

In the mid-20th century, during a time when both women and African Americans faced discrimination in education and the workplace, three extraordinary women — Katherine Johnson, Dorothy Vaughan, and Mary Jackson — rose above barriers to help send humans into space.

They worked at what was then called NACA, the National Advisory Committee for Aeronautics, which later became NASA in 1958. Their story, long overlooked, came to wider attention through the book and movie *Hidden Figures*.

At that time, segregation was still legal in Virginia, where NACA's Langley Research Center was located. The workplace was divided by both race and gender — separate bathrooms, cafeterias, and offices for Black employees.

Despite those restrictions, these women used their intelligence and perseverance to become essential to America's space race against the Soviet Union. Their tools were not rockets or suits — but pencils, slide rules, and pure mathematical genius.

Let's begin with Katherine Johnson. She was born in 1918 in White Sulphur Springs, West Virginia. From a young age, she showed extraordinary talent with numbers. By age ten, she was already in high school, and she graduated from college at just 18.

She studied mathematics and French at West Virginia State College, where her professors quickly noticed her brilliance. One mentor created special math courses just for her because she had gone beyond the school's curriculum.

In 1953, Johnson began working at Langley as part of the all-Black "West Area Computing Unit," a group of women mathematicians known as "human computers." Before electronic computers existed, these women did complex calculations by hand — with stunning accuracy.

Katherine's work focused on analytic geometry, which deals with calculating the paths and motions of objects — in this case, spacecraft. Her skill in understanding how objects move through space became critical to NASA's missions.

She helped calculate the trajectory for Alan Shepard's 1961 spaceflight, the first American to travel into space. Later, she verified the flight path for John Glenn's 1962 orbit around the Earth — one of NASA's most famous missions.

John Glenn personally requested that she check the computer's calculations before he would fly, saying, "If she says they're good, then I'm ready to go." That trust spoke volumes about her reputation and brilliance.

Now let's turn to Dorothy Vaughan, born in 1910 in Kansas City, Missouri. She graduated from Wilberforce University in Ohio in 1929 with a degree in mathematics and became a high school math teacher before joining NACA in 1943.

Dorothy began her career as part of the segregated West Area group but quickly proved herself as a skilled leader. In 1949, she became the first Black supervisor at NACA, overseeing the group of women mathematicians.

She was a gifted mathematician, but also a visionary. As technology advanced, she realized that electronic computers were the future. So she taught herself and her team how to program in FORTRAN, one of the earliest computer languages.

Because of her foresight, when NASA transitioned from human to digital computing, her team was ready — making her one of the first African American computer programmers in U.S. history.

Next is Mary Jackson, born in 1921 in Hampton, Virginia. She earned degrees in mathematics and physical science from Hampton Institute (now Hampton University). Like Johnson and Vaughan, she began as a “computer” at Langley.

Mary’s curiosity and drive led her to work closely with engineers on wind tunnel experiments — testing how air flows around objects like airplanes and rockets. Her supervisors recognized her potential and encouraged her to become an engineer.

However, at that time, the graduate courses she needed were held at a segregated high school. To attend, she had to petition the City of Hampton for permission. She won that fight, becoming NASA’s first Black female engineer in 1958.

Mary’s engineering work focused on improving spacecraft aerodynamics — how air resistance affects performance. Her research helped shape safer and more efficient designs during the early years of the U.S. space program.

Beyond her technical work, Mary Jackson became an advocate for diversity in science and engineering. Later in her career, she moved into NASA’s equal opportunity programs, mentoring and supporting women and minorities in STEM.

Together, Johnson, Vaughan, and Jackson transformed NASA from within — using intellect, precision, and perseverance to prove that excellence knows no race or gender.

Their achievements were not just scientific but social. They quietly undermined segregation by demonstrating through work, not protest, that intellect could not be confined by prejudice.

The term “hidden figures” fits perfectly because for decades, their names were left out of history books. Their calculations sent rockets into space, yet their own stories were almost lost to time.

In 2015, President Barack Obama awarded Katherine Johnson the Presidential Medal of Freedom, one of the nation’s highest honors. Dorothy Vaughan and Mary Jackson received posthumous recognition for their groundbreaking contributions.

In 2021, NASA renamed its headquarters building in Washington, D.C., the Mary W. Jackson NASA Headquarters, ensuring her name will stand where decisions about the future of space exploration are made.

Their stories remind us that progress often depends not only on visible heroes but on those who work quietly, persistently, behind the scenes — changing systems through skill and integrity.

Each woman represents a different kind of brilliance: Dorothy Vaughan's leadership and foresight, Mary Jackson's courage to break barriers, and Katherine Johnson's unmatched mathematical genius.

Together, they showed that science is not only about equations and data — it's about human possibility. They proved that diversity strengthens innovation, and that when opportunity is opened to all, the sky — quite literally — is no longer the limit.