



## WOMEN IN SPACE: POSTER COMPETITION

Thank you for participating in this competition!

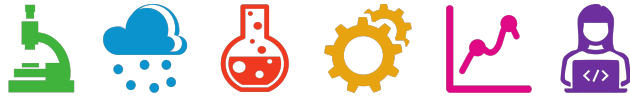
### Why is learning about women in space/STEM important?

Contrary to popular belief, there are plenty of women that have excelled in space exploration and STEM disciplines. However, in many cases, women participation in these fields have been stained by the so called “Matilda Effect”, a bias against acknowledging the achievements of women scientists (and inventors) whose work is attributed to their male colleagues. Known cases illustrating this effect are Rosalind Franklin, Jocelyn Bell Burner, Lise Meitner and Marietta Blau.

Activities that work to create awareness to the existence of exceptional female figures help to fight the gender bias and destroy harmful stereotypes that are known to have an impact on children’s interest to pursue pursuing space exploration and STEM disciplines.

See below a list (by no means comprehensive) of **FEMALE SPACE/STEM PROFESSIONALS** that you can use to help your class develop their posters and direct their search. Beside their names, I have included a small text about what they did or why are they important to help you choose.

Name	Description of their work
<b>Caroline Lucretia Herschel (1750-1848)</b>	A Germany astronomer. She discovered eight comets and made a list of over 2,500 fuzzy spots in the sky called nebulae. This list helped other scientists learn more about space later. She was the first woman to publish scientific findings in <i>the Philosophical Transactions of the Royal Society</i> and received a Gold Medal from the Royal Astronomical Society in 1828.
<b>Mary Somerville (1780-1872)</b>	A Scottish mathematician and scientist. Despite limited formal education, she self-taught herself mathematics and astronomy. Her influential works, such as <i>The Mechanism of the Heavens</i> , popularized complex scientific ideas and helped establish her as one of the first women in science. Reviewers of Somerville's work coined the term "scientist" to include her - before her, researchers were referred to as "men of science".

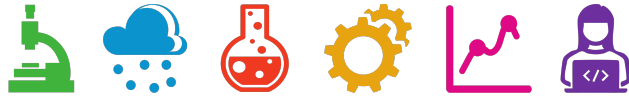


# TRY FIVE +



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<p><b>Henrietta Swan Leavitt (1868-1921)</b></p>	<p>Discovered the period-luminosity relationship of Cepheid variable stars (Leavitt Law), enabling accurate distance measurements in the universe. Edwin Hubble, who studied stars and galaxies in the 1920s, used Leavitt Law to find out that the fuzzy clouds seen in the sky were actually other galaxies beyond our Milky Way.</p>
<p><b>Cecilia Payne-Gaposchkin (1900-1979)</b></p>	<p>In 1925, her doctoral thesis "Stellar Atmospheres" proposed the relationship between stellar temperature and pressure with stellar spectra, suggesting that stars are primarily composed of hydrogen and helium. However, the mainstream view at the time believed stars had similar compositions to Earth, and she removed this argument at the suggestion of the famous astronomer Henry Norris Russell. But a few years later, her argument was confirmed.</p>
<p><b>Mary Jackson (1921-2005)</b></p>	<p>An American mathematician and aerospace. She worked at the National Advisory Committee for Aeronautics (NACA) and became NASA's first African American female engineer in 1958. Throughout her career, Jackson was dedicated to advancing the careers of women and minorities in science, engineering, and mathematics. Her story gained widespread attention in the 2016 book Hidden Figures, which was adapted into a film of the same name.</p>
<p><b>Vera Rubin (1928-2016)</b></p>	<p>Discovered dark matter. She found that stars at its edges rotated at the same speed as those near the centre. This contradicted Newton's laws, which predicted slower speeds for outer stars. Her observations revealed flat rotation curves, indicating there was unseen mass exerting gravitational influence—strong evidence for dark matter.</p>
<p><b>Andrea M. Ghez (1965- )</b></p>	<p>An American astrophysicist. She is renowned for her research on the Milky Way's centre, particularly the supermassive black hole known as Sagittarius A*. In 2020, Ghez was awarded the Nobel Prize in Physics, becoming the fourth woman to receive this honour after Marie Curie (1903), Maria Goeppert Mayer (1963), and Donna Strickland (2018) for the independent discoveries of the black hole. Her work has significantly advanced our understanding of black holes and their role in galaxy formation.</p>
<p><b>Sara Seager (1971- )</b></p>	<p>A Canadian-American astronomer and planetary. Her work focuses on finding planets outside our solar system, especially their atmospheres. She hopes to discover Earth-like planets that might have life. To achieve this goal, she has come up with new ideas and helped design space missions. She was awarded the MacArthur Fellowship, and has appeared in the documentary "Searching for Planet B".</p>
<p><b>Ellen Ochoa (1958- )</b></p>	<p>the first Hispanic woman to go to space and has held several important positions at NASA, including Director of the Johnson Space Centre. Ochoa is dedicated to educating and inspiring young people to pursue careers in science and technology, particularly in STEM fields. Her achievements have set an example for women in the aerospace industry.</p>



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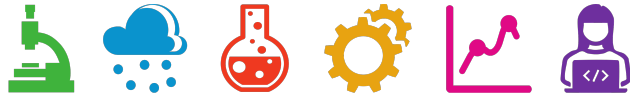
<b>Gwynne Shotwell (1963- )</b>	the Chief Operating Officer of SpaceX, responsible for the company's daily operations and strategic development. Shotwell has played a key role in advancing commercial space travel, helping SpaceX become one of the leading private aerospace companies in the world. She has received numerous industry awards and actively promotes women's participation in technology fields.
<b>Norah Patten (1988- )</b>	An aeronautical engineer and researcher, is hoping to become the first Irish person to travel into space. She will form part of a three-woman crew set to travel into space to carry out research for the International Institute for Astronautical Sciences (IIAS). She will test novel healthcare technologies and looking at how fluids behave in low gravity.
<b>Nicole Marie Passonno Stott (1962- )</b>	an American engineer and a retired NASA astronaut. She served as a flight engineer on ISS Expedition 20 and Expedition 21 and was a mission specialist on STS-128 and STS-133.
<b>Claudia Haigneré (1957- )</b>	A French doctor, politician and former astronaut, the first woman astronaut of the French space agency (CNES) and the European space agency (ESA) which went to space.
<b>Elżbieta Koopman Heweliusz (1647-1693)</b>	A Polish astronomer. She and her husband, Johannes Hevelius, conducted astronomical observations and research and designed and built the observatory in Gdańsk. she also completed his work "Prodromus astronomiae" after his death and published it in 1690.
<b>Marie Curie (1867-1934)</b>	Chemist and Physicist. Worked on radioactive compounds. She is, so far, the only woman in the field of science to win the Nobel Prize in two separate scientific fields: physics and chemistry. In her time, she was the first female scientist to win a Nobel Prize at all. developed and coined the theory of radioactivity, which she used to invent mobile radiography units. These units then allowed her to help alleviate the suffering of French soldiers during World War I
<b>Lina Borozdina (1938- )</b>	A Ukrainian scientist, chemist. She is also the first female astronaut from Ukraine, who participated in a commercial space flight with Virgin Galactic in 2024
<b>Annie Easley (1867-1934)</b>	An American computer scientist and rocket. She worked at NASA for many years, contributing to several important projects, including Mars landers and spacecraft development. Easley was not only an outstanding technical expert but also actively promoted STEM education, encouraging young people, especially women, to pursue careers in science and engineering.
<b>Mae Jemison (1956- )</b>	A physician and engineer, the first African American woman in space. She flew aboard the Space Shuttle Endeavour in 1992. She has been a strong advocate for diversity in STEM fields and continues to inspire future generations through her work and public speaking engagements.



# TRY FIVE +



<p><b>Samantha Cristoforetti</b> (1977- )</p>	<p>An Italian astronaut with the European Space Agency (ESA). She flew to the ISS in 2014 and became the first Italian woman in space. She has conducted numerous experiments aboard the ISS and is known for her efforts to promote science education and outreach.</p>
<p><b>Katya Echazarreta</b> (1995- )</p>	<p>The first Mexican-born woman to travel to space. She flew on Blue Origin's NS-21 mission on June 4, 2022. She is an electrical engineer who worked on several NASA missions before her historic flight and is dedicated to promoting STEM education through her foundation.</p>
<p><b>Wang Zhenyi</b> (Chinese: 王贞仪, pinyin)</p>	<p>A Chinese scientist and poet. She self-studied multiple subjects, including astronomy, mathematics, geography, and medicine. She authored numerous works, including "De Feng Ting Chu Ji" and "Explanation of Lunar Eclipses," and was honoured by the International Astronomical Union with a crater on Venus named after her for her contributions to science.</p>
<p><b>Liu Yang</b> (Chinese: 刘洋, pinyin)</p>	<p>China's first female astronaut. She successfully entered space aboard the Shenzhou 9 spacecraft in 2012. During her mission, she was responsible for various scientific experiments and worked alongside other astronauts to complete the docking with the space station.</p>
<p><b>Wang Yaping</b> (Chinese: 王亚平, pinyin)</p>	<p>A Chinese astronaut. She flew to space on the Shenzhou 10 spacecraft in 2013 and conducted a historic lesson from space. She also participated in the Shenzhou 13 mission in 2021, setting multiple records, including being the first female astronaut to perform a spacewalk.</p>
<p><b>Kalpana Chawla</b> (1962-2003)</p>	<p>The first woman of Indian origin in space. She flew on two Space Shuttle missions, STS-87 in 1997 and STS-107 in 2003. Tragically, she lost her life during the STS-107 mission when the Shuttle Columbia disintegrated upon re-entry. Her legacy continues to inspire many aspiring astronauts in India and around the world.</p>
<p><b>Ritu Karidhal</b> (1975- )</p>	<p>A prominent Indian aerospace engineer and senior scientist at the Indian Space Research Organisation (ISRO). She played a crucial role as the deputy operations director for the Mars Orbiter Mission (Mangalyaan) and was also the project director for Chandrayaan-2. Known as the "Rocket Woman of India," she has been instrumental in several successful missions, including the recent Chandrayaan-3, which made India the first country to land near the moon's south pole.</p>
<p><b>Mimi Aung</b> (1968- )</p>	<p>A Burmese-American engineer. She was a lead engineer on the Mars Helicopter Ingenuity, the first extra-terrestrial aircraft. In 2021, Ingenuity arrived on Mars and took its first 39-second flight. Now, she is director of technical program management for Amazon's Project Kuiper, an initiative to increase broadband internet access through an array of satellites in low Earth orbit.</p>



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<b>María José Cordero (1994- )</b>	A Spanish astronomer specializing in planetary science and astrophysics. She has participated in various international projects, particularly in missions exploring Mars and Jupiter.
<b>Valentina Tereshkova (1937- )</b>	The first female astronaut from the Soviet Union and the first woman to fly in space. In 1963, she completed a three-day space flight aboard the Vostok 6 spacecraft, becoming a global sensation.
<b>Svetlana Savitskaya (1948- )</b>	The second female astronaut from the Soviet Union and the first woman to conduct a spacewalk. She flew into space twice in 1982 and 1984, successfully performing a spacewalk during her 1984 mission.
<b>Sian Proctor (1970- )</b>	An American geologist, artist and astronaut. She is also the first African-American commercial astronaut, and the first African-American to paint in space. She participated as a pilot on SpaceX's Inspiration4 mission, overseeing various experiments and tasks. She also uses her Afrofuturism space art to encourage conversations about women of colour in the space industry.
<b>Diana Trujillo (1980- )</b>	A Colombian-American aerospace engineer at the NASA Jet Propulsion Laboratory. She has played a key role in Mars exploration missions, including the Curiosity and Perseverance rovers, and actively advocates for diversity in STEM fields. She currently leads the engineering team at JPL responsible for the robotic arm of the Perseverance rover.
<b>Tanya Harrison (1985- )</b>	A planetary scientist specializing in the geology and climate of Mars. She has worked on multiple NASA missions to Mars, including the Opportunity, Curiosity, and Perseverance rovers, and the Mars Reconnaissance Orbiter. A respected science communicator, she regularly appears on TV documentaries and news outlets discussing everything from Mars exploration to the commercial space sector to topics related to women in science.
<b>Katherine Johnson (1918-2020)</b>	The first African-American woman to work as a NASA scientist. She's also a mathematician whose calculations of orbital mechanics as a NASA employee were critical to the success of the first and subsequent U.S. crude spaceflights. She was known as a "human computer" for her tremendous mathematical capability and ability to work with space trajectories with such little technology and recognition at the time.
<b>Anamaría Font (1964- )</b>	A Venezuelan theoretical physicist. She received the 2023 L'Oréal-UNESCO International Award for Women in Science for her outstanding contributions. She introduced the concept of S-duality and played a significant role in the study of superstring theory, advancing the understanding of black holes and the early stages of the universe after the Big Bang.