



# ARTEMIS III

## WATCH PARTY PLANNING GUIDE



# 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](mailto: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.

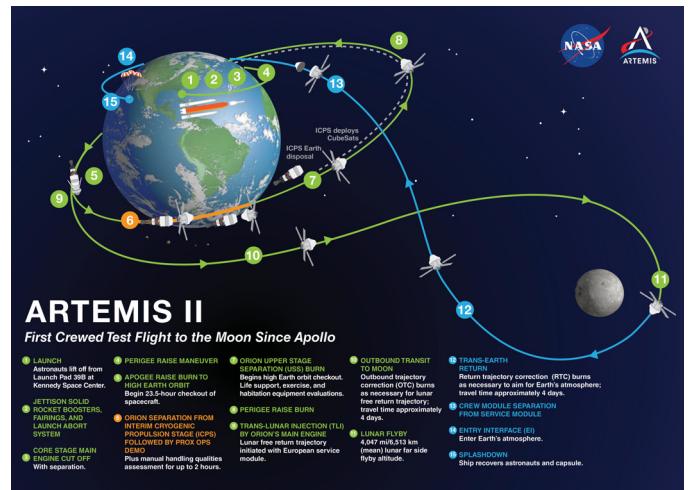
After the burn to enter high Earth orbit, Orion will separate from the upper stage. The expended stage will have one final use before it is disposed through Earth's atmosphere — the crew will use it as a target for a proximity operations demonstration. During the demonstration, mission controllers at 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

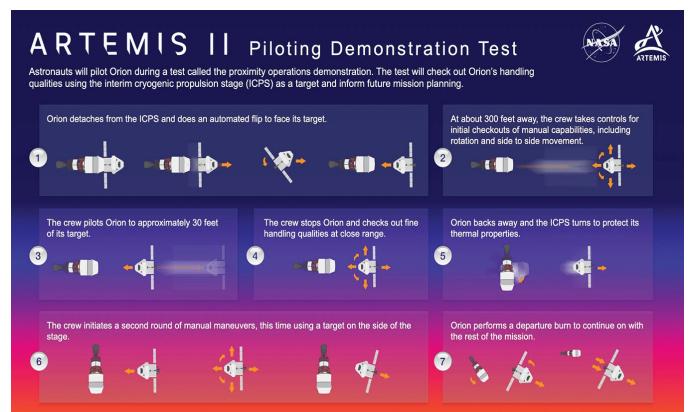
Following the proximity operations demonstration, the crew will turn control of Orion back to mission controllers at Johnson and spend the remainder of the orbit verifying spacecraft system performance in the space environment. They will remove the **Orion Crew Survival System** suit they wear for launch 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

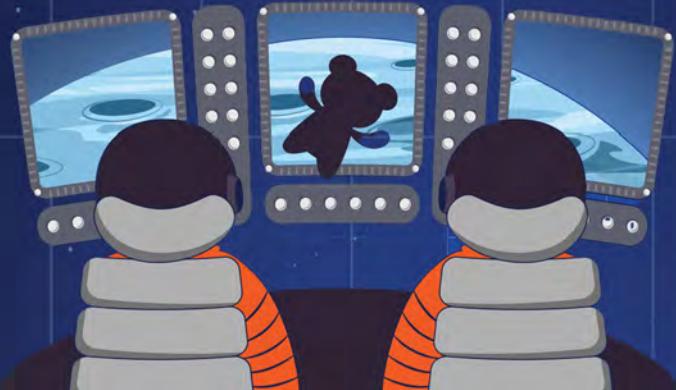
CSA (Canadian Space Agency) astronaut Jeremy Hansen earned his private pilot license and wings at the age of 17, and went on to become a fighter pilot and Colonel in the Canadian Armed Forces. On Artemis II, his first spaceflight, he will become the first Canadian to ever venture to the Moon.



## MEET THE ARTEMIS II ZERO GRAVITY INDICATOR

# MOON MASCOT

Credit:  freelancer



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.

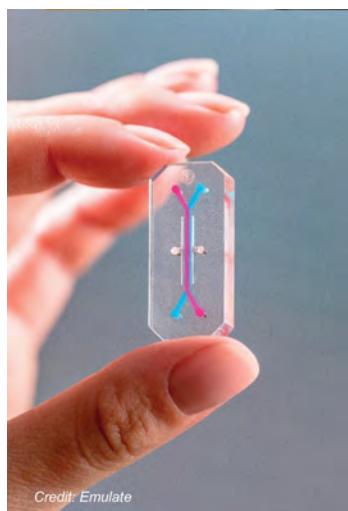
## HUMAN HEALTH AND BIOLOGY

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.
- **ARChEР: 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.  
Credit: Emulate



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.



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.

## 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.

- **ATENA:** 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.



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

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.



"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

Humanity's Next Great Achievement

## EXPLORATION GROUND SYSTEMS

# Rocket Propellant Loading

Ground support crews will load the agency's most powerful rocket, the Space Launch System (SLS), to launch from NASA's Kennedy Space Center.

 More than 700,000 gallons of liquid propellants travel through complex, unshielded systems from the mobile launcher into the heart of the SLS.

 **LIQUID OXYGEN**  
**\$196,000**  
**GALLONS**

 **LIQUID HYDROGEN**  
**\$37,000**  
**GALLONS**

 **Interior Cryogenic  
Propellant Reservoir**  
Provides fast, efficient environmental control system for propellants. Specialized connections to SLS upper stage and propellant stage.

 **Liquid Oxygen**

 **Liquid Hydrogen**

 **Tall Service Mast  
Unloaded**  
Provides fast oxygen and hydrogen tank access to the SLS core stage (post-ignition tank).

 **At T-0 umbilicals automatically**  
release from the SLS and swing back to the mobile launcher.

 **00:00**

 **At T-0 umbilicals automatically**  
release from the SLS and swing back to the mobile launcher.

 **At T-0 umbilicals automatically**  
release from the SLS and swing back to the mobile launcher.

## ROCKET PROPELLANT LOADING



## EMERGENCY EGRESS SYSTEM

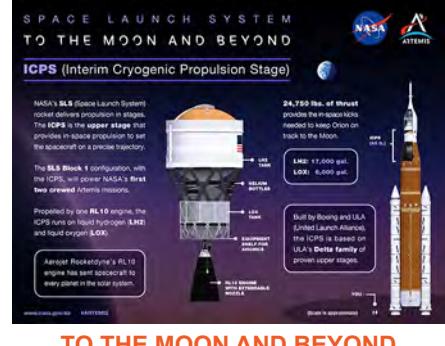


## SPACECRAFT PROPELLANT LOADING

## RS-25 ENGINES



## BOOSTER SEPARATION MOTORS



## TO THE MOON AND BEYOND



# BE A PART OF THE ARTEMIS II MISSION

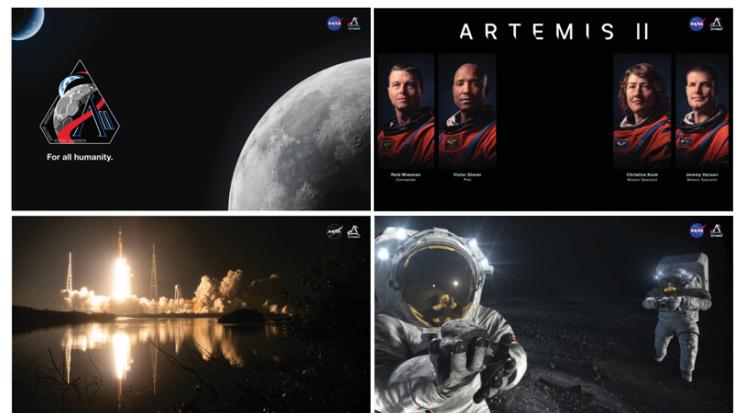
## ARTEMIS II BOARDING PASS

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 twin solid rocket boosters of the SLS (Space Launch System) rocket for Artemis II — the powerhouse that will launch a crew of four around the Moon next year — now feature the America 250 emblem. The design echoes the America 250 Commission's Spirit of Innovation theme, honoring a country that has never stopped pushing the horizon forward.

# 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!



## ARTEMIS II MISSION CREW PATCH



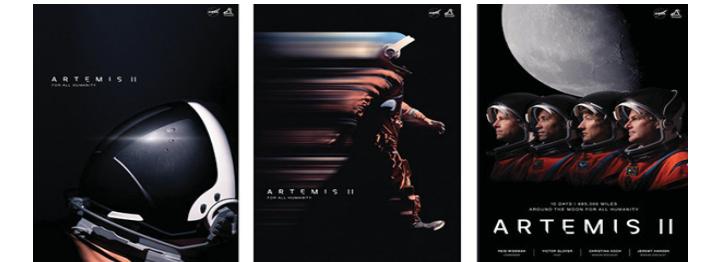
The Artemis II mission patch designates the mission as "All," signifying not only the second major flight of the Artemis campaign, but also an endeavor of discovery that seeks to explore for all and by all. Click [HERE](#) to download the printable pdf file for the emblem.

## ARTEMIS II BANNERS

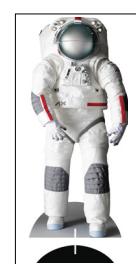
Invite audiences to send their best wishes to the Artemis II team by signing an Artemis banner. Organizations may print their own signage, which can be modified to add the institution's name.



## ARTEMIS II POSTERS



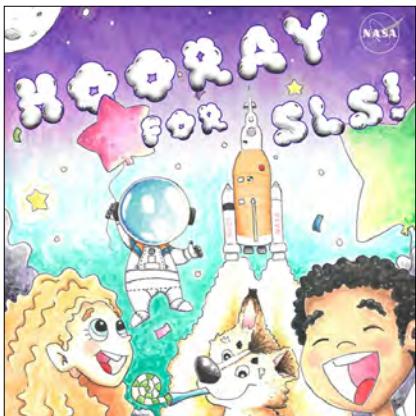
## LIFE-SIZE ARTEMIS SPACESUIT



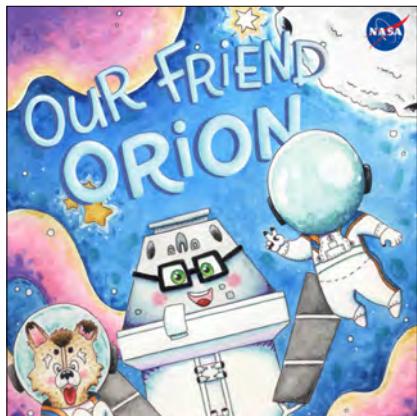
For NASA's Artemis III mission, astronauts will wear the AxEMU, or Axiom Extravehicular Mobility Unit, when they walk on the surface of the Moon. The next-generation spacesuit is being built by Axiom Space. This life size (6 feet, 5 inches by 2 feet, 8 inches) spacesuit poster file is available to download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

# BOOKS AND NOVELS

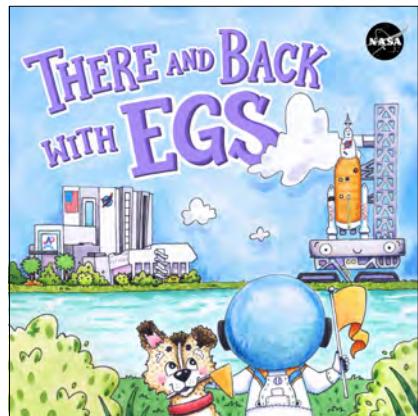
## BOOKS



**'HOORAY FOR SLS'**  
READ ALOUD



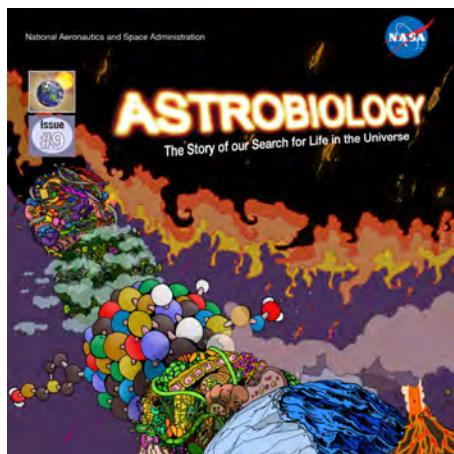
**'OUR FRIEND ORION'**  
READ ALOUD



**'THERE AND BACK WITH EGS'**  
READ ALOUD

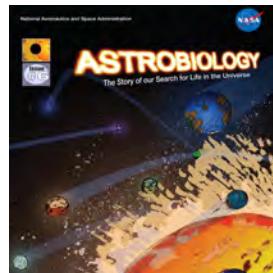
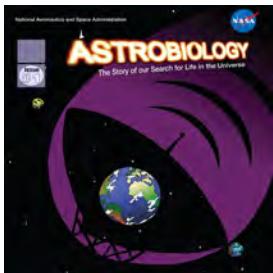
This series of children's books introduces young explorers to the unique elements needed for the Artemis missions to get to deep space and the Moon. The SLS (Space Launch System) mega rocket is designed to launch astronauts and heavy payloads from Earth, sailing across a cosmic sea to the Moon and beyond. 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 PLAYLIST

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



## 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 ANIMATIONS

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.

[FULL 8-MINUTE VIDEO](#) | [90-SECOND TEASER](#) | [30-SECOND TRAILER](#)

# 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 SUCCESS AND PREPARATION

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

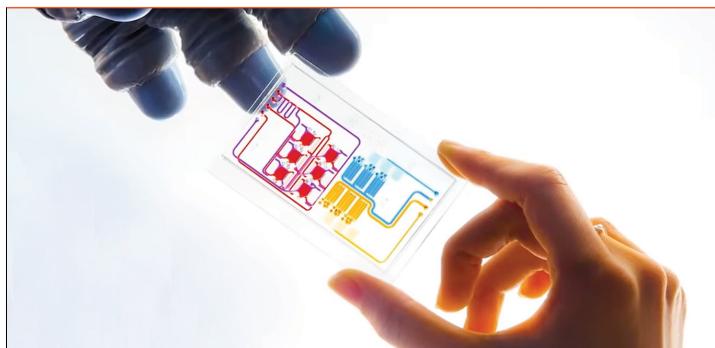
[FULL 12-MINUTE VIDEO](#) | [5-MINUTE VIDEO](#) | [2-MINUTE VIDEO](#)

# INSPIRATIONAL AND EDUCATIONAL VIDEOS



## 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.



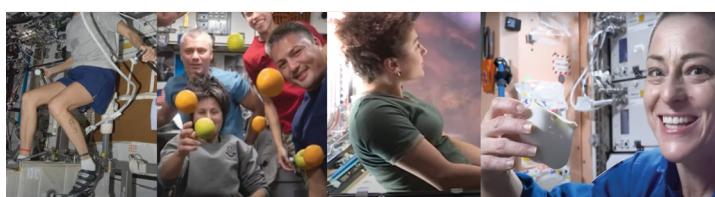
## AVATARS FOR ASTRONAUT HEALTH ARE HEADING TO SPACE

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.



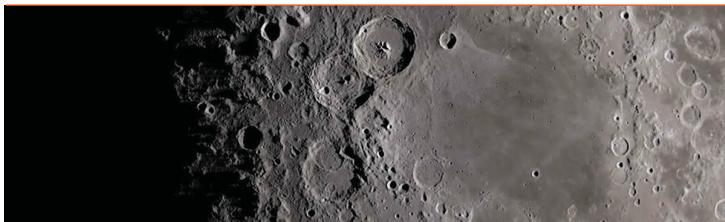
## EVOLUTION OF THE MOON

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."

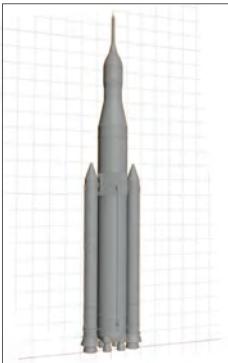
# 3D RESOURCES

## 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 space-suit 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.



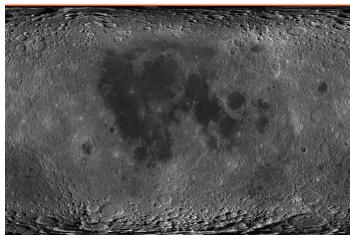
# INTERACTIVES AND VIRTUAL REALITY

## MOON INTERACTIVES



### EARTH'S MOON RESOURCES

Explore this curated collection of resources, including activities that can be done at home, as well as videos, animations, printable graphics, and online interactives. This resource package is suitable for educators, students, and anyone interested in learning more about Earth's Moon!



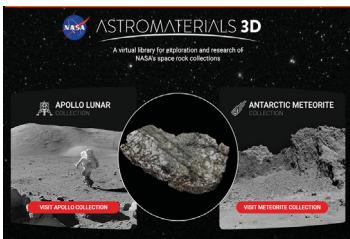
### MOON TREK

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

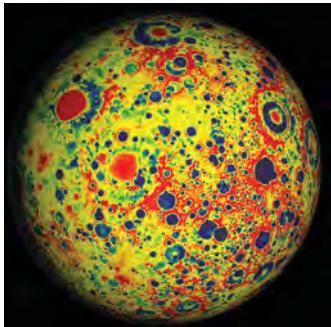
Explore the universe and discover our home planet with official NASA snaps and use custom Snapchat filters.

# 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**

## 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?**

**The Short Answer:**  
The Moon is an average of 238,855 miles away from Earth, which is about 30 Earth's away.

You might be surprised. Often when we can drawings of the Earth and the Moon, they look really close together.

**Oh, hey there!**

**What's up, friend?**

Don't be fooled! They're actually really far apart. The Moon is an average of 238,855 miles (384,400 km) away. How far away is that? That's 30 Earths.

To see for yourself how apart Earth and the moon are, do this:

**Materials:**

- Tennis ball
- Tennis tape

If Earth were the size of a tennis ball, the moon would be the size of a tennis ball. This can give you an idea of how far they are.

**Directions:**

1. Place the tennis ball on the floor. This represents Earth.
2. Extend your arm long and lay it out straight. 2 feet 5 inches away from the tennis ball. Place the tennis ball there. The tennis ball is the Moon.

# HOW FAR AWAY IS THE MOON?

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

## 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.

 **NASA Jet Propulsion Laboratory** | **Education**

**LESSON**

# Simple Rocket Science

 **SUBJECT**  
Math

 **GRADE LEVELS**  
K-2

 **TIME REQUIRED**  
30 - 60 mins



# 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.

National Aeronautics and Space Administration

**Engineering is Out of This World!**

**Acoustical Engineering**

NASA is developing a new rocket called the Space Launch System, or SLS. The SLS will be able to carry astronauts and materials, known as payloads. **Acoustical engineers** are helping to build the SLS.

Sound is a vibration. A vibration is a rapid motion of an object back and forth.

Hold a piece of paper up right in front of your lips. Talk or sing into the paper.

**What do you feel?** \_\_\_\_\_

**What do you think is causing the vibration?** \_\_\_\_\_

**Did you know?** If too much noise, or **acoustical heating**, is caused by air passing over the SLS rocket, the vehicle could be damaged by the vibration!

**NAME:** \_\_\_\_\_



# 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).

A vibrant, space-themed poster for NASA's "Launch Into Math" campaign. On the left, a large orange and white rocket with the text "LAUNCH INTO MATH" on its side is shown launching from a white base, with a trail of yellow and orange fire. To the right of the rocket, the words "LAUNCH INTO MATH" are written in large, bold, white letters with a black outline. The background is a dark blue night sky filled with white stars of various sizes. In the upper right corner, the NASA logo is displayed, featuring the word "NASA" in a circular emblem with a stylized "A" and the word "JOHNSON" below it. In the lower right corner, there is a stylized blue and green Earth. The overall theme is educational and space-oriented.

## LAUNCH INTO MATH

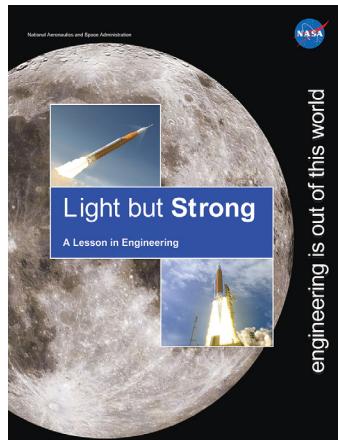
With these exercises, students will practice some common core standards of math and discover how mathematicians and engineers are working hard to make sure the journey to the Moon is safe.

## 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.

## ACTIVITIES



### MOON OBSERVATION JOURNAL

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**!

**Moon Observation Journal**

**DIRECTIONS:** Observe the Moon each day for a month. Write down the date and time you make each observation, and draw what you see. If you cannot see the Moon at all on a day, no matter when you look, indicate this in your journal and also write down why you could not see the Moon.

Name: \_\_\_\_\_

**OBSE**  
**MOON**

[www.moon.nasa.gov/observe](http://www.moon.nasa.gov/observe)



### NASA SPACE PLACE FOR KIDS

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



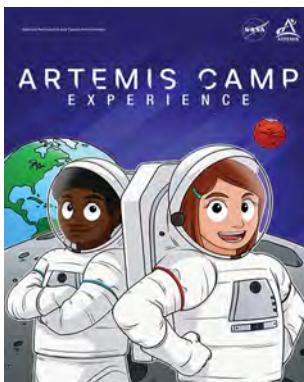
### JOIN THE ARTEMIS MISSION TO THE MOON

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.



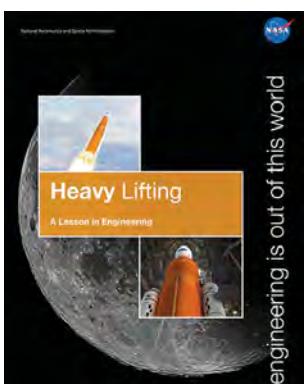
### ARTEMIS CAMP EXPERIENCE

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.



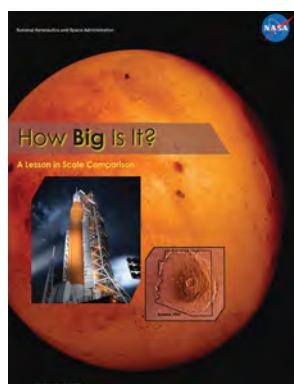
### CATCHING A WHISPER FROM SPACE

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



# Build Launch Recover: Build It

## NASA STEM - Hands-on Activity

### Background

At NASA, engineers in the Vehicle Assembly Building use cranes to lift and move heavy objects. These cranes have been used to lift and move parts of the mobile launcher and the core stage of the Space Launch System. These cranes are able to lift 40 heavy loads without breaking the table.

### Introduction

In this activity, students will work in teams to design and build a crane that will lift and move heavy objects. The goal is to build the crane so that it can move a heavy object from one side of the table to the other and move it back to the center of the table.

### Career Connection

1. **Structural Engineers** focus on designing and analyzing the structures that support the weight of objects, such as the mobile launcher.
2. **Heavy Machinery Operators** are trained in the safe use of heavy machinery, such as the mobile launcher, and receive training to ensure all of the proper and required equipment is used.
3. **Software Engineers** create simulations of objects that are used in the mobile launcher to help plan the best way to move them.

After the activity, have students rate how helpful and fun their team felt.

### Safety

It is important to always follow safety guidelines when working with heavy objects. Check out the following plan to help prevent injuries and avoid moving the objects with students on other planes.

**YINAYA STEM**

## BUILD, LAUNCH, RECOVER: BUILD A CRANE

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.

## BUILD, LAUNCH, RECOVER: BUILD A CRAWLER- TRANSPORTER

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.

## BUILD, LAUNCH, RECOVER: LAUNCH A ROCKET

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, RECOVER: RECOVER A SPACECRAFT

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.

## LANDING HUMANS ON THE MOON

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.

## DIGGING ON THE MOON

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.

## DEEP SPACE COMMUNICATIONS

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.

## SPACESUITS: HEADS-UP DISPLAY

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.

# LEARN TO DRAW ARTEMIS

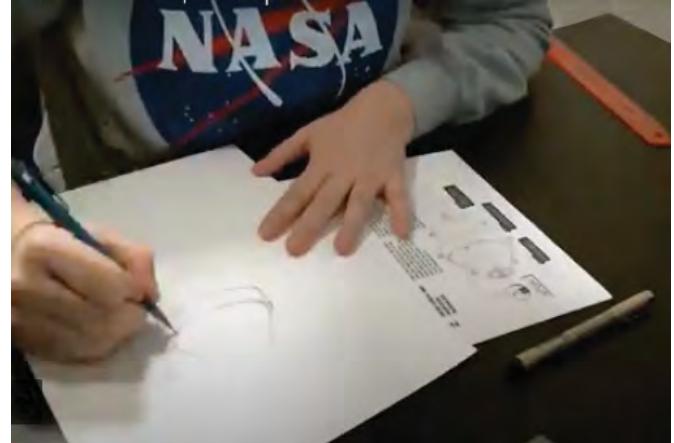
## CREATE ARTEMIS ILLUSTRATIONS OF YOUR OWN

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



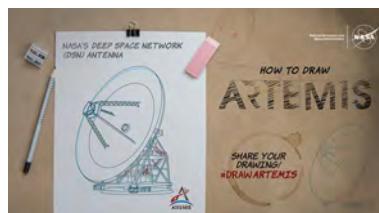
CRAWLER-TRANSPORTER



LUNAR TERRAIN VEHICLE



VEHICLE ASSEMBLY BUILDING



DEEP SPACE NETWORK ANTENNA



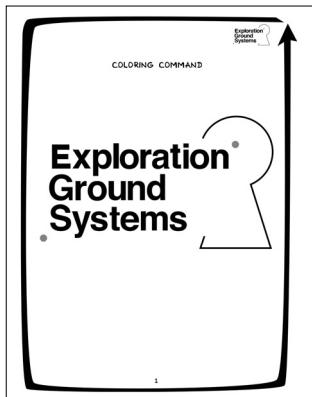
LAUNCH PAD 39B

# 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

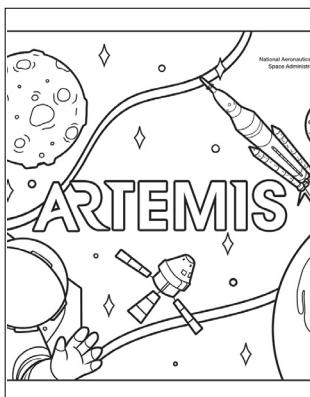


SLS (SPACE LAUNCH SYSTEM)



ORION A TO Z

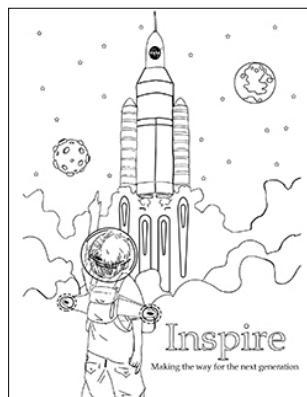
### COLORING AND ACTIVITY SHEETS



ARTEMIS ILLUSTRATION



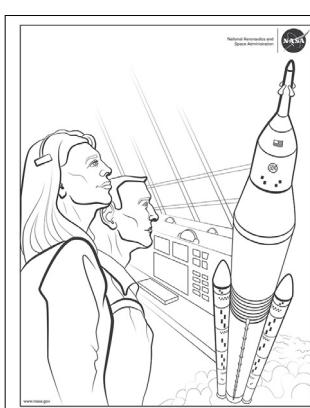
ASTRONAUT ON THE MOON



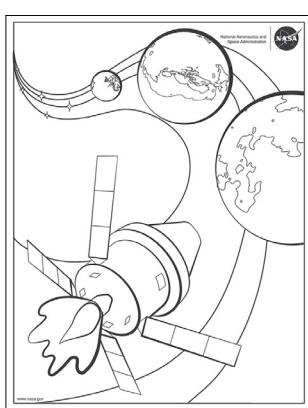
INSPIRE



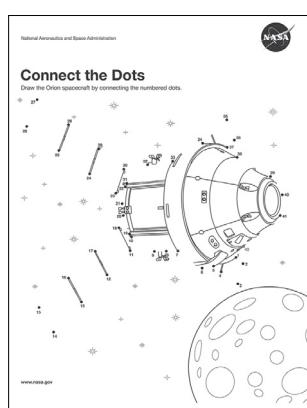
HOORAY FOR SLS



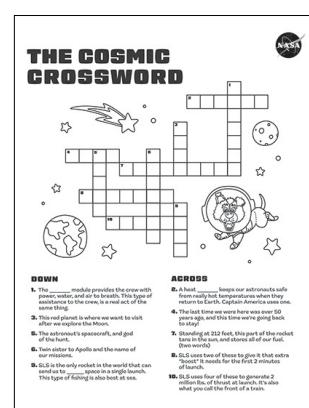
LAUNCH CONTROL ROOM



ORION IN SPACE



ORION CONNECT THE DOTS



THE COSMIC CROSSWORD

# CONNECT WITH NASA

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



## NASA ENGAGES

### REQUEST A SPEAKER

The NASA Engages program is composed of NASA experts who share NASA missions and content at educational, professional, civic, and other public venues. To request a speaker, create a NASA Engages account and submit a request, (preferably six to eight weeks before the event).

## SOCIAL MEDIA

### NASA ARTEMIS ON SOCIAL MEDIA

Follow, share, and be a part of the mission with [@NASA\\_Artemis](https://twitter.com/NASA_Artemis). Be sure to use the hashtag #Artemis!



@NASA\_Artemis

Follow your other favorite NASA social media accounts [HERE!](#)

## PODCASTS

NASA's diverse podcast portfolio lets you experience the thrill of space exploration without ever leaving Earth.

## LOCAL PARTNERS

### NIGHT SKY NETWORK

More than 400 amateur astronomy clubs share their time and telescopes, bringing the science, technology, and inspiration of NASA missions to science museums, observatories, classrooms, and other public locations.

## LOCAL SPEAKERS

### SOLAR SYSTEM AMBASSADORS

More than 1,100 trained volunteers are available to share NASA science in communities across the nation.

## NASA STUDENT CHALLENGES

NASA offers numerous student challenges across various educational levels and disciplines. These challenges encourage students to engage in hands-on projects, design experiments, and develop innovative solutions related to space exploration and technology.

## NASA INTERNSHIPS

At NASA, we explore the extraordinary every day, and our work is more than just a profession — it's a lifelong pursuit and a passion. NASA offers students challenging projects and on-the-job experiences, building confidence, essential technical skills, and career readiness, all essential for the nation's workforce.