA COLLECTIONS

[NASA IMAGE, VIDEO, AND AUDIO LIBRARY](#)

ARTEMIS II WATCH PARTY GRAPHICS

Use social media graphics and printable posters to promote your watch party. You can add your company name and date of the party to the poster before printing!



POSTER 24x36



SOCIAL MEDIA 1920x1080



SOCIAL MEDIA 1080x1920



SOCIAL MEDIA 1080x1350

ARTEMIS II MISSION CREW PATCH



The Artemis II mission patch designates the mission as “All,” signifying not only the second major flight of the Artemis campaign, but also an endeavor of discovery that seeks to explore for all and by all.

ARTEMIS II BANNERS

Invite audiences to send their best wishes to the Artemis II team by signing an Artemis banner. Organizations may print their own signage, which can be modified to add the institution's name.



ARTEMIS II POSTERS



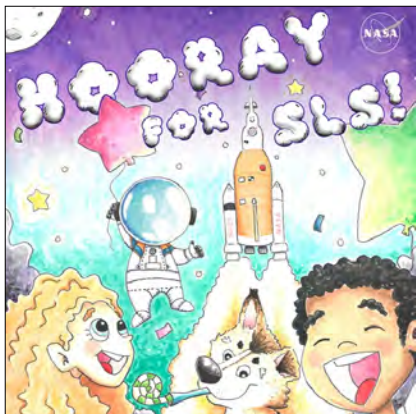
LIFE-SIZE ARTEMIS SPACESUIT



For NASA's Artemis III mission, astronauts will wear the AxEMU, or Axiom Extravehicular Mobility Unit, when they walk on the surface of the Moon. The next-generation spacesuit is being built by Axiom Space. This life size (6 feet, 5 inches by 2 feet, 8 inches) spacesuit poster file is available to download as JPG, PSD, and PDF files.

BOOKS AND NOVELS

BOOKS



'HOORAY FOR SLS'
READ ALOUD



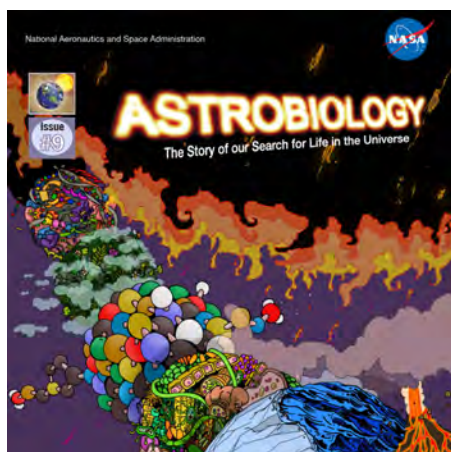
'OUR FRIEND ORION'
READ ALOUD



'THERE AND BACK WITH EGS'
READ ALOUD

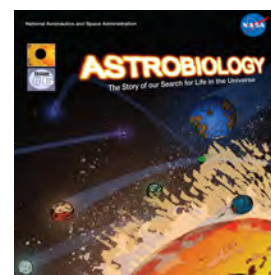
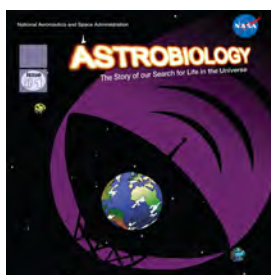
This series of children's books introduces young explorers to the unique elements needed for the Artemis missions to get to deep space and the Moon. The SLS (Space Launch System) mega rocket is designed to launch astronauts and heavy payloads from Earth, sailing across a cosmic sea to the Moon and beyond. Working together, the mighty SLS rocket and dependable Orion spacecraft will carry a crew of astronauts to deep space destinations. Once in space, Orion is designed to sustain the crew inside during space travel and provide safe re-entry for their return home. NASA's Exploration Ground Systems, or EGS, is the team that gets the rocket and spacecraft ready for launch, sends them to the Moon, and helps bring them home again. To access the read-aloud versions, just click on the read aloud link under the book title!

NOVELS



ASTROBIOLOGY: THE GRAPHIC HISTORY SERIES

This series of downloadable graphic novels tells the story of NASA's search for habitability and signs of life in our solar system and how to become an astrobiologist. Content is available in English, Spanish, and other languages.



INSPIRATIONAL AND EDUCATIONAL VIDEOS



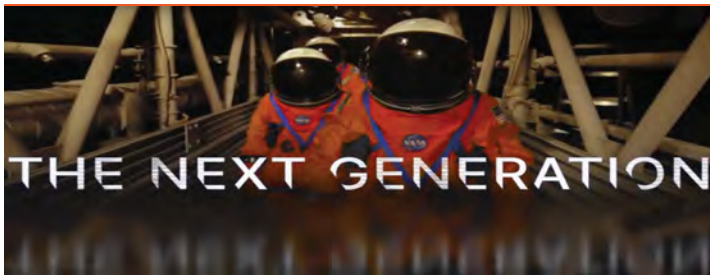
ARTEMIS I LAUNCH

"NASA's Artemis I Moon Mission: Launch to Splashdown Highlights"



ARTEMIS II: MEET THE ASTRONAUTS WHO WILL FLY AROUND THE MOON

Meet the four astronauts selected for NASA's Artemis II mission: commander Reid Wiseman, pilot Victor Glover, and mission specialist Christina Koch from NASA, and mission specialist Jeremy Hansen from the Canadian Space Agency.



'FUEL' AND FIRE FEATURING METALLICA

What do Metallica and NASA's Artemis missions to the Moon have in common? Both love 'Fuel' and fire. See footage of the Artemis I launch scored by Metallica's 'Fuel.'



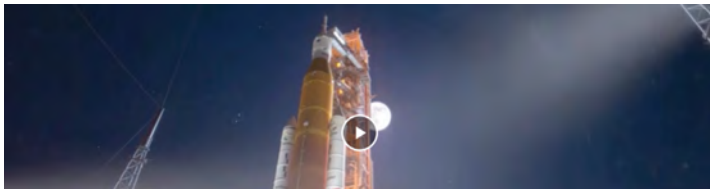
ARTEMIS II MISSION OVERVIEW ANIMATION

Experience the first crewed lunar Artemis mission, from rollout to recovery; of the 10-day test flight of Orion and a range of deep space exploration capabilities with crew, practicing operations essential to the success of future missions.



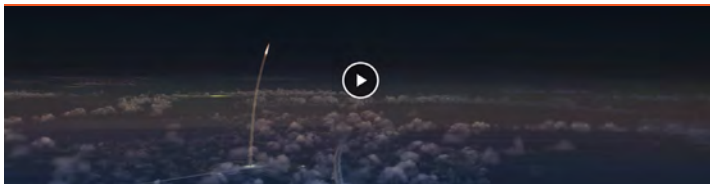
ARTEMIS II MISSION ANIMATION

The astronauts launch from NASA Kennedy Space Center's Launch Pad 39B atop the SLS rocket. Once out of our atmosphere, these star sailors will pilot Orion and check the spacecraft's systems near Earth before they head around the Moon and back to Earth, reentering our atmosphere at 30 times the speed of sound, before gently splashing down in the Pacific Ocean.



ARTEMIS II MISSION ANIMATION 90-SECOND TEASER

The approximately 10-day Artemis II flight test.



ARTEMIS II MISSION ANIMATION 30-SECOND TRAILER

Take a sneak peek at the approximately 10-day Artemis II flight test.

INSPIRATIONAL AND EDUCATIONAL VIDEOS



HOW TO FLY ORION

NASA's Orion spacecraft is built to fly autonomously — and, on the Artemis I mission, flew 25.5 days uncrewed around the Moon. On Orion's next flight to the Moon, Artemis II, astronauts will be aboard, and the crew will pilot the spacecraft for the first time.



SIMULATED ARTEMIS II LUNAR FLYBY

This visualization follows a possible trajectory for the Orion spacecraft during the Artemis II mission, showing what astronauts might see out the window as they approach the Moon and fly around its far side.



THE SLS BOOSTERS: TWO MINUTES OF PURE AWESOME

Towering at 17 stories tall and flanking either side of NASA's mega Moon rocket with the iconic NASA "worm" logo, the two solid rocket boosters for NASA's SLS (Space Launch System) rocket operate in parallel with the rocket's four RS-25 engines to send the Artemis missions to the Moon.



THE SLS RS-25 ENGINE: EIGHT MINUTES OF PURE POWER

When NASA's SLS rocket roars to life on the launch pad, NASA's Artemis astronauts inside the Orion spacecraft will feel the power of the rocket's four RS-25 engines for eight minutes. The four RS-25 engines on SLS are some of the most efficient engines ever built.



THE SLS PLAYLIST ON YOUTUBE

SLS development is underway across the nation. Watch the progress of the biggest, most capable rocket ever to be built!



ARTEMIS II PLAYLIST

Watch a series of videos to learn more about Artemis, the crew, science and technology, geology, and much more!

INSPIRATIONAL AND EDUCATIONAL VIDEOS



ARTEMIS SUCCESS AND PREPARATION

The story of Artemis — a prelude to what comes next.

[FULL 12-MINUTE VIDEO](#) | [5-MINUTE VIDEO](#) | [2-MINUTE VIDEO](#)



ARTEMIS SCIENCE: EXPLORING THE MOON

The Moon is our nearest celestial neighbor, orbiting Earth at less than a quarter of a million miles on average. Artemis III will target landing sites near the lunar South Pole.



AVATARS FOR ASTRONAUT HEALTH ARE HEADING TO SPACE

NASA's AVATAR experiment is flying aboard Artemis II to study how deep space affects human health. Using innovative tissue chips containing astronaut cells, researchers will examine how radiation and microgravity impact human tissue.



WHAT ARE THE DANGERS OF GOING TO SPACE? WE ASKED A NASA EXPERT

Space can be a rough place for humans. In this short video, Biological and Physical Sciences Division Director Lisa Carnell explains what it takes to survive and thrive in space.



LIFE IN SPACE

- How do Astronauts Exercise in Space?
- How do Astronauts Get Fresh Fruits and Veggies in Space?
- How do Astronauts Practice Self-Care in Space?
- How do Astronauts Drink Coffee in Space?



NERDY WORDS

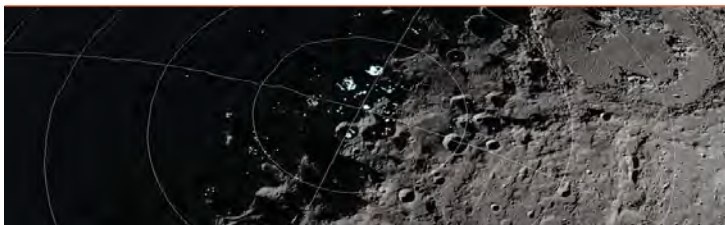
Rocket engineering may seem complex, but in "Nerdy Words," NASA SLS (Space Launch System) team members break down key terms in a fun way!

INSPIRATIONAL AND EDUCATIONAL VIDEOS



NASA EXTRACTS OXYGEN FROM LUNAR SOIL SIMULANT

Scientists explain how they are working on extracting oxygen from surface materials on the Moon, a capability that will aid upcoming human exploration.



HOW NASA UNLOCKS THE MOON'S MYSTERIES

Learn more about how the detailed surface images from NASA's Lunar Reconnaissance Orbiter (LRO) have informed our understanding of the Moon's craters and helped identify water ice at its South Pole.



EARTH AND THE SUN FROM THE MOON'S SOUTH POLE

This NASA Scientific Visualization Studio video projects how you would see the Earth and Sun from the Moon's South Pole.



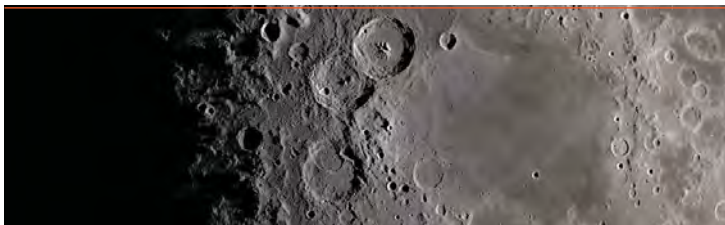
EVOLUTION OF THE MOON

Data from NASA's LRO provides insight into how the Moon was created and formed over time.



MOON ESSENTIALS: TURNTABLE

A looping 360-degree animation of the Moon rotating based on data from NASA's LRO spacecraft.



MOONLIGHT (CLAIR DE LUNE)

An evolving montage of images from NASA's LRO set to Claude Debussy's "Clair de Lune."

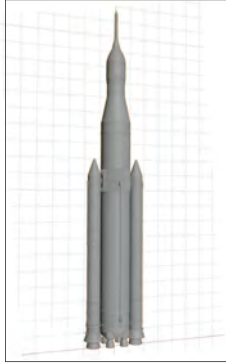
3D RESOURCES

3D RESOURCES

For additional 3D resources related to the International Space Station, Mars rovers, satellites, and much more, [CLICK HERE!](#)

SLS (SPACE LAUNCH SYSTEM)

Combining power and capability, NASA's SLS rocket is part of NASA's backbone for deep space exploration and Artemis. SLS is the only rocket that can send Orion, astronauts, and cargo directly to the Moon in a single launch.



CRAWLER-TRANSPORTER

A pair of behemoth machines called crawler-transporters have carried the load of taking rockets and spacecraft to the launch pad for more than 50 years at NASA's Kennedy Space Center in Florida.



ASTRONAUT

A fully equipped spacesuit is really a one-person spacecraft. The spacesuit protects the astronaut from the dangers of being outside in space.



ADVANCED CREW ESCAPE SUIT (ACES)

ACES is a full pressure vessel providing an atmosphere of protection for the ascent and entry portions of flight.



VEHICLE ASSEMBLY BUILDING (VAB)

The VAB at NASA's Kennedy Space Center, where rockets are assembled, is one of the largest buildings in the world.



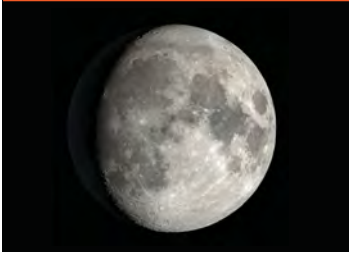
HABITAT DEMONSTRATION UNIT

The Habitat Demonstration Unit is a one story, four-port prototype deep space habitat used to develop concepts for sustainable living quarters, workspaces, and laboratories for next-generation space missions.



INTERACTIVES AND VIRTUAL REALITY

MOON INTERACTIVES



MOON PHASE AND LIBRATION, 2025

Enter any date and time from the past, up to the end of 2025, to view the Moon's phase and position at that moment and download a high-resolution image. The page also offers downloadable visualizations of Moon phases for 2025. Moon phases for 2026 are coming soon!



MOON TREK

View imagery and data from the Moon's surface, analyze elevation, calculate Sun angles, and search for data from a myriad of Moon missions. You can also "fly" to specific locations and scale them for relative size, then "spin" 3D maps of the lunar surface.



EYES ON THE MOON

Track Moon-orbiting spacecraft in real time with this online application, which also allows you to follow the rest of NASA's solar system-exploring missions.



ASTROMATERIALS 3D

Examine rocks and Moon surface materials brought back to Earth by the Apollo missions via this virtual, 3D library of astromaterials.

VIRTUAL REALITY



NASA SLS VIRTUAL REALITY EXPERIENCE

Experience the excitement of standing on the launch pad beneath NASA's mega rocket, the SLS, and see the breathtaking visual of the rocket bursting through clouds.



NASA (@nasa) Snapchat Stories, Spotlight, and Lenses

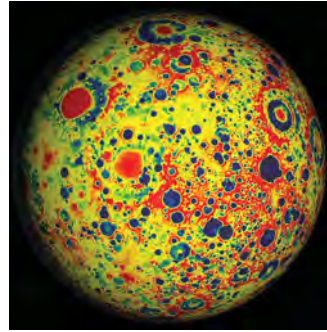
Explore the universe and discover our home planet with official NASA snaps and use custom Snapchat filters.

DOWNLOADABLE POSTERS



TYCHO CRATER

Downloadable image of one of the Moon's most prominent craters, with information about its scientific importance.



GRAVITY MAP OF THE MOON

A gravity map of the Moon produced by NASA's Gravity Recovery and Interior Laboratory (GRAIL) mission, which flew two spacecraft that mapped variations in the lunar gravity field.



MOON PHASES

A downloadable, real-imagery chart showing the different phases of the Moon cycle.



EARTH SOIL VS. LUNAR REGOLITH

An infographic highlighting the differences between the Earth's soil and the Moon's regolith, with information on the scientific importance of studying each.



GROWING PLANTS IN SPACE

An infographic showing challenges of growing plants in space versus on Earth.



HUBBLE SHOOTS THE MOON

A downloadable image of the Moon captured by the Hubble Space Telescope.



SATURN AND ITS MOONS

A stunning image of Saturn and three of its moons captured by the James Webb Space Telescope.



MOONS IN OUR SOLAR SYSTEM

A collection of downloadable posters of different moons in our solar system.



MOON: FOR THE BENEFIT OF HUMANITY

An inspirational illustration of an Artemis astronaut on the lunar surface.



SOLAR SYSTEM AND BEYOND POSTERS

A series of NASA posters showcasing the beauty of our solar system and beyond. The backside of the posters provide additional context and orbit diagrams for a deeper dive into our galactic neighborhood.

COLLECTOR AND TRADING CARDS

COLLECTOR CARDS



ARTEMIS COLLECTOR CARDS

Collector cards — send them to your friends for fun!

TRADING CARDS



SOLAR SYSTEM TRADING CARDS

This solar system set includes 15 trading cards representing our solar system and beyond. Cards are 3 and 5/8 inches tall and 2 and 5/8 inches wide. A template for a foldable pouch is included.

STEM ACTIVITIES AND OUTREACH RESOURCES



FLOOR DEMONSTRATIONS

NASA STEM ACTIVITY IMPACT CRATERS

BACKGROUND

Over 100,000 craters of various sizes are scattered across the Moon's surface. The craters are formed by the impact of meteoroids, asteroids, and comets. The craters are the most prominent features on the Moon's surface. The craters are the most prominent features on the Moon's surface. The craters are the most prominent features on the Moon's surface.



CHALLENGE

For this activity, you will create your own impact craters. You will use a variety of materials to create craters of different sizes and shapes. You will then measure the craters and compare them to the craters on the Moon.

MATERIALS

Materials for this activity include: a large, flat surface (like a beach or a sandbox), a variety of materials (like rocks, marbles, and coins), a measuring tape, and a ruler. You will also need a notebook and a pencil to record your observations.

LUNAR SURFACE MATERIALS
The lunar surface is covered in a layer of fine, dark, powdery material called regolith. This material is made up of small rocks and dust. The regolith is the result of billions of years of impacts. The regolith is the result of billions of years of impacts.

IMPACT CRATERS

Create your own impact craters! When astronauts visit the Moon on future Artemis missions, they will be able to study craters that may contain water and ice. Testing and studying these craters may help NASA identify areas on the Moon that are rich in water and other resources to determine how to best use those materials while on the lunar surface.

HOW FAR AWAY IS THE MOON?

To see for yourself how far apart Earth and the Moon are, try this activity!

TABLE ACTIVITIES

Simple Rocket Science

SUBJECT
Science

GRADE LEVELS
K-2

TIME REQUIRED
30-60 mins



Overview

Students perform a simple science experiment to learn how a rocket works and demonstrate Newton's third law of motion. Students will predict the motion of a rocket, perform an experiment to verify and repeat the experiment to validate the results.

SIMPLE ROCKET SCIENCE

Students will perform a simple science experiment to learn how a rocket works and demonstrate Newton's third law of motion. Students will predict the motion of a rocket, perform an experiment to verify, and repeat the experiment to validate the results.

Simple Rocket Science

SUBJECT
Math

GRADE LEVELS
K-2

TIME REQUIRED
30-60 mins



Overview

Students will determine whether the amount of air in a balloon changes the distance it will travel on a fishing line. They will collect data from multiple tests and then create a graph to visualize the variation.

SIMPLE ROCKET SCIENCE CONTINUED

Students will determine whether the amount of air in a balloon changes the distance it will travel on a fishing line. They will collect data from multiple tests and then create a graph to visualize the variation.

Engineering is Out of This World!

ENGINEERING IS OUT OF THIS WORLD!

Explore the world of engineers — acoustical, aerospace, electrical, materials, and mechanical — and learn how they are helping to build the SLS (Space Launch System).



LAUNCH INTO MATH

With these exercises, students will practice some common core standards of math and discover how mathematicians and engineers are working hard to make sure the journey to the Moon is safe.

ACTIVITIES



BE AN ARTEMIS ASTRONAUT

Help protect our astronauts by designing a spacesuit with colored pencils, crayons, and construction paper. Each astronaut and his/her spacesuit will be as unique and creative as you are!



LIGHT BUT STRONG

Students will design and build a mobile launcher platform that is light enough to be moved to the launch pad, but strong enough to hold the weight of the rocket.



BUILD AND LAUNCH AN SLS (SPACE LAUNCH SYSTEM) STRAW ROCKET

Can you launch a rocket into orbit? Students can test their skills by making a simple rocket using the SLS pattern, tape, and a straw. Then, learn how much air is needed to launch the rocket to different altitudes.



BUILD YOUR OWN SLS

Students will build their own SLS using poster paper, copier paper, and everyday school supplies. Students can then use markers and/or poster paint to make it their own design.



DESIGN, BUILD, AND TEST AN ORION SPACECRAFT

Students will decorate a white paper cup with paint, markers, and glitter; cut out windows; and even install a heat shield on the bottom of their capsule. Then they can test their spacecraft!



BUILD AN ORION DESKTOP MODEL

Build your own Orion model and join the Artemis II crew on their journey to explore around the Moon.



ARTEMIS GENERATION SPACESUITS

Students will research previous generations of NASA spacesuits and then develop their own spacesuit prototype.



SENSOR SOLUTIONS

Students will imagine innovative solutions to real-world problems facing their local communities and demonstrate how those problems could be solved by designing a sensor.

A large, detailed image of the Moon in a dark sky, showing craters and lunar maria. The Moon is a bright, spherical object with a textured surface, featuring numerous craters of varying sizes and darker, flat areas known as maria. The background is a deep, dark blue to black gradient, representing the night sky.

Download this chart and spend the next month having fun getting to know the Moon. Set aside some time each day to look at the Moon. Write down the date and time you make each observation, and draw what you see. Check out the **“What’s Up”** video series monthly for skywatching tips and the **Daily Moon Guide!**

NASA Space

Space Place

Explore Earth and Space!








Earth

Sun

Solar System

Universe

Science and Tech

Educators



Skylighting Tips!

What's up in the night sky this month? Check out a summary and skylighting tips from NASA!



Why Does the Sun Burn Us?



What is a Galaxy?



Asteroid or Meteor?



EXPLORE MARS

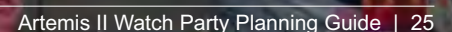
Play Explore Mars!

Cruise around on the surface of another planet!
Click here to play!



All About the Sun!

Visit NASA's Space Place for activities, videos, games, and more to help younger learners understand our solar system. Content is also available in Spanish.





ACTIVITIES



JOIN THE ARTEMIS MISSION TO THE MOON

Make, launch, compete, and learn. Find your favorite way to be part of NASA's Artemis missions.



NASA EXPLORATION EXPERIENCE GUIDE

Choose between two hands-on options: a 45-minute engagement activity testing a spacesuit glove; or a three-hour experience to create tools to collect Moon rock samples.



ARTEMIS CAMP EXPERIENCE

This set of hands-on activities tells the story of NASA's Artemis campaign. Intended for use in K-12 informal education settings such as after-school programs, summer camps, STEM nights, and weekend workshops, this resource is sure to bring the excitement of returning to the Moon to the Artemis Generation of explorers.



CATCHING A WHISPER FROM SPACE

Students will model the mathematics used to communicate with spacecraft. They will use sound waves as an analog for light waves and parabolic transmitters and receivers to represent antennas on spacecraft and on Earth.



HEAVY LIFTING

A Lesson in Engineering



HOW BIG IS IT?

A Lesson in Scale Comparison



HOW FAR WILL IT GO?

A Lesson in Graphing

ACTIVITIES

Students will work in teams to design and build a crane that will lift and stack increasingly heavy pieces. The goal is to build the tallest possible tower without collapsing. Cranes can be maneuvered from the table and must have a base that allows the crane to function without needing to be held.

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Build Launch Rocket: Build It

NASA STEM – Hands-on Activity

Background

As NASA engineers in the Vehicle Assembly Building you expect to lift and transport heavy rockets. As a project manager you expect to coordinate the launch of the rocket. As a scientist you expect to collect data and report on the launch. As a NASA engineer you expect to be involved in the design of the rocket. As a NASA scientist you expect to be involved in the design of the rocket. As a NASA engineer you expect to be involved in the design of the rocket. As a NASA scientist you expect to be involved in the design of the rocket.

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Grade Level:

6-12

Time

45-60 minutes

Materials

1. Launch

2. Rocket

3. Launch

4. Launch

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58

Students become engineers and NASA crawler operators, working in teams to design and build a rubber-band-powered model of NASA's crawler-transporter that can carry the greatest possible mass the farthest distance without failure.

[illegible]

Students will develop and test a procedure to launch a rocket consistently. By studying NASA's launch sequences and protocols, students can gain valuable insights into the meticulous planning, precision, and teamwork required for successful space missions. After doing so, participants will create their very own rocket launch protocol.





Build Launch Recovery: Launch It

NASA STEM – Hands-on Activity

Background

After the crash at the time of the space exploration and technological revolution, NASA's Space Shuttle Program (SSP) became the first governmental space program to be launched. The program was the first to launch the first space shuttle and launched. Today, NASA's shuttle system is the most advanced and most complex. Today, NASA's shuttle system is the most advanced and most complex. Today, NASA's shuttle system is the most advanced and most complex.

Objectives

In this challenge, participants will always and build a procedure to launch a shuttle. The challenge is to build a launch system that can launch a shuttle. The challenge is to build a launch system that can launch a shuttle. The challenge is to build a launch system that can launch a shuttle.

Introduction

- 1. Review participants' knowledge of space exploration and launch systems.
- 2. Review participants' knowledge of the launch system and launch system.
- 3. Challenge participants to design a launch system that can launch a shuttle.
- 4. Challenge participants to design a launch system that can launch a shuttle.

Assessment

- 1. Review participants' knowledge of space exploration and launch systems.
- 2. Review participants' knowledge of the launch system and launch system.
- 3. Challenge participants to design a launch system that can launch a shuttle.
- 4. Challenge participants to design a launch system that can launch a shuttle.



Launch It



Challenge



Materials



Procedure



Assessment



Safety



Launch It

In this activity, students will act as NASA's recovery team to recover a spacecraft that has splashed down in the ocean. Participants will use algorithms to create search patterns to allow the rescue vessels to recover the spacecraft.

Source: NASA.gov and NASA.gov/education

Build Launch Recover; Recover It

NASA STEM - Hands-on Activity

Background

After a successful mission from space and a splashdown out of the water, it's time for recovery. NASA partners with the U.S. Navy and Department of Defense to provide recovery resources and crew assistance for the Space Shuttle. It is important that recovery resources be available to safely rescue crew in the event of an emergency.

Introduction

Students participating will use the NASA's Shuttle Crew to create a simulation that has been updated down to the present. Participants will be able to create a rescue plan for the rescue mission to be able to recover the spacecraft.

Career Connection

- Emergency Technicians** work with geographic information, scientific and engineering data, and use a variety of tools and equipment to collect and analyze data that is used for emergency response.
- Computer technicians** maintain computers and software for the operation of a computer system and use it for emergency systems.
- Emergency Medical Technicians** provide emergency medical care after receiving directly with patients in the rescue mission.

Age

8-12

Time Required

45-60 Minutes

Grade Level

8-12

Subject List

• Ocean Map

• Oceanography

• Science

• Social Studies

• Technology

• History

• Language Arts

• Earth Science

• Life/Physical

• Social Studies

SINASA STEM

Students will work in teams to design and build a model of a lunar lander that will use the thrust of balloons to slow its rate of descent.

[illegible]

Students will be challenged to compare the properties of ice with simulated icy regolith — like the what's found on the Moon's South Pole — and design a robot drill that will drill down into the simulated icy regolith.

[illegible]

In this activity, students will practice problem-solving strategies to construct a set of instructions for minimizing the amount of data lost or damaged during transit.

[illegible]

Students will have the opportunity to design and develop a user interface that makes information available to an astronaut via a heads-up display in their spacesuit helmet.

[illegible]

LEARN TO DRAW ARTEMIS

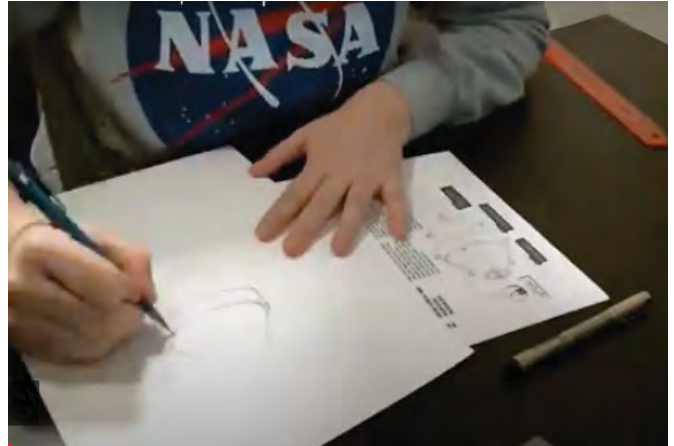
CREATE ARTEMIS ILLUSTRATIONS OF YOUR OWN

Learn to draw a fleet of sophisticated space hardware that will take us on Artemis missions — similar to the way NASA engineers and technicians sketched out early concepts for spacesuits, rockets, spaceships, ground systems, and orbiting platforms that have allowed us to explore other worlds.

1. Download your favorite — download them all! — and learn how to draw NASA's deep space exploration systems that will power us to the Moon and beyond.
2. Color your drawings to bring them to life.
3. Share your creation! Upload onto social media and tag #DrawArtemis and #NASAatHome. If you are posting on Instagram, also tag @NASAArtemis.

Here are some ideas to spark your creativity:

- Draw your face into the helmet of a spacesuit.
- Show the SLS (Space Launch System) launching with fire roaring from its engines.
- Place Orion near the Moon.
- Draw SLS standing on the mobile launcher platform.
- Include NASA and Artemis branding.
- Draw them all and piece together into one exciting space scene.
- Display your creation in a unique and interesting way.



LEARN HOW TO DRAW ARTEMIS



ORION SPACECRAFT



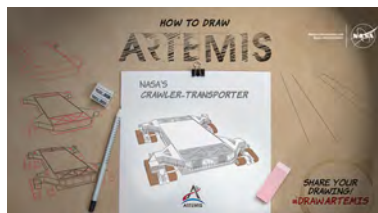
SLS (SPACE LAUNCH SYSTEM)



MOBILE LAUNCHER



ORION SURVIVAL SYSTEM SUIT



CRAWLER-TRANSPORTER



LUNAR TERRAIN VEHICLE



VEHICLE ASSEMBLY BUILDING



DEEP SPACE NETWORK ANTENNA



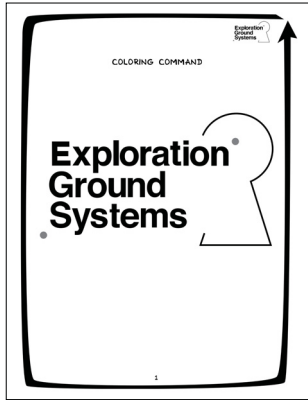
LAUNCH PAD 39B

COLORING ACTIVITY BOOKS AND OTHER FUN PAGES

COLORING FOR FUN — COLORING TO LEARN

Download any — or all — of the coloring books. Use colored pencils, crayons, or markers to color and discover more about Artemis. Print the coloring sheets, bring them to life with color, and display them as artwork on your walls!

COLORING ACTIVITY BOOKS



**EXPLORATION
GROUND SYSTEMS**

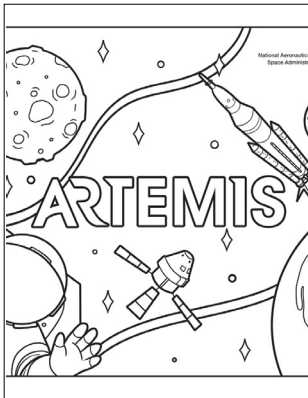


**SLS (SPACE LAUNCH
SYSTEM)**

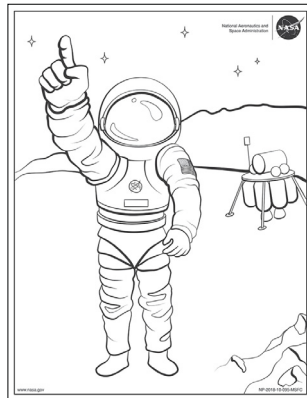


ORION A TO Z

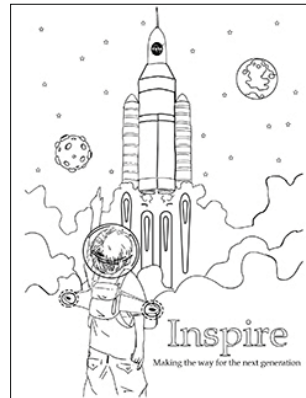
COLORING AND ACTIVITY SHEETS



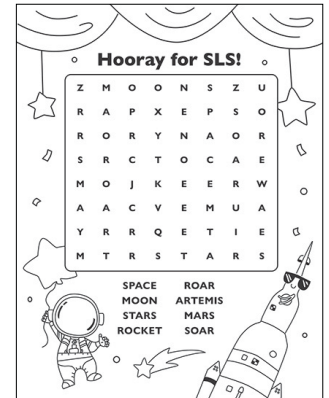
**ARTEMIS
ILLUSTRATION**



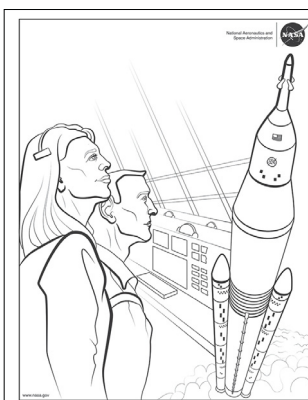
**ASTRONAUT
ON THE MOON**



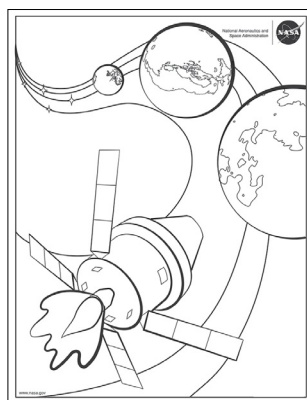
INSPIRE



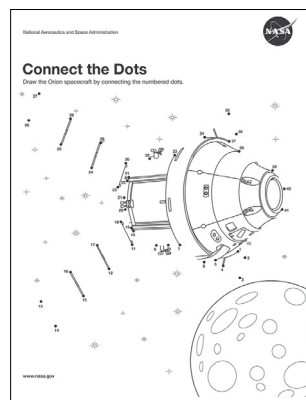
HOORAY FOR SLS



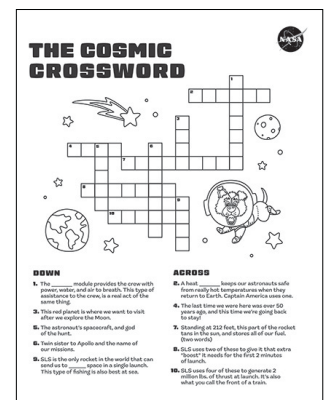
**LAUNCH
CONTROL ROOM**



ORION IN SPACE



**ORION CONNECT
THE DOTS**



**THE COSMIC
CROSSWORD**

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For any questions about the Artemis II Watch Party Planning Guide, contact Vanessa Lloyd (vanessa.c.lloyd@nasa.gov).



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