How to play

Any number of people can play at once! Shuffle all the cards in the deck and deal all the cards equally between players, face down.

The player to the dealer's left starts by reading out an item from their top card, e.g. Biography 7. The other players then read out their scores for the same characteristic. The player with the highest value (going from 1-10) wins and places all the top cards - including their own - to the bottom of their pile. They then choose an item from the next card at the top of their hand.

If two or more cards share the top value then all the cards are placed in the middle and the same player chooses again from the next card. The winner of the hand takes all the cards in the middle as well.

The person with all the cards at the end is the winner.

About this deck

This deck contains the stories of some of the most awesome women to ever work in the fields of mathematics, biology, chemistry, physics and geology. Each field's cards are colour-coded and have a unique symbol in the top right.

We hope that you take inspiration from what these women have achieved, and maybe you will be a card yourself one day!
**Dorothy Hodgkin**


**Innovation** 8  
**Impact** 8  
**Obscurity** 2  
**Badassery** 4

Winner of the 1964 Nobel prize for chemistry. Hodgkin advanced the technique of using X-ray crystallography to identify biological molecules. Her work on the structure of penicillin and vitamin B-12, and later insulin, was pioneering in the field. One of her research students was future Prime Minister Margaret Thatcher, who hung a portrait of her in 10 Downing Street.

**Kathryn Sullivan**


**Innovation** 2  
**Impact** 2  
**Obscurity** 2  
**Badassery** 9

Trained as a geologist, and specializing in oceanography, Sullivan joined NASA's astronaut corps and has logged 592 hours in space over three space shuttle missions. She was the first American woman to walk in space. As well as working for the US government in both NASA and NOAA, she was an oceanography officer in the US Navy and worked with the rank of Captain.

**Lise Meitner**


**Innovation** 9  
**Impact** 7  
**Obscurity** 8  
**Badassery** 6

The first woman in Germany to become a full professor in physics, and praised by Einstein as the German Marie Curie. Meitner was part of the team which discovered nuclear fission, the process by which atoms can be split apart, releasing huge amounts of energy. Extremely controversially she was not awarded the Nobel prize in physics for her work, while her male colleague Otto Hahn was.

**Hypatia**

Greek. 370-415. Mathematician and Philosopher.

**Innovation** 4  
**Impact** 5  
**Obscurity** 4  
**Badassery** 5

Hypatia was a Greek philosopher, the head of the Neoplatonic school in Alexandria. While none of her original works survive, it is clear that she made contributions to mathematics - including commentary on Euclid and Diophantus - astronomy, and instrumental science. She was brutally murdered by a Christian mob, with her death signifying the end of Classical antiquity.

**Emmy Noether**

German. 1882-1935. Mathematician.

**Innovation** 8  
**Impact** 9  
**Obscurity** 7  
**Badassery** 3

Described by many, including Einstein, as the most important woman in the history of mathematics, Emmy Noether conducted world-leading research at the University of Göttingen in rings, fields and algebras. Noether's theorem in physics elegantly draws a connection between symmetry and conservation laws, and has been described as one of the most powerful laws in mathematical physics.

**Mary Somerville**

Scottish. 1780-1872. Polymath.

**Innovation** 3  
**Impact** 5  
**Obscurity** 6  
**Badassery** 5

Somerville was a feminist, mathematician, and an astronomer who correctly predicted the existence of the planet Neptune, discovered four years later. She was a great scientific writer of textbooks and articles, with her work cited as influential on many, many Victorian scientists. She has an Oxford college, Somerville College, named after her.

**Marie Skłodowska**


**Innovation** 9  
**Impact** 8  
**Obscurity** 1  
**Badassery** 8

Better known as Marie Curie after her marriage to French physicist Pierre Curie, she was the first woman to win a Nobel prize, and the only woman to have won two Nobel prizes - for physics in 1903 and for chemistry in 1911. She pioneered a theory where radiation did not come from a chemical reaction but from atoms themselves, and discovered the elements Polonium and Radium.

**Émilie du Châtelet**


As interesting for her personal relationships as she is for her scientific work, du Châtelet had a wide range of talents including mathematics, linguistics, music, and gambling. Her greatest achievement was her translation of, and commentary on, Newton's Principia Mathematica, still considered the standard French translation. During her life she was romantically linked to French philosophers Voltaire and Pierre Louis Maupertuis.
Jane Goodall

Innovation 5
Impact 3
Obscurity 4
Badassery 7

Considered to be the world’s leading expert on chimpanzees, Jane Goodall is most famous for her groundbreaking study of social and family interactions of chimpanzees in Tanzania. She was unique among researchers, accepted into a chimpanzee society for 22 months. She is also a passionate advocate of conservation and animal welfare issues.

Helen Sharman

Innovation 2
Impact 1
Obscurity 5
Badassery 9

A chemist who received her doctorate from Birmingham University, London, Sharman was the first Briton to go into space, and the first woman to visit the Mir space station, after responding to a radio advert. Sharman wanted no experience required. Before going into space, she worked on the chemical properties of chocolate, because she liked “test it.”

Florence Bascom

Innovation 4
Impact 4
Obscurity 9
Badassery 1

The first woman to graduate with a PhD at Johns Hopkins University, the first woman to present a scientific paper at the Geological Society of Washington, and the first woman officer of the Geological Society of America. Bascom was an authority on rocks of the Piedmont region and was given 4 stars in the 1947 edition of American Men and Women of Science (called the “who’s who” of Science at the time), a very high honor for a scientist of any gender.

Mary Maynard Daly

Innovation 6
Impact 5
Obscurity 9
Badassery 9

Trained as a chemist, Daly became the first African American woman in the United States to receive a PhD in chemistry from Columbia University in 1947. In her long research career she pioneered work on the effects of cholesterol on heart attacks, the effects of sugar on arteries, and the effects of cigarette smoking on the lungs.

Maryam Mirzakhani

Innovation 5
Impact 3
Obscurity 6
Badassery 4

Both the first woman and the first Iranian to win the Fields Medal – the most prestigious award in mathematics – in 2014, Mirzakhani is currently a professor at Stanford University and received her PhD from Harvard. Her work on the symmetry of curved surfaces was described as having “partner problem-solving ability, ambitious mathematical vision and fluency in many disciplines.”

Dorothy Hill

Innovation 4
Impact 7
Obscurity 7
Badassery 8

Educated at the University of Queensland, AUS, and the University of Cambridge, UK, Hill completed research on the coral reefs of Australia which became the global standard for the field. During WW2 she enlisted in the Women’s Royal Australian Naval Service and worked on cipher and coding. After the war she became the first female professor in Australia.

Claudia Alexander

Innovation 1
Impact 3
Obscurity 8
Badassery 6

Named Woman of the Year by the University of Michigan, AUS, and when she graduated with her PhD in 1995, Alexander went on to work for NASA as a planetary scientist at the Jet Propulsion Laboratory. In 2003 she was awarded the Eureka Prize for Women’s Contribution to Color in Research & Engineering for her work at JPL. Alexander is now the project manager of NASA’s Rosetta mission to study the comet 67P.

May-Britt Moser

Innovation 8
Impact 6
Obscurity 5
Badassery 4

May-Britt Moser and her husband Edvard shared the 2014 Nobel Prize for physiology for their pioneering work on how the brain represents space. Both are experienced associate professors of the Norwegian University of Science and Technology just one year after completing their PhD degrees. She is noted for her leadership qualities and has established multiple research institutes.