

# SNOOPY'S ZERO GRAVITY MISSION

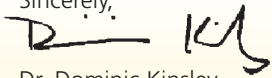
**Dear Educator,**

Explore, learn, and dream with Snoopy this fall as he soars into space! You and your students can join Snoopy as he prepares for his new role as the official Zero Gravity Indicator (ZGI) on NASA's Artemis I mission to the Moon, scheduled to launch in February 2022. With Snoopy to guide them, your students will gain a deeper understanding of NASA's commitment to explore our planetary neighbors by venturing from the Moon to Mars and beyond.

Follow along as Snoopy learns more about the exciting Artemis missions, the significance of the ZGI, and the new technology that is making further space exploration possible. Developed by the curriculum specialists at Young Minds Inspired as part of a unique partnership between NASA and Peanuts Worldwide, these standards-based, easy-to-implement classroom activities will engage your grades 3-6 students with fascinating facts, while boosting their creative thinking and problem-solving skills. Plus, each activity includes extension activities the whole family can enjoy.

Please share this program with other grades 3-6 teachers at your school. And let us know your opinion of the program by visiting [ymiclassroom.com/feedback-snoopy-zgi](http://ymiclassroom.com/feedback-snoopy-zgi). We look forward to your comments and suggestions.

Sincerely,



Dr. Dominic Kinsley  
Editor in Chief  
Young Minds Inspired



Questions? Contact YMI toll-free at 1-800-859-8005 or by email at [feedback@ymiclassroom.com](mailto:feedback@ymiclassroom.com).

**Program Objectives**

- Fuel interest in space and raise awareness about NASA's upcoming Artemis missions to help prepare humans to land on the Moon in 2024
- Reinforce STEAM and language arts skills

**Target Audience**

Students in grades 3-6 and their families

**How to Use This Program**

Download, copy, and distribute the three reproducible activity sheets to all students, or share the PDFs through your school's digital platform. Students will need pencils, crayons, or markers to complete the activities. Have students take their completed sheets home so their families can do the activities at the bottom of each sheet together. Visit [ymiclassroom.com/snoopy-zgi](http://ymiclassroom.com/snoopy-zgi) for standards alignment.

**Activity 1  
Snoopy's Special Mission**

*Students learn that Snoopy will be a passenger aboard NASA's Artemis I mission, scheduled to launch in February 2022. Artemis I is an uncrewed test flight that is the first in a series of missions to return humans to the Moon.*

Ask students to raise their hands if they would like to be involved in space exploration — perhaps as an engineer who builds or designs rockets or experiments to be conducted on the Moon, or as an astronaut who travels to space. What do they think would be fun about being an astronaut? Let students share their ideas. Point out that one thing all astronauts look forward to is floating in space.



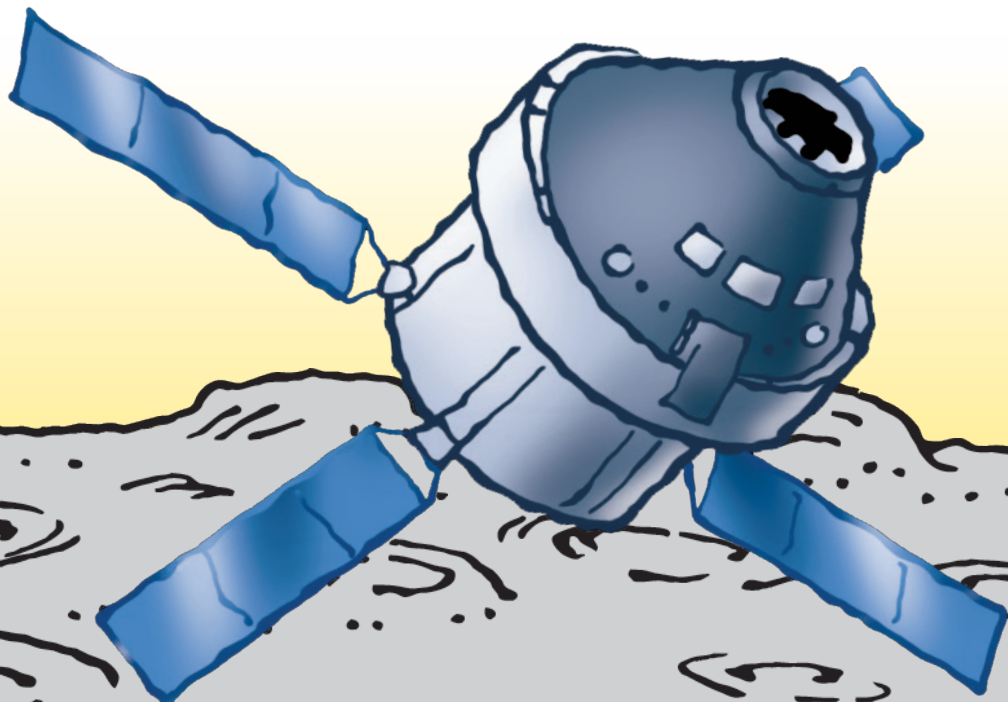
Explain that NASA is planning to send a spacecraft named *Orion* to orbit the Moon in February 2022, and Snoopy will be a passenger who serves as the Zero Gravity Indicator, or ZGI. (There won't be any humans on board.)

A ZGI shows people watching the launch from Earth when the spacecraft has escaped the pull of Earth's gravity and enters orbit. At this changeover, the ZGI starts to float inside the spacecraft.

The ZGI is usually a plush toy or doll. ZGIs are a space tradition dating back to 1961, when Yuri Gagarin became the first human in space. He took a small doll with him, and since then astronauts from all over the world have chosen their own special objects to take with them as ZGIs.

NASA chose Snoopy as the ZGI because he is brave, adventurous, and experienced — he's already flown into space. A Snoopy plush doll has even been aboard the International Space Station, and the Apollo 10 lunar and command modules were called Snoopy and Charlie Brown. Now Snoopy is part of the first in a series of Artemis missions that will return humans to the Moon and beyond.

Next, ask students if they think there is really such a thing as "zero gravity". Why or why not? Allow them to share their ideas, then distribute the activity sheet. Have students read Part 1 and answer the questions. Follow-up with a class discussion, then have students complete Part 2.



**Answers: Part 1:** 1. Answers will vary; 2. everywhere; 3. microgravity. **Part 2** answers will vary.

**Extension:** Integrate STEAM concepts by having students form small groups and create posters or videos designed to encourage Snoopy on his journey through space. Students could also create pictures of what Snoopy might see if he looks out the window of the *Orion*.

## Activity 2 Snoopy's Special Spacesuit

*Students will learn about NASA's new generation of xEMU spacesuits.*

Ask students to think about what equipment they would need to survive if they were to go on a spacewalk or conduct scientific experiments on the Moon. How hard do they think it would be for an astronaut to carry around all that survival gear? It used to be very hard, but thanks to new technology it's getting easier. Explain that NASA has designed a new generation of spacesuits called xEMU suits that are tailor-made for future Artemis missions when humans plan to walk on the Moon again. And because he is a passenger aboard the *Orion* spacecraft, Snoopy will be wearing a special suit as well.

Distribute the activity sheet and read the opening paragraph together, then have students complete Part 1 individually. Review their answers as a class, then discuss the two xEMU designs in Part 2. Have students create their own spacesuit designs and share their ideas with a show-and-tell.

**Answers: Part 1:** 1. Answers will vary; 2. up to 9 hours; 3. Answers will vary.

**Extension:** Challenge students to perform a task wearing heavy-duty rubber cleaning gloves or mittens to simulate "spacesuit" gloves. Can they perform the tasks an astronaut has to? It takes patience and

perseverance, especially when you're working without gravity! Simulate microgravity by filling a container of water and having students try putting building blocks together under the water while wearing the gloves. Other challenges could include threading washers on a straw, putting nuts and bolts together, or putting a small rock into a collection jar.

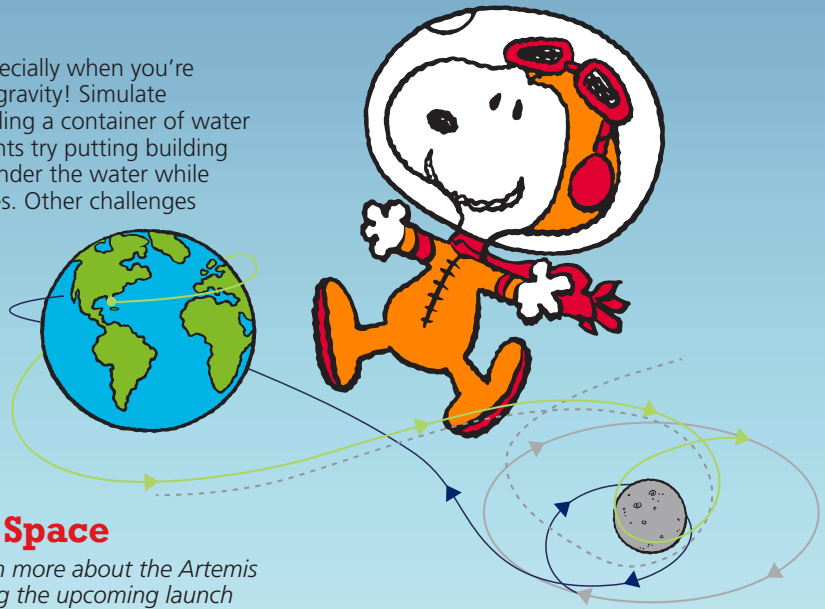
## Activity 3 Snoopy in Space

*Students will learn more about the Artemis missions, including the upcoming launch of Artemis I, and why NASA is undertaking such an important and ambitious plan.*

Prompt students to recall the purpose of the Artemis I mission, which they learned about in Activity 1. Let them share their answers, then show them the video at [www.youtube.com/watch?v=T8cn2J13-4](https://www.youtube.com/watch?v=T8cn2J13-4). Pause the video at intervals to clarify and discuss important concepts. Ask students questions and allow them to share their thoughts as they watch. For example, what do they think it would be like to work on the Moon or travel to Mars?

After watching the video, distribute the activity sheet and have students identify the statements in Part 1 as true or false and then complete Part 2. If time allows, let students share their Artemis mission patch designs.

**Answers: Part 1:** 1. False (The goal is to go back to the Moon, create a long-term human presence on and around it, and prepare for human missions to Mars.); 2. True; 3. True; 4. False ("Pre-staging" means that supplies and equipment will be placed on and around the Moon before the astronauts get there.); 5. True. **Part 2:** Answers will vary.



**Extension:** Ask students to imagine that they are journalists responsible for writing a headline for a paper, magazine, online article, or blog post about Snoopy, *Orion*, and the Artemis missions. Can they summarize the mission in 10 words or less?

## Resources

### Artemis Missions:

- [www.nasa.gov/what-is-artemis/](https://www.nasa.gov/what-is-artemis/)
- [www.nasa.gov/feature/around-the-moon-with-nasa-s-first-launch-of-sls-with-orion](https://www.nasa.gov/feature/around-the-moon-with-nasa-s-first-launch-of-sls-with-orion)

### Zero Gravity Indicators:

- <https://blogs.nasa.gov/commercialcrew/2021/07/29/public-shares-zero-g-indicator-ideas-for-nasas-boeing-starliner-launch/>

### xEMU Spacesuit:

- [www.nasa.gov/feature/orion-suit-equipped-to-expect-the-unexpected-on-artemis-missions](https://www.nasa.gov/feature/orion-suit-equipped-to-expect-the-unexpected-on-artemis-missions)
- [www.nasa.gov/sites/default/files/atoms/files/draw\\_ocss\\_final.pdf?utm\\_source=FBPAGE&utm\\_medium=NASA%207s+Space+Launch+System&utm\\_campaign=NASASocial&linkid=88891214](https://www.nasa.gov/sites/default/files/atoms/files/draw_ocss_final.pdf?utm_source=FBPAGE&utm_medium=NASA%207s+Space+Launch+System&utm_campaign=NASASocial&linkid=88891214)
- [www.nasa.gov/image-feature/exploration-extravehicular-mobility-unit-xemu](https://www.nasa.gov/image-feature/exploration-extravehicular-mobility-unit-xemu)

### Lunar Gravity:

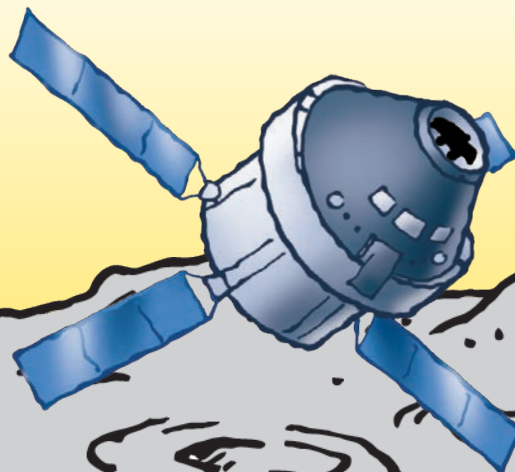
- [www.nasa.gov/centers/armstrong/features/nasa-blue-origin-to-bring-lunar-gravity-conditions-closer-to-earth.html](https://www.nasa.gov/centers/armstrong/features/nasa-blue-origin-to-bring-lunar-gravity-conditions-closer-to-earth.html)

### Microgravity:

- [www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-microgravity-58.html](https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-microgravity-58.html)

### YMI Program Site:

- [ymiclassroom.com/snoopy-zgi](https://ymiclassroom.com/snoopy-zgi)



# Snoopy's Special Mission

Snoopy is headed back into space! In February 2022, he is scheduled to orbit the Moon and return to Earth aboard the *Orion* spacecraft. His journey will be the first step in NASA's Artemis mission to send a new generation of astronauts to the Moon.

Snoopy will be *Orion's* ZGI — Zero Gravity Indicator. When he begins to float inside the spacecraft, NASA will know that *Orion* has escaped Earth's gravity.

ZGI's have been part of space missions from the start. Yuri Gagarin, the first human to orbit the Earth, used a doll as his ZGI, and later astronauts have taken all kinds of ZGI's into space.



**Part 1:** Many people think the term *zero gravity* means there is no gravity in space. Not so! Gravity is everywhere in space — it's the glue that holds the universe together. Any object with mass has gravity, and the more mass, the stronger the force of gravity. For example, the Moon has much less mass than the Earth, so the force of gravity there is only about one-sixth of what we feel on Earth. That's why astronauts feel lighter on the Moon.

Instead of “zero gravity,” astronauts often use the term *microgravity* for what they feel in orbit. As they circle the Earth, they are actually in a kind of constant freefall that makes them feel weightless. But it's the circular motion of their spacecraft that causes this feeling, not zero gravity.

In the paragraphs above:

1. Find and underline two new things you learned.
2. Put a circle around the word that tells where gravity can be found in space.
3. Put a square around the word that tells what kind of gravity astronauts experience in orbit.

**Part 2:** What would you bring to space as a ZGI if you were on an Artemis mission? Name and write about it here.

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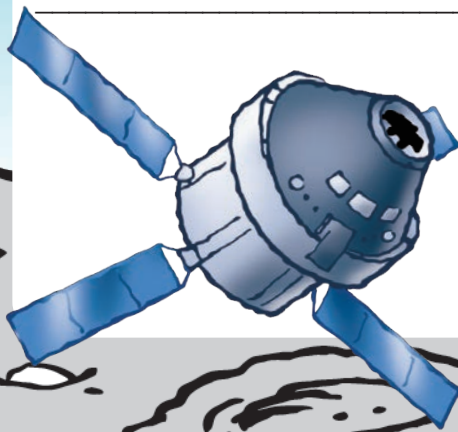


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**Families:** Snoopy will be the ZGI (Zero Gravity Indicator) on NASA's Artemis I mission to the Moon, scheduled for February 2022! What would you choose as your family ZGI?





# Snoopy's Special Spacesuit

Scientists at NASA have developed a new generation of spacesuit, called the xEMU. The new spacesuit is simpler to put on and take off than older spacesuits, and it is also lighter and more flexible. Most importantly, the xEMU spacesuit includes new technology. It has a built-in communication system that eliminates the need to wear a separate headpiece. It also has high-definition cameras, thermal and dust protection, and an improved carbon dioxide system that allows astronauts to spend up to 9 hours outside their spacecraft.



**Part 1:** Answer these questions based on what you read above.

1. Why do you think scientists made the xEMU spacesuit lighter and more flexible?

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2. How long can astronauts wear the new suit comfortably?

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3. List two ways the xEMU suit has been improved over the old spacesuit design.

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**Part 2:** The xEMU spacesuit will come in two designs.

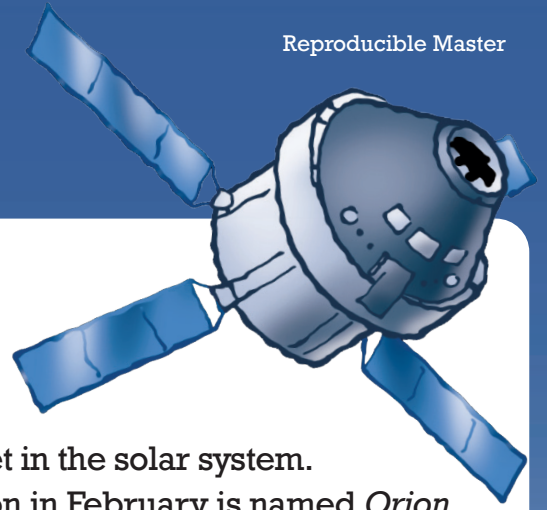
The *Orion* astronauts will wear a bright orange suit, the traditional NASA color for spaceflight. On the Moon, astronauts will wear a white xEMU with color blocks of red and blue.

Here's Snoopy in his *Orion* spacesuit, made of the same materials the astronauts will wear! If you could design a spacesuit, what colors and design would you use? Draw your idea on the back of this sheet and add add notes about the features you'd want to build into your spacesuit.

**Families:** You can learn more about NASA's new generation of xEMU spacesuits by visiting [www.nasa.gov/suitup](http://www.nasa.gov/suitup).



# Snoopy in Space



**Part 1:** Artemis I is the first in a series of space missions that will take humans back to the Moon, to Mars, and beyond. After watching the video your teacher shows you, label the following statements with a T for true or F for false.

1. \_\_\_ The goal of the Artemis missions is to visit every planet in the solar system.
2. \_\_\_ The spacecraft preparing to take astronauts to the Moon in February is named *Orion*.
3. \_\_\_ The spacecraft will be launched by the most powerful rocket system in the world.
4. \_\_\_ “Pre-staging” means “setting the stage” for a Mars landing.
5. \_\_\_ A dedicated lunar station will be in permanent orbit around the Moon.

**Part 2:** Imagine that you are part of a future Artemis mission. As a member of the crew, you get to help design a mission patch! Draw your design in the box. Check out the picture of the real Artemis patch below.



**Families:** Today your child learned about the first Artemis mission, which is scheduled to launch in February 2022. Visit [www.nasa.gov/what-is-artemis](http://www.nasa.gov/what-is-artemis) to learn more about these exciting missions and the fascinating plans NASA has for future space travel and exploration.