

## 7. Sally Ride

By Sharon Fabian

<sup>1</sup> Sally Ride had the skills and the talent, and she loved science. She wasn't afraid to keep studying science, even when other girls decided that science was too hard, or when they said that science was a boys' subject. Sally Ride became so good at science that she got to be the first American woman in space.



<sup>2</sup> As a science student, she had many demanding subjects to study. Space scientists take advanced courses in math and sciences. They study topics like calculus and physics, and that is just the beginning. These are not easy subjects, but when you are studying something you enjoy, it may be hard work, but the hard work is often fun too. Sally Ride must have really enjoyed space science. She went on to get her bachelor's degree, her master's degree, and her doctorate in science. Her field was astrophysics.

<sup>3</sup> When she was 27 years old, Sally heard that NASA was looking for young men and women who were experts in science. At the time NASA wanted to hire 35 astronaut candidates. Sally applied for one of the jobs. At the time she wouldn't have had any way of knowing that 8,000 other men and women had applied too. Sally's application was one of the very best, and in 1978 she joined NASA and began astronaut training.

<sup>4</sup> Even though she was a science expert, Sally didn't know much about flying a spacecraft. So she had more subjects to learn. She learned about flying. She learned about navigation. She learned about radio communication. She went through training on weightlessness, water survival, and parachute jumping. Sally must have enjoyed these new subjects that she was learning too. She especially liked flying; it became her new favourite hobby.

<sup>5</sup> Sally did many different jobs for NASA. She worked as part of the ground crew for two Columbia flights, in 1981 and 1982. For those flights, she was a communications officer who sent radio messages back and forth between the ground crew and the shuttle itself.

<sup>6</sup> Sally was chosen to go on a space flight in 1983. She became an astronaut aboard the space shuttle Challenger. Her job there was mission specialist. A mission specialist does many different things during a space flight. One of the things Sally did on this flight was to test a robot arm in space. This flight made her famous, because she was the first American woman in space. Here is what she had to say

about that flight. "I'm sure it was the most fun I'll ever have in my life."

<sup>7</sup> In 1984, Sally had the chance to go on a second space mission aboard Challenger. This time she spent eight days in space. All together, Sally spent 343 hours in space, a place most people can only dream of.

<sup>8</sup> In 1987, at the age of 36, Sally retired from NASA. She went on to other science jobs at major universities and science centres. She had a mission now too, but it wasn't to go into space this time. Now her mission was to get more girls interested in science and to encourage girls to study science when they moved on to high school and college. She began an organization to promote girls' interest in science. If you are interested, you can look up Imaginary Lines or the Sally Ride Club on the Internet. You can find her children's books in the library. Two of them are *To Space and Back* and *Voyager: An Adventure to the Edge of the Solar System*.

<sup>9</sup> With an approach like Dr. Ride's, most anything you can do with science is fun!

## Sally Ride

<p>1. Sally Ride was _____. <input type="radio"/> A The first American woman in space <input type="radio"/> B The first woman pilot <input type="radio"/> C The first woman to study science in college <input type="radio"/> D The first American in space</p>	<p>2. Sally Ride's name became Dr. Ride when _____. <input type="radio"/> A She graduated from college <input type="radio"/> B She received her doctorate degree <input type="radio"/> C She graduated from medical school <input type="radio"/> D She flew in the Challenger</p>
<p>3. Space scientists need to know a lot of math. <input type="radio"/> A False <input type="radio"/> B True</p>	<p>4. When Sally applied to be an astronaut, how many other people applied too? <input type="radio"/> A 35 <input type="radio"/> B 27 <input type="radio"/> C 1978 <input type="radio"/> D 8,000</p>
<p>5. Sally worked as a ground crew communications officer _____. <input type="radio"/> A After her second space flight <input type="radio"/> B Before she went to college <input type="radio"/> C Before she flew in space. <input type="radio"/> D After she retired from NASA</p>	<p>6. All together, Sally spent a total of about _____ days in space. <input type="radio"/> A 12 <input type="radio"/> B 14 <input type="radio"/> C 10 <input type="radio"/> D 8</p>
<p>7. The article says that Sally's field was astrophysics. What do you think the word <i>astrophysics</i> means?</p> <p>_____</p> <p>_____</p>	<p>8. What can you do while you are in middle school and high school to prepare for a career in space science?</p> <p>_____</p> <p>_____</p> <p>_____</p>

## 8. Neil Armstrong

By Sharon Fabian

<sup>1</sup> When you are planning to go on a trip, you have to get things ready. You have to pack. If you're going to the beach for a vacation, maybe you pack swimsuits, shorts, and T-shirts, but you might also pack a few warm clothes in case it gets cold at night. If you're planning a trip to someplace you've never been before, maybe you do a little research to find out what the weather is usually like there. Maybe you pack something to read, something to play with, or some sports equipment. If you're going on a business or a study trip, you pack the materials that you will need while you are there. You might look up the best route on a map, or ask someone for directions. You might fill up the gas tank in your car, or buy a plane ticket.



<sup>2</sup> In 1969, Neil Armstrong was planning a trip. For this trip, he couldn't choose a route from a road map, and there was no one who had taken the same trip before, so he couldn't just ask for directions. Neil Armstrong was planning a trip to the moon. If the trip went as he planned, he would be the first person ever to set foot on the moon.

<sup>3</sup> Armstrong and the other scientists at NASA had a lot of planning to do. Since both the earth and the moon are always moving, it would take a lot of very precise math to figure out how to get there and back. The weather would be unpredictable, as always, and might cause last minute changes in their plans. They had to choose a landing site. Since no one had ever been on the moon's surface, they had to make a scientific guess about where would be a good place to land, and they chose a place named the Sea of Tranquility.

<sup>4</sup> They had to pack too. Armstrong and his crew, Michael Collins and Edwin "Buzz" Aldrin, would have to take everything they would need for their eight-day journey. There would be no stopping for pizza on this trip. Not only would they have to pack all of their food, they would also need to take their own water, and even their own oxygen! They would need to pack special equipment to deal with the weightlessness in space and the low gravity on the moon. They needed to plan how they would keep warm in space. They also packed equipment for science experiments, including a seismograph, -- used to detect earthquakes (or moonquakes) -- and a laser that could be used to calculate the exact distance from the earth to the moon. They took a camera, and containers to bring samples back to Earth.

<sup>5</sup> Planning for this trip also involved lots of training. The three astronauts had to relearn many everyday things. Simple activities like eating and moving around would require new skills in the weightless atmosphere of the spaceship.

<sup>6</sup> Finally it was time to go. Everything was ready, and the weather was right. On July 16, a huge Saturn V rocket blasted Armstrong, Collins, and Aldrin into orbit in their spacecraft, Apollo 11. For four days, they raced through space. Then, on July 20, while Collins orbited the moon in Apollo 11, Armstrong and Aldrin climbed into the Eagle, their lunar landing vehicle, and headed straight for the moon. The spot they had picked for a landing turned out to be too rocky, but the astronauts manoeuvred to a smoother area and landed. Armstrong was the first one to step out onto the moon. He had a short speech prepared for the occasion: "That's one small step for man, one giant leap for mankind."

<sup>7</sup> They took pictures of the moon, collected samples of moon rocks, set up their experiments, and all together spent just two and one-half hours on the moon. They left behind footprints that are probably still there today.

<sup>8</sup> Then they started on their journey home. On July 24 they splashed down in the ocean, safely back on earth. They must have been glad to be home, but what a trip it had been!

## Neil Armstrong

<p>1. Apollo 11 carried _____ astronauts.</p> <p><input type="radio"/> A One</p> <p><input type="radio"/> B Two</p> <p><input type="radio"/> C Four</p> <p><input type="radio"/> D Three</p>	<p>2. The module that landed on the moon was called _____.</p> <p><input type="radio"/> A The Eagle</p> <p><input type="radio"/> B Apollo 11</p> <p><input type="radio"/> C Saturn V</p> <p><input type="radio"/> D Tranquility</p>
<p>3. The rocket that boosted them into space was called _____.</p> <p><input type="radio"/> A Saturn V</p> <p><input type="radio"/> B Apollo 11</p> <p><input type="radio"/> C Tranquility</p> <p><input type="radio"/> D The Eagle</p>	<p>4. Their spacecraft that flew to the moon was called _____.</p> <p><input type="radio"/> A Apollo 11</p> <p><input type="radio"/> B Saturn V</p> <p><input type="radio"/> C The Eagle</p> <p><input type="radio"/> D Tranquility</p>
<p>5. _____ astronauts landed on the moon.</p> <p><input type="radio"/> A Four</p> <p><input type="radio"/> B One</p> <p><input type="radio"/> C Two</p> <p><input type="radio"/> D Three</p>	<p>6. This article is mainly about _____.</p> <p><input type="radio"/> A The Saturn V rocket</p> <p><input type="radio"/> B Planning for a trip to the moon</p> <p><input type="radio"/> C Planning for a vacation</p> <p><input type="radio"/> D The moon's surface</p>
<p>7. Since there wasn't much room on the spacecraft, the astronauts only packed clothes and science experiments.</p> <p><input type="radio"/> A False</p> <p><input type="radio"/> B True</p>	<p>8. Footprints on earth usually wash away, or dry up and blow away, after a while. Why do you think the astronauts' footprints are probably still on the moon?</p> <p>_____</p> <p>_____</p>

## 9. John Glenn

By Sharon Fabian

<sup>1</sup> When John Glenn was a young man, he didn't plan on a career in space flight. Glenn was interested in a career in the military, and in aviation in particular. When he entered the Naval Aviation Cadet Program in 1942, he had no way of knowing that this would be the first step on his path to outer space.

<sup>2</sup> Glenn's training in the cadet program prepared him to be a fighter pilot in World War II. Altogether he flew 59 combat missions in that war. After the war, Glenn became a flight training instructor, teaching young men who wanted to become pilots how to fly for the military. Then, in the Korean War, Glenn again flew combat missions as part of a marine fighter squadron. This time he flew a total of 63 missions.

<sup>3</sup> Next, Glenn entered Test Pilot School. He was interested in the field of aircraft design. He also continued to fly. In fact, in 1957 John Glenn set a new speed record as he flew across the continent from Los Angeles to New York.

<sup>4</sup> Glenn's career had been changing all along. As soon as he finished one job, he always looked for a new area to move into. But, in 1959 his career suddenly took off in an exciting new direction. NASA, the National Aeronautics and Space Administration, chose Glenn to be part of a group of men who would train to be astronauts for the Mercury missions.

<sup>5</sup> NASA had a space mission scheduled for 1962, and it chose John Glenn to be the astronaut. This mission, Mercury 6, would be a history-making mission, because the Mercury 6 astronaut would be the first American to orbit the earth in space.

<sup>6</sup> This Mercury mission had simple but important objectives: to put a man in orbit, to observe his reactions to being in space, and to return him safely to earth.

<sup>7</sup> The Mercury 6 spacecraft, named Friendship 7, was carefully designed to help Glenn, and the astronauts on the ground at Kennedy Space Centre, meet these objectives. The spacecraft had to protect Glenn from the tremendous heat and the acceleration forces that would occur as the spacecraft was launched and also as it re-entered the earth's atmosphere. It was designed to allow the astronaut inside to take over some of the controls. The body of the capsule would hold the astronaut himself, the life support system, and the spaceship's

electrical system. The blunt end of the capsule was where the very important heat shield was located. At the opposite end were the parachutes that would be used on re-entry. A modified Atlas rocket would boost Mercury 6 into space.

<sup>8</sup> The spacecraft was ready. So was Glenn.

<sup>9</sup> The countdown began at T - 390 minutes. At 6:06 in the morning, on February 20, Glenn boarded the spacecraft. There were a few minor delays to make last minute adjustments, but then the countdown continued. Finally they were down to the last few seconds before lift-off. Five, four, three, two, one -- Glenn was blasted into orbit. His successful flight orbited the earth three times. It reached a maximum altitude of 162 miles, and a maximum speed of 17,500 miles per hour. When it was time to re-enter the earth's atmosphere, the astronauts had a scare. They thought that the heat shield was coming loose. Glenn saw chunks of material that might be part of the heat shield flying by the window of the capsule. In the final minutes of the flight, everyone was nervously waiting to see if he would be able to return home safely. They were all relieved to see the Mercury 6 capsule splash down in the Atlantic Ocean. After four hours and 55 minutes in space, John Glenn was home. Seventeen minutes after splashdown, the capsule was picked up by a US destroyer. After it was brought aboard ship, Glenn stepped out. He had returned safely!

<sup>10</sup> John Glenn was a hero. His career had taken him into earth orbit and back.

<sup>11</sup> However, Glenn didn't stop there. His popularity as a space hero helped him get elected to the US Senate. There the story of John Glenn began a new chapter.



# John Glenn

<p>1. John Glenn was _____. <input type="radio"/> A All three <input type="radio"/> B An astronaut <input type="radio"/> C A senator <input type="radio"/> D A fighter pilot</p>	<p>2. John Glenn was _____. <input type="radio"/> A The first man to walk on the moon <input type="radio"/> B The first American in space <input type="radio"/> C The first American to orbit the earth <input type="radio"/> D The first man to orbit the earth</p>
<p>3. In the second paragraph, the word mission means _____. <input type="radio"/> A A space flight <input type="radio"/> B A secret assignment <input type="radio"/> C A homework assignment <input type="radio"/> D A combat plane flight</p>	<p>4. In the fifth paragraph, the word mission means _____. <input type="radio"/> A A secret assignment <input type="radio"/> B A space flight <input type="radio"/> C A combat plane flight <input type="radio"/> D A homework assignment</p>
<p>5. This article is mainly about _____. <input type="radio"/> A John Glenn's work as a senator <input type="radio"/> B John Glenn's early life <input type="radio"/> C John Glenn's career <input type="radio"/> D The Mercury space capsule</p>	<p>6. John Glenn's career could be described as _____. <input type="radio"/> A Successful <input type="radio"/> B Ambitious <input type="radio"/> C Distinguished <input type="radio"/> D All of the above</p>
<p>7. Which happened first? <input type="radio"/> A Glen orbited the earth in Mercury 6 <input type="radio"/> B Glenn became senator <input type="radio"/> C Glenn flew in the Korean War <input type="radio"/> D Glenn flew in WWII</p>	<p>8. From this article, you can infer that _____. <input type="radio"/> A Glenn didn't really want to fly planes <input type="radio"/> B Glenn worked and studied hard <input type="radio"/> C Glenn was elected senator by only a few votes <input type="radio"/> D Glenn was born in 1950</p>

## 10. Space Walkers

By Sharon Fabian

<sup>1</sup> Many people can name the first American in space (Alan Shepard) or the first man to walk on the moon (Neil Armstrong). Not as many people can name the astronauts who set records for space walking. So many astronauts have completed a space walk now that the records go to those with the largest number of space walks, or the most total space walk hours.

<sup>2</sup> All together, there have been over 100 space walks, or EVA's as NASA calls them. EVA stands for extra-vehicular activity, and that is exactly what a space walk is. An astronaut goes outside of his spaceship. Nothing but a special rope, called a tether, keeps him from floating away in space. The tether, about 55 feet long, is attached at one end to the astronaut and at the other end to a slide wire on the outside of the spaceship. This allows the astronaut as much freedom of movement as possible.

<sup>3</sup> Space walking may seem like a really exciting job, but one astronaut called space walkers the construction workers of outer space. When an astronaut goes outside of his spacecraft, it is usually to repair or to build something on the outside of the spaceship. Sometimes it is a new piece of scientific equipment; sometimes it is just routine maintenance. When going for a space walk, astronauts wear a stiff, pressurized suit that weighs about 250 pounds. Just moving around in this suit is hard, tiring work. The astronaut must stay focused on his job every minute, because he has to keep track of his tether, and the tethers holding each and every tool and piece of equipment, at all times. After all, he is about 150 miles above the earth, and moving at a speed that is measured in miles per second!

<sup>4</sup> Despite the fact that he is zooming around in space, attached only by a tether, the astronaut does not feel the speed the same way that you do on a bike or riding in a convertible with the top down. That is because there is no air, and therefore no wind, in space.

<sup>5</sup> One interesting fact about space walking is that it is not actually walking at all. Astronauts move by pulling themselves around hand over hand, not by moving their feet.

<sup>6</sup> The first space walker was Alexei Leonov, a cosmonaut from the former Soviet Union. His space walk lasted for 20 minutes.

<sup>7</sup> The first American astronauts to walk in space were Donald Pettit and Kenneth Bowersox, who were assigned an EVA to release some locks on a radiator that was part of the air conditioning system for the International Space Station. When they were ready to begin their space walk, Donald Pettit had trouble opening the hatch to get out of their spaceship. Bowersox helped him out; he knew just what to do, because he had had the same trouble with the door on his pickup truck.

<sup>8</sup> Today, there are astronauts who have had the opportunity to take several space walks. Some are getting to be old pros at the job. Anatoly Solovyov holds the record at the moment, with 16 EVA's totalling 77 hours outside of his spaceship. Jerry Ross is in second place with nine EVA's totalling 58 hours, and Steven Smith is in third place with seven EVA's totalling 49 hours. Chris Hadfield was the first Canadian astronaut to perform a space walk in 2001. He was involved in the installation of the Canadarm2.

<sup>9</sup> One interesting job that the space walkers worked on was installing a cargo railway on the outside of the International Space Station. Space walkers also performed maintenance on the Hubble Space Telescope, replacing equipment that had been worn down by its time in space, and making improvements to the giant telescope.

<sup>10</sup> Space walkers may think of their job as being something like a handyman's, and not all space walkers become famous now, but they have about the most amazing working conditions of any worker anywhere. After all, what other workers have new challenges every day, and all of outer space for their work place?

## Space Walkers

<p>1. Another word for an EVA is _____. <input type="radio"/> A Tether <input type="radio"/> B Space station <input type="radio"/> C Space walk <input type="radio"/> D Astronaut</p>	<p>2. Americans who fly in space are called astronauts. In the former Soviet Union, they were called _____. <input type="radio"/> A Cosmonauts <input type="radio"/> B Astronauts <input type="radio"/> C Aviators <input type="radio"/> D Space walkers</p>
<p>3. This article is mainly about _____. <input type="radio"/> A Construction workers <input type="radio"/> B Astronauts who go outside of their spacecraft while in space <input type="radio"/> C Soviet cosmonauts <input type="radio"/> D Astronauts who repaired the space telescope</p>	<p>4. The most space walks by one astronaut, so far, is _____. <input type="radio"/> A Nine <input type="radio"/> B 16 <input type="radio"/> C Over 100 <input type="radio"/> D One</p>
<p>5. Which happened last? <input type="radio"/> A Anatoly Solovyov set the record for the most EVA's. <input type="radio"/> B Donald Pettit and Kenneth Bowersox walked in space. <input type="radio"/> C Alexei Leonov walked in space. <input type="radio"/> D Alan Shepard flew into space.</p>	<p>6. Space walkers were called construction workers of outer space because _____. <input type="radio"/> A They work only in good weather <input type="radio"/> B Most of them are former construction workers <input type="radio"/> C They do building and maintenance work on the outside of spacecraft <input type="radio"/> D They are not really scientists</p>
<p>7. A tether is _____. <input type="radio"/> A A pressurized space suit <input type="radio"/> B A line that attaches an astronaut to the outside of his spaceship <input type="radio"/> C A pair of special boots for walking in space <input type="radio"/> D An electric cord that provides the power for a spacecraft</p>	<p>8. Walking in space is _____. <input type="radio"/> A Challenging <input type="radio"/> B Tiring <input type="radio"/> C An adventure <input type="radio"/> D All of the above</p>

