



# Women Make History:

## Stories we should have learned in school

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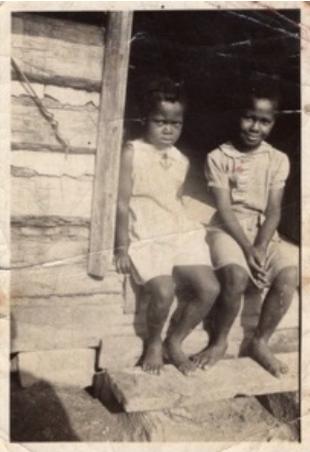
**“Study Hard.”**

**Dr. Gladys West,  
Mathematician and Inventor, GPS**



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The next time you use a map or location service on your phone, laptop, or other electronic device, give a nod to [Dr. Gladys West](#), an African American mathematician. Defying poverty, sexism, and Jim Crow segregation, her work was critical to the invention the Global Positioning System commonly known as [GPS](#).



*West and her sister in Sutherland, Virginia*

Born Gladys Mae Brown in 1930, West grew up in rural Virginia working alongside her parents and siblings on their small family farm. Determined to escape the boundaries of a predictable future as a farmer or a tobacco worker, West believed that education was her ticket “off the farm.”

In high school, no one subject captivated her imagination, so she decided to become proficient in each of them. She graduated valedictorian and won a full scholarship to Virginia State College (now [Virginia State University](#)). In 1952, she earned a degree in mathematics and in 1955, she received the first of two master’s degrees.

In an era that West later referred to as “separate but unequal,” she was denied several career opportunities because of race. After a brief period as a teacher, in 1956 West became the fourth Black person hired at a Naval weapons facility in Virginia. There she met and married her husband, also a scientist.

In the 1950s and early 1960s, most complex mathematical equations were still calculated by hand. West soon earned a reputation for her precision and speed in solving equations. When the Navy installed one of the first supercomputers at the lab where she worked, West often had the job of double checking its accuracy. Eventually, she learned to program the computer to solve complex mathematical problems.



West was also at the forefront of other new technologies including the use of satellites to determine the relationship between objects in space. Her success in calculating the movements of Pluto in relationship to Neptune, led to leadership roles on other groundbreaking initiatives. In 1978, West led the Navy’s [Seasat team](#), an experimental program that used satellites to survey and gather data on ocean conditions in real time. The satellite had to be programmed to collect and then factor multiple changing variables including wave height, water temperature, currents, winds, and other elements.

This brought scientists one step closer to being able to determine the exact shape of an ever-shifting earth. [According](#) to West, “The Earth is not round and we had to figure out the shape, precisely.” The challenge was to create a model that accurately measured and interpreted the Earth’s geometric shape, orientation in space, and gravity field. Her success was one of the critical components that enabled the precise location of points on the planet or GPS.

West later [said](#) that she and her colleagues weren’t thinking about the far-ranging implications of their work. “The most important thing,” she said, “was to do the work at hand, and to make sure it was correct.”



*Lt. Gen. David Thompson presents West with the Air Force Space and Missile Pioneers award.*

Like other “hidden figures” such as NASA’s mathematicians [Katherine Johnson](#), [Dorothy Vaughan](#), and [Mary Jackson](#), West’s groundbreaking work went mostly unrecognized because of race and gender. That changed in 2018 when West published a memoir, “[It Began with A Dream](#).” She dedicated the book to her mother and to the many “strong women in my life who said I could do it.”

Like those who mentored her, West has also sought to be a role model, regularly giving speeches and talks to young women, and also serving as a mentor to aspiring scientists, especially those she said had two strikes against them – being Black and female.

It was also in 2018, that West was [inducted](#) into the Air Force Space and Missile Pioneers Hall of Fame and was recognized by the Virginia General Assembly for her work in the development of GPS.

Throughout her life, West’s curiosity and passion for education has only increased. In 1973, while working full time, raising children, and serving on the local school board, she earned her second master’s degree. Following retirement in 1998, West suffered a stroke, but went onto receive her Ph.D. from Virginia Polytechnic Institute at age of 70.

Today, at 92 years-old, West remains an active volunteer in her church and regularly mentors young people interested in careers in science. Her advice? “Concentrate on your core subjects, take a look around at all of the [options], and choose what you might be interested in — and of course, study hard.”



**Separated by a century, these women  
share an astonishing herstory.**

I'm honored to share an essay I wrote that was recently published by Ms. Magazine:

**[If The Marvelous Mrs. Maisel Met the Dynamic Mrs. Dennett, Sex Ed and Censorship Would be So 20th Century.](#)**

Enjoy!

**Bring it Home: Conversation Starters**

**Ask a friend:** Midge Maisel is a fictional character, yet we can relate to her as if she were a real crusader against sexism. Who are other strong fictional women shaping our culture?

**Ask Yourself:** Gladys West had to battle both racism and gender discrimination. Are things beginning to change? If so, how?

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[Sharon Spaulding](#) is an historian and researcher who specializes in the life and times of Mary Ware Dennett (1872-1947). The curator of Dennett's family archives, Spaulding is at work on a book about Dennett. In 2020, [Time magazine](#) included Dennett as one of the most important women in American history.

Spaulding received a grant from Radcliffe College's Schlesinger Library to support her work. Her journalism has appeared in [Ms.Magazine](#), [Smithsonian](#), [New Hampshire Magazine](#), [BOLD](#), and others. She lives near Salt Lake City with her husband and two dogs.

Sharon is available to delight audiences with the forgotten stories of remarkable women and the history of the suffrage and reproductive rights movements of the early 20th century. Contact her at: [Sharon@SharonSpaulding.com](mailto:Sharon@SharonSpaulding.com).

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