**1957 -** October 4, 1957: USSR launch [Sputnik](http://www.american-historama.org/1945-1989-cold-war-era/sputnik.htm), the world's first artificial satellite that orbited Earth  every 96 minutes

* World’s first artificial satellite
* Dims: 58 cm in diameter, 83.6 kg
* 98 minutes to orbit the Earth on its elliptical path
* Marked the start of the Space Age and the U.S. – U.S.S.R. Space Race
* American public feared that Soviet’s ability to launch satellites => ability to launch ballistic missiles with nuclear weapons from Europe to U.S.
* Caused approval of more funding for new U.S. satellite -> Explorer & creation of NASA (National Aeronautics and Space Administration.
* *🡪 use this as intro scene, show Sputnik in real dims, then launch into a snapshot of videos about the space race to get user excited to learn more -> throw user into SPACE scene and throw up instructions about stars on helmet HUD.*
* [1]

**1957 -** November 3, 1957:  USSR launch Sputnik 2 into space with Laika the dog aboard

* Carried a heavier payload than Sputnik I
* First biological spacecraft – carried Laika (life form)
* [1]
* Dims: 4 m high cone-shaped capsule with a base diameter of 2 meters
* Radio transmitters, telemetry system (Tral\_D: transmitted engineering and bio data to Earth for 15 mins of each orbit), a programming unit, a regen and temp control system for the cabin, scientific instruments (2 spectrophotometers to measure solar radiation UV and X-ray, and cosmic rays); separate sealed cabin for Laika with camera (transmit 100-line video frames at 10 frames/second), food/water (gelatinized form), air regeneration system provided oxygen.
* Nose cone jettisoned successfully
* Blok A core did not separate as planned => inhibited operation of the thermal control system
* Inhib of temp control system + partially torn thermal insulation => interior temperatures reached 40 C => Laika survived for only 2 days instead of 10.
* Reentered atmosphere on 14 April 1958 (162 days in orbit).
* Laika: female part-Samoyed terrier, 6 kg.
* [2]

**1958 -** January 31, 1958: USA Explorer Satellite success - America's first satellite launched into space

* Carried scientific payload that later led to discovery of magnetic radiation belts around the Earth.
* [1]
* Cosmic ray detector.
* One orbit every 114.8 mins.
* Dims: 203 cm in length, 15.9 cm in diameter.
* First satellite to carry science instruments.
* Final transmission on May 23rd, 1958; reentered Earth’s atmosphere and burned up on March 31st, 1970.
* [4]

**1959 -** October 4, 1959: USSR sent the first spacecraft, Luna 3, around the moon

* Automatic interplanetary station.
* First to return images of the lunar far side (showed mountainous terrain, only 2 dark regions – Mare Moscovrae and Mare Desiderii.
* Cylindrically shaped cannister with hemispherical ends and a wide flange near the top end (length: 130 cm, 120cm @ max diameter, cylinder 95 cm in diameter).
* Power thru solar cells, mounted along the outside of the cylinder -> power to chem batteries stored inside the spacecraft.
* Jalousies along the cylinder would open to expose a radiating surface when interior temperature exceeded 25 C => temp control.
* Photoelectric cells => maintain orientation with respect to the Sun and Moon.
* Cosmic ray detectors, micrometeoroid detectors
* Radio equipment, cameras, propulsion systems, batteries, gyroscopic units for attitude control, fans
* Directly radio controlled from Earth.
* [3]

**1960 -** August 18, 1960: USA Corona Spy Satellite - successful recovery of photographs from space

* First imaging reconnaissance satellite.
* Created by CIA, Air Force, and industry experts.
* Task: provide broad imagery coverage of the USSR to identify missile launch sites and production facilities.
* Collected over 800,000 images.
* [5]
* Moscow: <https://research.archives.gov/id/595264>

**1961 -** April 12, 1961: USSR sent First Man into Space in Vostok I spacecraft (Soviet Cosmonaut, Yuri Gagarin)

* A secret nationwide selection process narrowed down to an elite training group “Sochi Six”
* An air force doctor evaluated his personality as: "Modest; embarrasses when his humour gets a little too racy; high degree of intellectual development evident; fantastic memory; distinguishes himself from his colleagues by his sharp and far-ranging sense of attention to his surroundings; a well-developed imagination; quick reactions; persevering, prepares himself painstakingly for his activities and training exercises, handles celestial mechanics and mathematical formulae with ease as well as excels in higher mathematics; does not feel constrained when he has to defend his point of view if he considers himself right; appears that he understands life better than a lot of his friends."
* Chosen by vote of his colleagues.
* First human to orbit Earth.
* Poehali
* Baikonur Cosmodrome
* Flight duration: 108 minutes.
* Dims: 2.3m sphere diameter
* Vostok 1 speed: 27400 kilometers per hour
* Vostok 1 reentry controlled by a computer program sending radio commands to the space capsule.
* [6]
* Video: <https://www.youtube.com/watch?v=Ds44_CkfCW4>
* Interview BBC: <https://www.bbc.com/russian/multimedia/2016/04/160411_v_gagarin_int>
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* Doklad: http://www.retroportal.ru/gagarin\_13\_04\_1961.shtml

**1961 -** May 5, 1961: Alan Shepard became the first American, to travel into space on Freedom 7

* Project Mercury: capsule Freedom 7
* Did not orbit Earth, flew 116 miles high and came back down: 15 minutes, 28 seconds.
* [7]

**1962 -** February 20, 1962: USA launches Friendship 7 and John Glenn becomes the first US astronaut to circle the Earth

* First American to orbit Earth, circled Earth 3 times.
* 4 hours, 55 minutes, 23 seconds
* NASA finally pulled back even with the Soviets
* [8]

**1962 -** April 1962: USSR launches Zenit Spy Satellite, takes photographs above the USA

* Converted Vostok manned spacecraft carrying cameras instead of a cosmonaut, successfully returned film from space.
* Photos: <https://airandspace.si.edu/exhibitions/space-race/online/sec400/sec441.htm>
* [9]

**1963 -** 16 June 1963: USSR launch Vostok 6 sending Valentina Tereshkova as the first woman in space

* Wrote a letter to the space center volunteering for the cosmonaut team.
* Vostok 6
* 45 revolutions around the Earth: 70 hours, 50 minutes
* Orbited Earth every 88 minutes
* Spacecraft was manually controlled by Tereshkova
* [10]

**1965 -** March 1965: USSR First Spacewalk by Aleksei Leonov.

* First man to walk in space.
* With Pavel Belyayev
* 26 hour flight
* Floated freely outside the Voskhod capsule for more than 10 minutes.
* *=> Make into a scene, teleport user outside Voskhod as Leonov.*
* Could not return to the capsule because the pressure difference between the air in the space suit and the vacuum of space expanded the suit, making it so ridig he could not work his fingers => had to bleed some air out of the suit to be able to work the lock’s outer hatch.
* Onboard computer malfunctioned on re-entry => capsule landed in Ural Mountains, cosmonauts rescued after 2 days.
* [11]

**1965 -** June 3-7, 1965: Astronaut Edward H. White II piloted the second operational Gemini mission and performed the first spacewalk by an American.

* Program: Gemini
* 4 day mission
* Spacewalk: 21 minutes.
* Missions: study of cabin depressurization, opening of cabin doors, 12 scientific and medical experiments.
* [12]
* Spacecraft: Titan II
* Experiments: photography (geological, oceanographic, meteorological data on full-color film), radiation in spacecraft, simple navigation, electrostatic charge, proton/electron spectrometers and tri-axis magnetometers; degree of cardiovascular adaptation or deconditioning of the human body during prolonged space flight, phonocardiogram for cardiac status of astronauts during flight, bone demineralization, impedance pneumograph measured respiration.
* [13]

**1967 -** The Outer Space Treaty was signed in January 1967 forming the basis of international space law and banned placing weapons of mass destruction in outer space.

* Formed the basic legal framework of international space law.
* US, UK, USSR
* Bars states party to the treaty from placing weapons of mass destruction in Earth orbit, installing them on the Moon or any other celestial body, or otherwise stationing them in outer space.
* Limits the use of the Moon and other celestial bodies to peaceful purposes and prohibits their use for testing weapons of any kind, conducting military bases, installations, and fortifications.
* Does not prohibit the placement of conventional weapons in orbit.
* States that exploration of outer space shall be done to benefit all countries and that space shall be free for exploration and use by all the States.
* States are liable for damages caused by their launched space objects.
* [14]

**1969 -** July 16, 1969: USA places First Man on the Moon. Neil Armstrong and Buzz Aldrin in Apollo 11 lunar module land on the Moon with Michael Collins as the third crew member.

* July 20th, 10:56 pm EDT, Armstrong set foot on the moon.
* “That’s one small step for a man, one giant leap for Mankind”
* Top layer was a fine powdery material, foot sunk in only a quater
* *=> There is a video for that*

**1970 -** April 23, 1971: USSR establishes the first Space Station, Salyut 1

**1971 -** November 14, 1971: USA sends the first satellite to orbit another planet

**1973 -** Russian space probe Mars 2 explored Mars, the fourth planet of the solar system.

**1975 -** The USA / USSR First joint multi-national manned missions in the Apollo-Soyuz Test Project ended the Cold War Space Race.

**June 18, 1983:** [Sally Ride](https://www.space.com/16756-sally-ride-biography.html) aboard the Space Shuttle Challenger becomes the first American woman in space.

**Feb. 20, 1986:** The Soviet Union launches theMir space station.

**April 25, 1990:** The Space Shuttle Discovery releases the [Hubble Space Telescope](https://www.space.com/15892-hubble-space-telescope.html)into Earth orbit.

**Nov. 20, 1998:** Russia's Zarya control module, the first segment of the [International Space Station](https://www.space.com/16748-international-space-station.html), launches into space and unfurls its solar arrays.

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