

Katherine Johnson

Katherine Johnson was not allowed to attend school beyond year 8 in her home town because she was black but she became a mathematician and physicist whose calculations were essential to the success of the US Space Program including the first American in space and the Apollo space missions.

For several years after she was born in 1918, schools in the USA were still segregated (with black and white students taught completely separately) and the education opportunities for young black women were very limited. Katherine's father thought his daughter had potential and so the family moved 120 miles to the next state during the school year so that she could complete her schooling. She had finished high (secondary) school by the age of 14 and graduated with a degree in maths and French by the age of 18 thanks to her extraordinary mathematical talents.

Working for NASA

Katherine became a teacher and a housewife until 1953 when she began working for the National Advisory Committee for Aeronautics, which later became NASA (the National Aeronautics and Space Administration). This was an era before electronic computers and Katherine's job title was 'computer'. She calculated trajectories, launch windows and emergency back-up return paths for



Katherine Johnson at NASA in 1966

many space flights including the trajectory for Alan Shepherd, the first American in space. Some of the astronauts trusted her calculations more than they did those of early electronic computers, asking her to check the calculations the electronic computers had made.

Until 1958 her workplace was segregated so that Katherine and the other African-American women 'computers' had to work, eat and use separate toilets from the white workers.

As electronic computers came into NASA, Katherine combined her talent for mathematics with electronic computer skills to ensure the success of the Apollo space missions and the early flights of the space shuttle programme.

In 2015 President Barack Obama presented Johnson with the Presidential Medal of Freedom, the highest civilian award in the United States. Her story, and those of her black female colleagues, is told in the 2016 film *Hidden Figures*.

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Hidden Figures shows the importance of the work of the African-American women who worked as 'computers' in the early days of NASA.



Katherine Johnson with the US Presidential Medal of Freedom in 2015