

Out of this World



Objectives:

This patch is designed to help girls learn more about the history of manned space flight, how humans adapt to living in space and women's roles in aerospace.

Grade Level Requirements:

To earn this patch, everyone must complete requirements 1, 2 and 3. Each grade level must also complete the minimum number of additional activities.

Grade Level	Required Item #s	Additional # of Requirements
Daisy	1, 2, 3	2
Brownie	1, 2, 3	3
Junior	1, 2, 3	5
Cadette	1, 2, 3	7
Senior/Ambassador	1, 2, 3	8

Requirements

1. Identify a former Girl Scout who went on to become a NASA astronaut. Name five facts about her. Visit spaceflightsystems.grc.nasa.gov/girlscouts/gsusastro.html.
2. Read astronaut Suni Williams' answers to questions from Girl Scouts. Visit nasa.gov/mission_pages/station/expeditions/expedition15/girl_scout_questions.html.
3. Visit the Women@NASA website and watch at least one of the videos to see how women at NASA are leading the way in STEM (science, technology, engineering and mathematics), and learn about the awe-inspiring projects they're pursuing. Visit women.nasa.gov/.
4. Choose one mission from each of the following three space programs: Mercury, Gemini and Apollo. Name the crew, vehicle used, purpose of the mission and one interesting fact about each mission.
5. Choose a mission from the Space Shuttle program (STS). Name the crew, vehicle used, purpose of the mission and one interesting fact about that mission.
6. Choose a mission from the International Space Station (ISS) program. Name the crew, vehicle used to get them to and from the space station, purpose of the mission and one interesting fact about that mission.
7. The International Space Station was not the first space station to orbit earth. Identify at least two other space stations that came before the ISS. Identify when they were in orbit, what country they belonged to and at least one interesting fact about each of them.
8. Research the space program of another country. Point out similarities and differences to the United States program. Find out if the country you are studying has worked with the U.S. space team at any time in the past, or if they are planning any joint missions with the U.S. in the future.
9. Space exploration is not without risk or difficulty. Identify an American and a Russian mission that did not go as planned. Identify what happened and how the space program used what they learned from the tragedy to make things safer for the next flight.
10. A NASA spin-off is something that we use here on earth that uses technologies or materials that were originally developed for the space program. Learn about at least 10 spin-offs that you use in your school or home, or play the online Spin-off Memory Game at spaceplace.nasa.gov/spinoffs/en/.
11. Visit an aerospace or flight museum. While there, learn at least three facts that you did not know before you arrived.
12. Future destinations for manned space flight includes near-earth asteroids, the moon and eventually Mars. Design a vehicle or base that could be utilized for that mission. It can be a picture or a 3D model.
13. Build and launch a rocket. You are not limited to a particular type of rocket. It can be made of paper, use water or balloons to launch, or be a model rocket.
14. Astronauts lose muscle mass in space due to the effects of microgravity. Explain what microgravity is, and name two exercises that astronauts use in space to help them keep fit. Try one of them or choose and complete one of NASA's "Train Like an Astronaut" physical activities. Visit <http://www.nasa.gov/audience/foreducators/train-likeanastronaut/activities/index.html>.
15. Learn about the different types of food that astronauts can take into space and how they eat on the space station. Plan your own astronaut-themed meal to share with family and friends.
16. Every space flight crew designs a personalized mission patch to represent their mission. Design your own mission patch. Patches include elements that describe the mission's purpose, as well as the name of the space vehicle and the mission number.
17. Name the countries that collaborate on the International Space Station.
18. Identify how many people have landed on the moon and the country they are from.

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Out of this World (continued)

19. What is the famous quote from Neil Armstrong when he first stepped on the surface of the moon?
20. Learn how astronauts brush their teeth, bathe and use the bathroom in space.
21. What was the Vehicle Assembly Building (VAB) at Kennedy Space Center used for?
22. Learn about two scientific experiments done on either an STS mission or an ISS mission. Try your own scientific experiment.
23. Identify two college-level aerospace courses that are offered at a college or university near you.
24. Identify one aerospace-related career. Find out what type of education you would need to get the job, what typical job duties it would entail and what the salary range would be.
25. Find out about one private company that is working toward manned space flight.