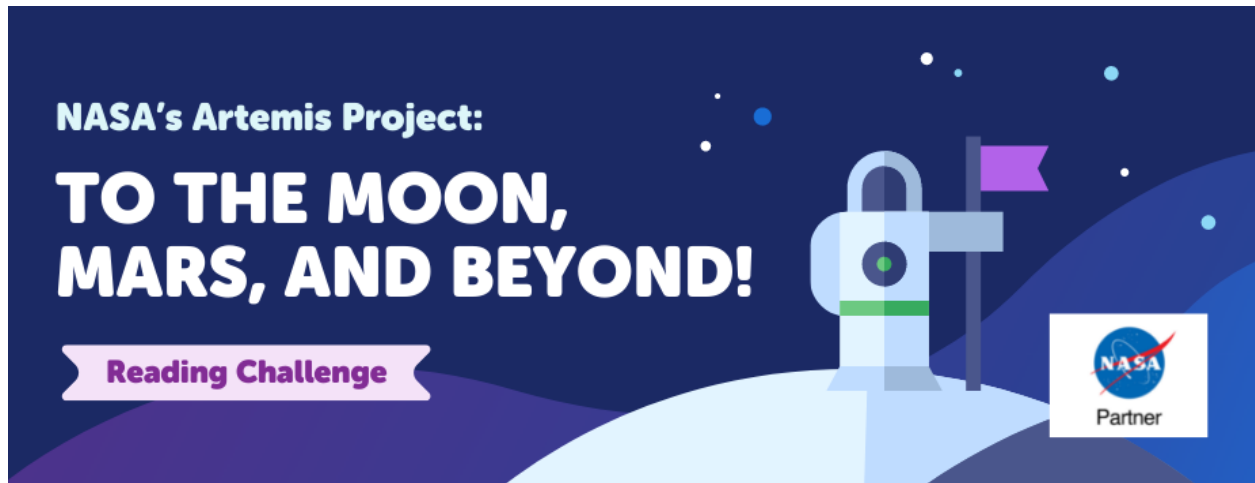


Go From the Moon to Mars and Beyond With the NASA Artemis Project Reading and STEM Activity Challenge!



CHALLENGE DESCRIPTION

NASA is readying the first mission of the [Artemis spaceflight program](#)! In ancient Greek mythology, Artemis was the goddess of the Moon and twin sister to the sun god Apollo. Much like NASA's Apollo program, which took humans to the Moon in the 1960s and 1970s, the Artemis program will take humans back to the Moon and prepare us for traveling to Mars and beyond for the first time.

Learn more about the Artemis program and NASA's plans for a new generation of crewed spaceflight by completing the activity badges in this reading and activity challenge!

CHALLENGE STRUCTURE

- 1 Registration Badge**
- 1 Completion Badge**
- 10 Logging Badges (Minutes)**
- 5 Activity Badges**

ACTIVITY BADGES

Activity Badge Title:

All About Artemis

Badge Description

The Artemis program will take humans, including the first woman and the first person of color, to the Moon for the first time in half a century. Learn more about the Artemis program and earn this badge by completing three of the eight activities below!

Activities

- Just what is the Artemis program? Learn about what it will take to put astronauts back on the Moon and why that is such an important mission by reading one of these NASA articles describing the Artemis program's planned missions.
 - [Elementary school readers: "What Is the Artemis Program?"](#)
 - [Middle school readers: "What Is the Artemis Program?"](#)
- Putting humans back on the Moon through the Artemis program requires close collaboration between astronauts and engineers. Learn more about the goals of the Artemis program with this #AskNASA video featuring astronaut Dr. Serena M. Auñón-Chancellor!
 - ["#AskNASA: What is Artemis?"](#)
- NASA's Artemis program will take humankind back to the Moon using the new Orion spacecraft which will be carried into space by the Space Launch System (SLS) rocket. The program will also build the first space station orbiting the Moon, the Lunar Gateway. Color in each of these new spacecraft with this coloring page from NASA!
 - [NASA Artemis coloring page](#)
- The Artemis program requires many types of mechanical systems to help astronauts get to and stay on the Moon. NASA engineers carefully designed lunar vehicles, spacesuits, and spacecraft to protect future astronauts on their missions to the Moon

and beyond.. Dive deeper into these designs with these “Learn How to Draw Artemis” workbooks!

- [Learn how to draw Artemis!](#)

- The Artemis missions rely on NASA’s Space Launch System (SLS) rockets to launch both crewed and uncrewed missions into space. Learn all about the different components of the SLS and what it will transport on different missions in one of these informative NASA articles.
 - [Elementary school readers: “What Is the Space Launch System?”](#)
 - [Middle school readers: “What Is the Space Launch System?”](#)

- The Space Launch System (SLS) rockets will carry many important things into space like the Orion crewed spacecraft.. Color your own SLS rocket and practice your Artemis vocabulary with this printable coloring and activity book all about the SLS!
 - [SLS coloring book](#)

- NASA engineers spent more than a decade designing and building the Space Launch System (SLS) rockets that will carry the Artemis missions into space. Put yourself in the shoes of a NASA engineer and turn a poster board and printer paper into your very own SLS model by following these instructions and this video!
 - [“Build Your Own SLS” instructions](#)
 - [“#NASAatHome: How Does the SLS Rocket Fly” video](#)

- What part of the Artemis program are you most excited about? **(text box)**

Activity Badge Title:

Planning and Prototyping

Badge Description

Space travel requires massive amounts of planning, design, modeling, and testing to ensure the vehicles and tools sent with astronauts into space are safe and reliable. Dive deeper into NASA’s planning and prototyping process for the Artemis missions and earn this badge by completing two of the seven activities below!

Activities

- Space missions have limited capacities for weight and fuel, and the Artemis missions will be no different. To address this, NASA plans to use some resources, like rocks and water, that are already found on the Moon rather than bring those materials from Earth. Learn more about this process, called “in situ resource utilization,” by watching this NASA video!
 - [“#NASAatHome: Spaceport Series”](#)
- To create cement and building materials from rocks and minerals on the Moon and Mars, NASA needs a good understanding of the similarities and differences between rocks and minerals on Earth and those on the Moon and Mars. Test how well you can tell the difference between geologic features on the Moon, Earth, and Mars with this interactive game from SciGames!
 - [SciGames: Earth, Moon, or Mars?](#)
- One of the exciting technologies NASA is exploring for the Artemis missions is 3D printing. Astronauts could potentially use 3D printers and materials found on the Moon to create habitats and other buildings. Find out more about how NASA is developing this technology in this article!
 - [“NASA Looks to Advance 3D Printing Construction Systems for the Moon and Mars”](#)
- In addition to building potential habitats on the Moon and Mars with 3D printing, NASA is also experimenting with astronauts using 3D printing to make their own tools in orbit rather than taking tools with them. Learn more about how NASA is solving problems in orbit through 3D printing in this article!
 - [“Solving the Challenges of Long Duration Space Flight With 3D Printing”](#)
- 3D printing in space will require highly specialized machines. You can learn the basics of 3D printing here on Earth with sand and glue by following along with this video—no 3D printer required!
 - [“3D Printing With Sand and Glue”](#)
- Planning for long duration space travel like the trip to Mars includes planning for many types of space weather, like asteroids and solar storms. Learn more about space weather with this interactive digital space weather exhibit!

- [Space Weather Center](#)
- If you could bring anything with you to the Moon or Mars, what would it be and why?
(text box)

Activity Badge Title:

Spectacular Spacecraft

Badge Description

The Artemis program will take humans back to the Moon using the next generation of rockets and crewed spacecraft like the Space Launch System and Orion Multi-Purpose Crew Vehicle. Get to know these amazing spacecraft and earn this badge by completing two of the six activities below!

Activities

- The Artemis program will be the latest series of missions to take humans into space. Learn more about the history of crewed spaceflight with this video from NASA!
 - [“NASA 60th: Humans in Space”](#)
- The Orion spacecraft is the first reusable NASA spacecraft since the retirement of the Space Shuttle. Learn about this amazing new vehicle by reading one of these informative NASA articles.
 - [Elementary school readers: “What Is Orion?”](#)
 - [Middle school readers: “What Is Orion?”](#)
- To maximize fuel efficiency, the Orion spacecraft is designed to have the least amount of mass possible while carrying astronauts safely to and from space. Get to know the design and look of Orion better with this printable connect-the-dots activity sheet!
 - [Connect the Dots: Orion Spacecraft](#)
- The Orion spacecraft must be rigorously tested to ensure that it can safely transport humans to orbit, the surface of the Moon, and back home to Earth. Put yourself in the shoes of NASA engineers by following these printable instructions along with this how-to video to design and test your own crew module from household items!

- [“Design a Crew Module” instructions](#)
- [“Design Your Own Crew Module” video](#)

- The Orion spacecraft has three main elements: the crew module, the service module, and the launch abort system. Get to know each of these elements by printing and assembling your very own paper model of the Orion spacecraft with this activity from NASA!
 - [Orion Desktop Model](#)

- NASA relies on teams of many people to assemble the rockets like the Space Launch System that will send the Artemis missions into space. Get a taste of what these assembly crews go through by building your own fleet of rockets with this digital interactive from NASA Kids’ Club!
 - [Rocket Builder](#)

- If you were designing a spacecraft, what must-haves would you include in the design?
(text box)

Activity Badge Title:

Building on the Moon

Badge Description

Going back to the Moon and building a permanent presence on the lunar surface is a crucial step towards putting humans on Mars for the first time. Learn all about NASA’s plans for lunar exploration and earn this badge by completing three of the nine activities below!

Activities

- It is easy to take the Moon for granted when we see it in the sky every night, but there is a lot to learn about Earth’s natural satellite! Get to know the Moon even better with these articles from Space Place explaining the basics of lunar science and how far away the Moon is from Earth.
 - [“All About the Moon”](#)
 - [“How Far Away Is the Moon?”](#)

- Establishing both the Lunar Gateway station in orbit around the Moon and a permanent station on the lunar surface are some of the many goals of the Artemis program. Find out why heading back to the Moon is so important for the future of space travel by watching this video from NASA!
 - [“Why the Moon?”](#)
- Going back to the Moon to establish a permanent and sustainable base on the lunar surface takes an extraordinary amount of work and planning. Learn more about what it will take by watching this NASA video!
 - [“How We Are Going to the Moon”](#)
- Lunar exploration is an important part of NASA’s history of landing humans on the Moon through the Apollo program. It is an even bigger part of NASA’s future with the planned return to the Moon through the Artemis program. Celebrate more than 50 years of humanity going to the Moon by building this paper moon model!
 - [Paper Moon Cutout](#)
- While the Apollo program only sent men to the Moon, one of the Artemis program’s most important goals is to break the lunar glass ceiling by putting a woman on the Moon for the first time with the Artemis III mission. Follow along the imagined journey of the first woman to land on the Moon with this graphic novel and related interactive activities from NASA!
 - [“First Woman:” Graphic Novels and Interactive Experiences](#)
- Establishing a permanent human presence on the Moon will require the use of crew-controlled, remote-controlled, and self-driving vehicles. One of these vehicles, the VIPER rover, will operate in some of the darkest and coldest regions of the Moon. Drive your own VIPER moon rover with this interactive game from SciGames!
 - [SciGames: Shadow Rover](#)
- One of the biggest challenges of the Artemis program will be designing and building permanent habitats for humans to live in on the surface of the Moon. Challenge yourself by building a model of a lunar habitat big enough for you to play in with this activity from Space Place!
 - [“Build a Moon Habitat”](#)

- The Lunar Gateway space station will allow astronauts to move back and forth from its position in orbit to the lunar surface. Landing spacecraft on the lunar surface is a great design challenge, and you can put yourself in the shoes of astronauts by building your own landing system and testing it with this On Target activity from NASA!
 - [NASA STEM Engagement: On Target](#)
- If you were an astronaut heading to the Moon, what would you be most excited to explore? (**text box**)

Activity Badge Title:

Many Miles to Mars

Badge Description

The Artemis program is all about sending humans back to the Moon in preparation for an even more challenging goal: human travel to Mars, the red planet! Earn this badge and learn more about Mars by completing two of the five activities below!

Activities

- Mars is both similar and different to our own planet Earth in many important ways. Curious about what makes Mars unique? Dive into Martian science by reading one of these informative NASA articles.
 - [Elementary school readers: “What Is Mars?”](#)
 - [Middle school readers: “What Is Mars?”](#)
- Though the Artemis program is preparing to send humans to Mars for the first time, rovers and orbiters have been exploring Mars both on the surface and from orbit for many years. Learn more about these previous Martian exploration missions and our current understanding of Mars by reading this article from Space Place!
 - [“All About Mars”](#)
- Sending spacecraft to Mars is all about timing. It can take six to nine months to reach Mars, and Earth and Mars only align to create a launch window every two years. Explore what it is like flying to Mars yourself with this simulation from SciGames!
 - [SciGames: Fly to Mars](#)

- Unlike rovers on the surface of the Moon, Mars is too far away for NASA to control Martian rovers in “real time.” These rovers must be sent instructions in code that takes more than a half-hour to reach Mars from Earth. Want to drive a rover on the Martian surface yourself? Head over to Space Place and code your own rover to analyze rocks on Mars!
 - [Explore Mars: A Mars Rover Game](#)
- Humans landing on Mars and stepping foot on an entirely different planet would be a first for humanity. What would traveling to another planet mean to you? **(text box)**