

Katherine Johnson

Katherine Johnson was an American mathematician whose work helped astronauts travel safely into space. She was born in White Sulphur Springs, West Virginia, in 1918. As a child, she loved numbers and counted everything she could, from steps to household objects.

Katherine learnt quickly, but racism limited opportunities for black children. Her local area did not offer them schooling beyond a certain age, so her family moved to help her continue studying. She graduated from college in 1937 and became a teacher.



In 1953, Katherine joined NACA, the organisation that later became NASA, America's space agency. She worked as a "computer". At that time, this word could describe a person who solved mathematical problems and checked calculations. Katherine worked alongside other skilled black women, including Dorothy Vaughan.

Her calculations helped work out a spacecraft's trajectory—the path it follows through space. Getting these numbers right was essential. Astronauts needed to reach their destination and return safely to Earth.

Katherine helped calculate the flight path for Alan Shepard, who became the first American in space in 1961. Before John Glenn's flight in 1962, he asked her to check the electronic computer's calculations. He trusted her accuracy. Glenn then became the first American to travel round, or orbit, Earth.

Katherine also contributed to the Apollo programme, which took astronauts to the Moon. Her work helped plan how different spacecraft would meet up during missions.

Throughout her career, Katherine faced barriers because she was black and a woman. Her achievements challenged unfair ideas about who could succeed in science.

She retired in 1986 and received the Presidential Medal of Freedom in 2015. Katherine died in 2020, aged 101. Her story shows how curiosity, learning and teamwork can help achieve extraordinary things.



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Questions

1. Where and in which year was Katherine Johnson born?
2. What did Katherine enjoy doing as a child?
3. Why did Katherine's family move to help her education?
4. What job did Katherine do after graduating from college?
5. What did the job title "computer" mean when Katherine began her work?
6. What is a spacecraft's trajectory?
7. Which astronaut became the first American in space in 1961?
8. Why did John Glenn ask Katherine to check the electronic computer's calculations?
9. What did Katherine help plan for the Apollo programme?
10. Which award did Katherine receive in 2015?



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Answers

1. She was born in White Sulphur Springs, West Virginia, in 1918.
2. She enjoyed counting things and working with numbers.
3. Local schooling opportunities for black children were limited.
4. She became a teacher.
5. It meant a person who solved mathematical problems and checked calculations.
6. It is the path a spacecraft follows through space.
7. Alan Shepard became the first American in space.
8. He trusted her accuracy and wanted the calculations checked.
9. She helped plan how spacecraft would meet up during missions.
10. She received the Presidential Medal of Freedom.



accuracy	astronaut	calculation	curiosity	determination	discrimination	engineer
mathematician	mission	orbit	spacecraft	teamwork	trajectory	verify

1. A person who studies and uses maths to understand problems and find solutions.
2. The process of using numbers and maths to work out an answer.
3. The quality of being correct and free from mistakes.
4. A person trained to travel and work in space.
5. A vehicle designed to travel in space.
6. The path followed by a moving object, such as a spacecraft.
7. The curved path an object follows as it travels around a planet, moon or star.

8. A planned task or journey with a particular purpose, such as exploring the Moon.
9. To check that something is correct or true.
10. A person who uses science and maths to design, build or improve things.
11. A strong wish to learn or find out more about something.
12. The firm decision to keep working towards a goal, even when it is difficult.
13. Unfair treatment of someone because of who they are, such as their skin colour or whether they are a boy or a girl.
14. The combined effort of people working together towards a shared goal.



Katherine Johnson

Timeline Challenge

Katherine Johnson was a brilliant mathematician whose work helped NASA send astronauts into space. She solved difficult maths problems and checked flight paths to help astronauts travel safely. She also succeeded at a time when Black people and women faced unfair treatment in the USA.



Can you put these key events from Katherine's life into chronological order?

Katherine calculates the flight path for Alan Shepard, the first American to travel into space.	Katherine is born in West Virginia, USA. From a young age, she loves numbers and is very good at maths.	President Barack Obama gives Katherine the Presidential Medal of Freedom, one of the USA's highest awards.	Katherine starts college when she is only 15 years old. She studies maths and French.
Katherine joins NACA, which later becomes NASA. She works as a mathematician, solving problems for aircraft and space travel.	Katherine finishes college at just 18 years old. She later becomes a teacher because there are few other jobs open to Black women.	Astronaut John Glenn asks Katherine to check the computer's maths before his space flight. His mission successfully orbits Earth.	Katherine's maths helps NASA plan the Apollo 11 mission, when people land on the Moon for the first time.

Link each event with one of the dates below. Use the information to make a timeline.

1918	1933	1937	1953	1961	1962	1969	2015
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NASA: The organisation in the USA that explores space and sends astronauts on space missions.

