

# SPACE RACE TIMELINE NEWSPAPERS

## Directions:

You have been assigned one of the key events in what is known as the "Space Race". During the Cold War, America and the Soviet Union had a fierce competition to beat each other into Outer Space.

You will need to read your assigned article and create a newspaper front page for this event.

You must include:

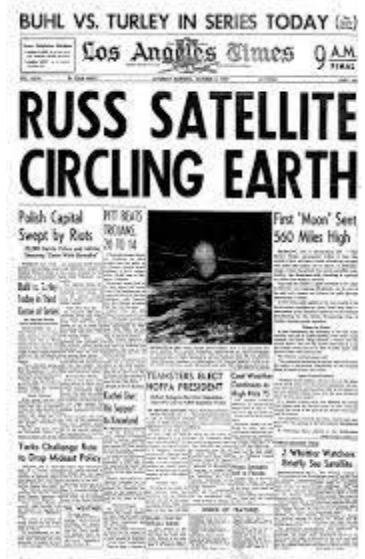
1. A name of your newspaper.
2. The date of your event.
3. An appropriate headline
4. A picture of your event
5. A caption for your picture
6. An article describing the significance of your event.

You will then present your newspaper to the class and each event will be added to a timeline we will create on the Space Race.

The template consists of several sections:

- 1:** A box for the newspaper's name.
- 2:** A box for the date.
- 3:** A large box for the main headline.
- 4:** A large box for a picture of the event.
- 5:** A box for a caption below the picture.
- 6:** A large box for the main article text.

At the top of the template, there are fields for "Name", "History's Biggest Events", and "Date".



# TIMELINE OF THE SPACE RACE

**American Accomplishments**



**Soviet Accomplishments**



1955

1960

1965

1970

1975

1980

1985

1990

1995

2000



# PRESIDENT KENNEDY ANNOUNCES DECISION TO GO TO THE MOON

On May 25, 1961, President John F. Kennedy announced before a special joint session of Congress the dramatic and ambitious goal of sending an American safely to the Moon before the end of the decade. A number of political factors affected Kennedy's decision and the timing of it. In general, Kennedy felt great pressure to have the United States "catch up to and overtake" the Soviet Union in the Space Race.

At the time, the Russians were far ahead of the United States in the Space Race. Four years after the Russians launched Sputnik, the first satellite in 1957, Yuri Gagarin became the first human in space in April 1961, greatly embarrassing America. In May of that that year, Alan Shepard became the first American in space but he only flew on a short suborbital flight instead of orbiting the Earth, as Gagarin had done.

After consulting with Vice President Johnson, NASA Administrator James Webb, and other officials, he concluded that landing an American on the Moon would be a very challenging technological feat, but an area of space exploration in which the U.S. actually had a potential lead.



The decision involved much consideration before making it public, as well as enormous human efforts and expenditures to make what became known as Project Apollo.

His goal was achieved on July 20, 1969, when Apollo 11 commander Neil Armstrong stepped off the Lunar Module's ladder and onto the Moon's surface.

# JOHN GLENN ORBITS THE EARTH

On February 20, 1962, NASA launched one of the most important flights in American history. The mission was to send a man to orbit Earth and return him home safely. John Glenn was the pilot of this historic flight and soon became a national hero and a symbol of American ambition.

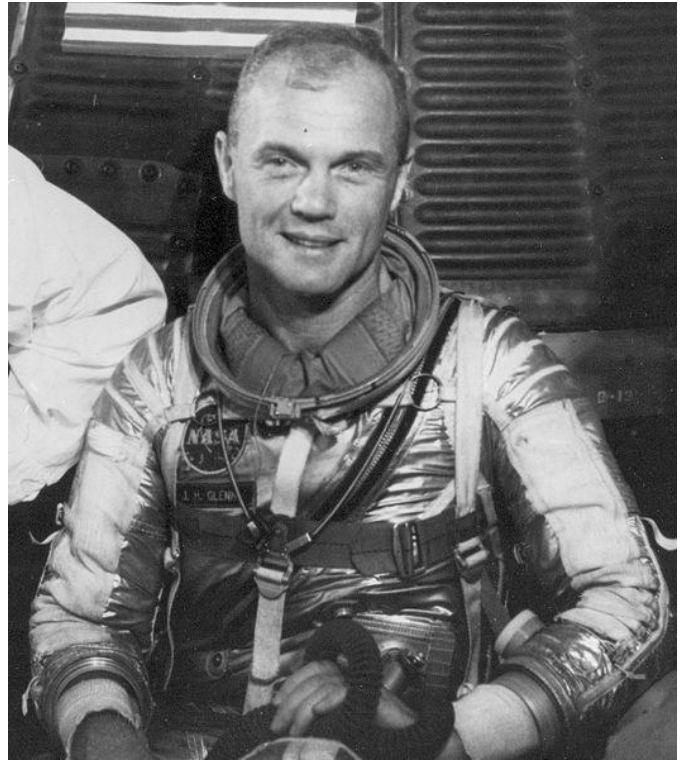
America's space program, NASA was formed in 1958 after the Soviets took the lead into space. NASA recruited astronaut candidates from across the US. Each had to be test pilot school graduates in excellent physical shape, less than 40 years old, shorter than 5 feet 11 inches, qualified jet pilots, and they had to have at least 1,500 hours flying time and bachelors' degrees in engineering. Glenn met all the requirements.

He also had a reputation as one of the best test pilots in the country. In July 1957, he had set a transcontinental speed record by flying from Los Angeles to New York in 3 hours and 23 minutes. It was the first transcontinental flight to average supersonic speed.

In April of 1959, John Glenn was selected as a member of the first group of astronauts, the "Mercury Seven."

After three years of training, John Glenn rocketed into space aboard the Mercury capsule Friendship 7. He became the third American in space and the first to orbit Earth.

In 4 hours and 56 minutes, John Glenn circled the globe three times, reaching speeds of more than 17,000 miles per hour. The successful mission concluded with a splashdown and recovery in the Atlantic Ocean, 800 miles southeast of Bermuda.



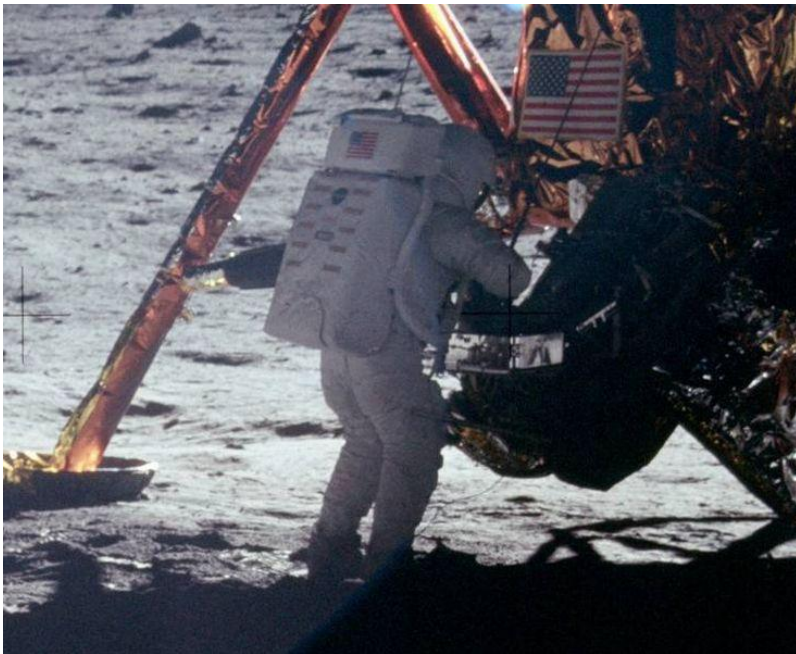
John Glenn instantly became a hero. President John Kennedy awarded him the Space Congressional Medal of Honor. Schools and streets across the country were named after him. And a ticker tape parade in New York City celebrated his mission.

# NEIL ARMSTRONG WALKS ON THE MOON

On July 20, 1969, Apollo 11 Commander Neil Armstrong became the first man on the moon. A camera in the Lunar Module provided live television coverage as Neil Armstrong climbed down the ladder to the surface of the moon. He then said the historic words, "One small step for man, one giant leap for mankind."

The Apollo 11 landing on the surface of the moon occurred at 3:17 pm on July 20, 1969. When a sensor attached to the legs of the still hovering Lunar Module made lunar contact, a panel light inside the LM lit up. The first words Armstrong intentionally spoke to Mission Control and the world from the lunar surface were, "Houston, Tranquility Base here. The Eagle has landed."

About 15 minutes after the first step, Buzz Aldrin joined Armstrong on the surface and became the second human to set foot on the Moon. The duo began their tasks of investigating how easily a person could operate on the lunar surface. Early on they also unveiled a plaque commemorating their flight, and also



planted the flag of the United States. The flag used on this mission had a metal rod to hold it horizontal from its pole. Since the rod did not fully extend, and the flag was tightly folded and packed during the journey, the flag ended up with a slightly wavy appearance, as if there were a breeze.

## Activities

After helping to set up the Early Apollo Scientific Experiment Package, Armstrong went for a walk to what is now known as East Crater, 65 yards to the east.

Armstrong's final task was to leave a small package of memorial items to deceased Soviet cosmonauts Yuri Gagarin and Vladimir Komarov, and Apollo 1 astronauts Gus Grissom, Ed White and Roger Chaffee.

The time spent on the moon during Apollo 11 was about two-and-a-half hours, the shortest of any of the six Apollo lunar landing missions. Each of the subsequent five landings were allotted gradually longer periods for activities. The crew of Apollo 17, by comparison, spent over 21 hours exploring the lunar surface.

## Return to Earth

The hatch was closed and sealed. While preparing for the liftoff from the lunar surface, Armstrong and Aldrin discovered that in their bulky spacesuits, they had broken the ignition switch for the ascent engine. The ascent engine had no switch to fire. Using part of a pen, they pushed the circuit breaker in to activate the launch sequence. The lunar module then continued to its rendezvous and docked with Columbia, the command and service module, and returned to Earth. The command module splashed down in the Pacific Ocean and the Apollo 11 crew was picked up.

# SALLY RIDE IS FIRST AMERICAN WOMAN IN SPACE



Sally Ride was one of 8,000 people to answer an advertisement in a newspaper seeking applicants for the space program.

Ride attended Swarthmore College and then transferred to Stanford University, graduating with a bachelor's degree in English and physics. Also at Stanford, she earned a master's degree and a Ph.D. in physics, while doing research in astrophysics and free electron laser physics.

She joined NASA in 1978. During her career, Ride served as the ground-based Capsule Communicator (CapCom) for the second and third Space Shuttle flights (STS-2 and STS-3) and helped develop the Space Shuttle's robot arm.

On June 18, 1983, she became the first American woman in space as a crew member on Space Shuttle Challenger for STS-7. However, she was preceded by two Soviet women, Valentina Tereshkova in 1963 and Svetlana Savitskaya in 1982.

On STS-7, the five-person crew deployed two communications satellites and conducted various experiments in space. Ride became the first woman to use the robot arm in space and the first to use the arm to retrieve a satellite.

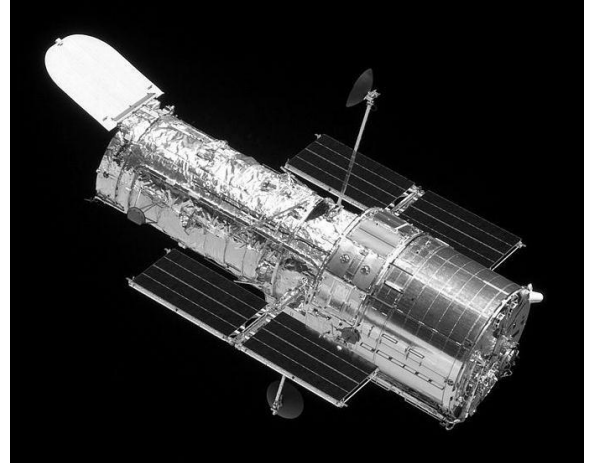
Her second space flight was in 1984, also on board the Challenger. She has spent more than 343 hours in space.

# HUBBLE TELESCOPE LAUNCHED

The Hubble Space Telescope is a space telescope that was carried into orbit by a space shuttle in 1990. Although not the first space telescope, Hubble is one of the largest and most versatile, and is well-known as both a vital research tool and a public relations boon for astronomy.

The Hubble was built by the United States space agency NASA, with contributions from the European Space Agency, and is operated by the Space Telescope Science Institute. It is named after the astronomer Edwin Hubble.

Hubble was funded in the 1970s, with a proposed launch in 1983, but the project was beset by technical delays, budget problems, and the Challenger disaster. When finally launched in 1990, scientists found that the main mirror had been ground incorrectly, severely compromising the telescope's capabilities. However, after a servicing mission in 1993, the telescope was restored to its intended quality. Hubble's orbit outside the distortion of Earth's atmosphere allows it to take extremely sharp images with almost no background light. Hubble's Ultra Deep Field image, for instance, is the most detailed visible-light image ever made of the universe's most distant objects. Many Hubble observations have led to breakthroughs in astrophysics, such as accurately determining the rate of expansion of the universe.



Hubble is the only telescope designed to be serviced in space by astronauts. Four servicing missions were performed from 1993 to 2002, but the fifth was canceled on safety grounds following the Space Shuttle Columbia disaster. However, after spirited public discussion, NASA administrator Mike Griffin approved one final servicing mission, completed in 2009.

The telescope is now expected to function until at least 2018, when its scientific successor, the James Webb Space Telescope (JWST), is due to be launched.



# GPS POSITIONING MADE POSSIBLE

Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense (USDOD). GPS was originally intended for military applications, but is now available for civilian use.

The USDOD began the GPS system in the 1970's bringing together several technologies made possible in the 1960's. After Korean Air Lines Flight 007, carrying 269 people, was shot down in 1983 after straying into the USSR's prohibited airspace, President Ronald Reagan issued a directive making GPS freely available for civilian use, once it was sufficiently developed, as a common good.

The first GPS satellite was launched in 1989, and the 24th and last satellite was launched in 1994 and GPS became fully operational.

GPS works in any weather conditions, anywhere in the world, 24 hours a day. There are no subscription fees or setup charges to use GPS. Today GPS is available in phones, computers, directional devices, and countless other devices.



## How it works

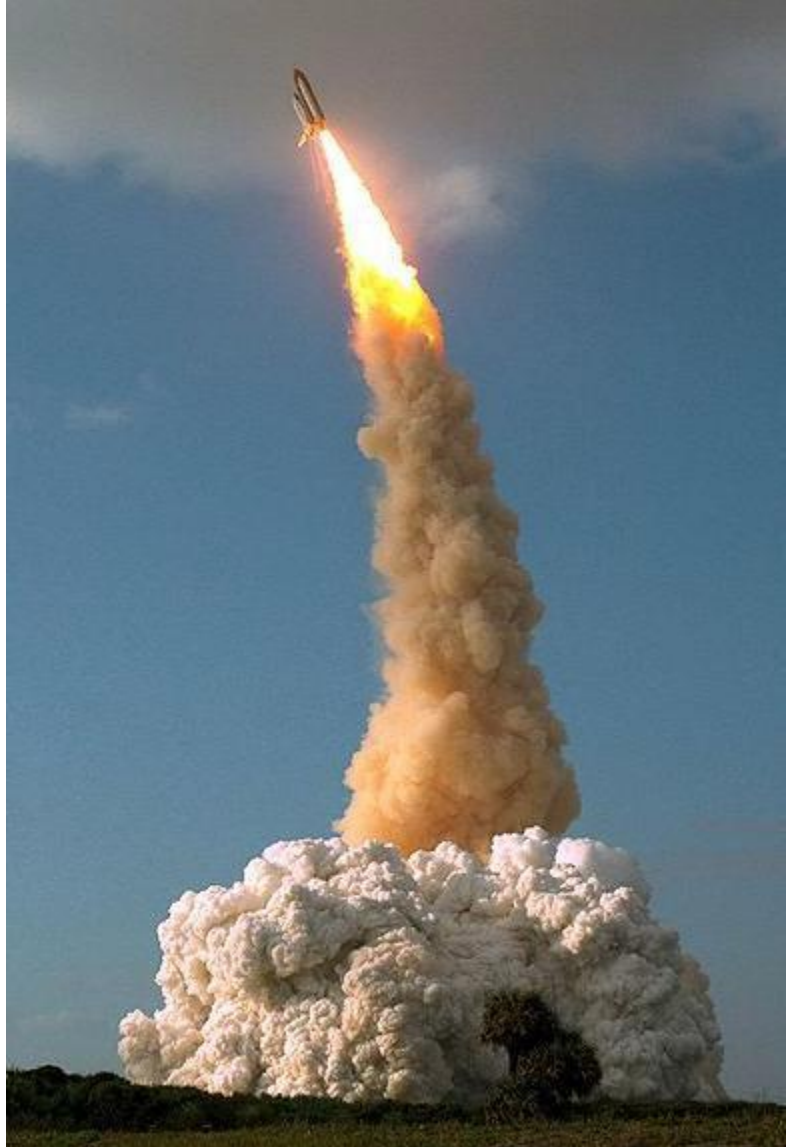
GPS satellites circle the earth twice a day in a very precise orbit and transmit signal information to earth. GPS receivers take this information and use triangulation to calculate the user's exact location.

Essentially, the GPS receiver compares the time a signal was transmitted by a satellite with the time it was received. The time difference tells the GPS receiver how far away the satellite is. Now, with distance measurements from a few more satellites, the receiver can determine the user's position and display it on the unit's electronic map.

# VOYAGER PROGRAM STARTED

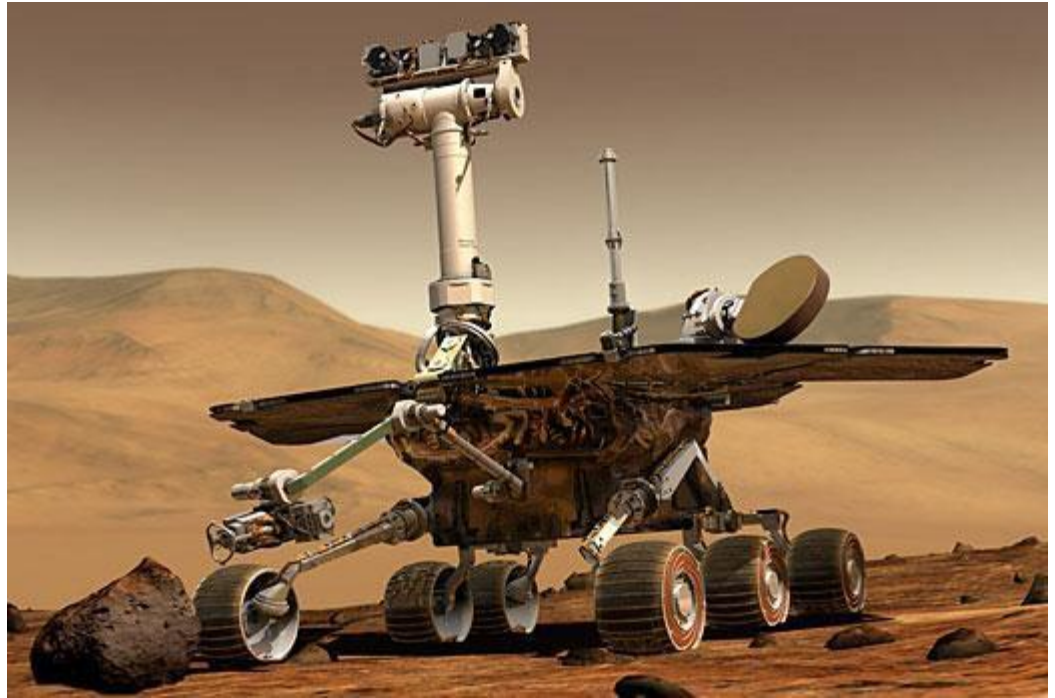
The Voyager program is a series of U.S. unmanned space missions that consists of a pair of unmanned scientific probes, Voyager 1 and Voyager 2. They were launched in 1977 to take advantage of a favorable planetary alignment of the late 1970s. Although they were officially designated to study just Jupiter and Saturn, the two probes were able to continue their mission into the outer solar system. They are currently on course to eventually exit the solar system. These probes were built and were funded by NASA. Voyager 1 is currently the farthest human-made object from Earth.

Both missions have gathered large amounts of data about the gas giants of the solar system, of which little was previously known. In addition, the spacecraft trajectories have been used to place limits on the existence of a hypothetical trans-Plutonian Planet X.



# MARS ROVER EXPLORES MARS

The Mars rover is an automated motor vehicle which propels itself across the surface of the planet Mars after landing. The rover examines territory, can be directed to interesting features, places itself in sunny positions to weather winter months and can advance the knowledge of how to perform very remote robotic vehicle control. There have been three successful Mars rovers, all of which were robotically operated.



The first successful Mars rover was Sojourner. It was launched by NASA on December 4, 1996, and landed July 4, 1997. It was the first to use a new radical landing technique whereby the impact of the spacecraft was mitigated by its placement inside a multi-cell balloon that bounced and rolled across the Martian surface, killing its momentum. Mars rover Spirit launched June 10, 2003.



Opportunity launched July 7, 2003. Spirit landed in Gusev crater on January 4, 2004. Opportunity landed in the Meridiani Planum on the opposite side of Mars, January 25, 2004.

On August 6, 2012 the Mars Rover Curiosity landed in the Gale Crater on Mars. This car-sized robotic rover's goals are to investigate the Martian climate and geology; assess whether the selected field site inside Gale Crater has ever offered environmental conditions favorable for life, and perform studies in preparation for future human exploration.

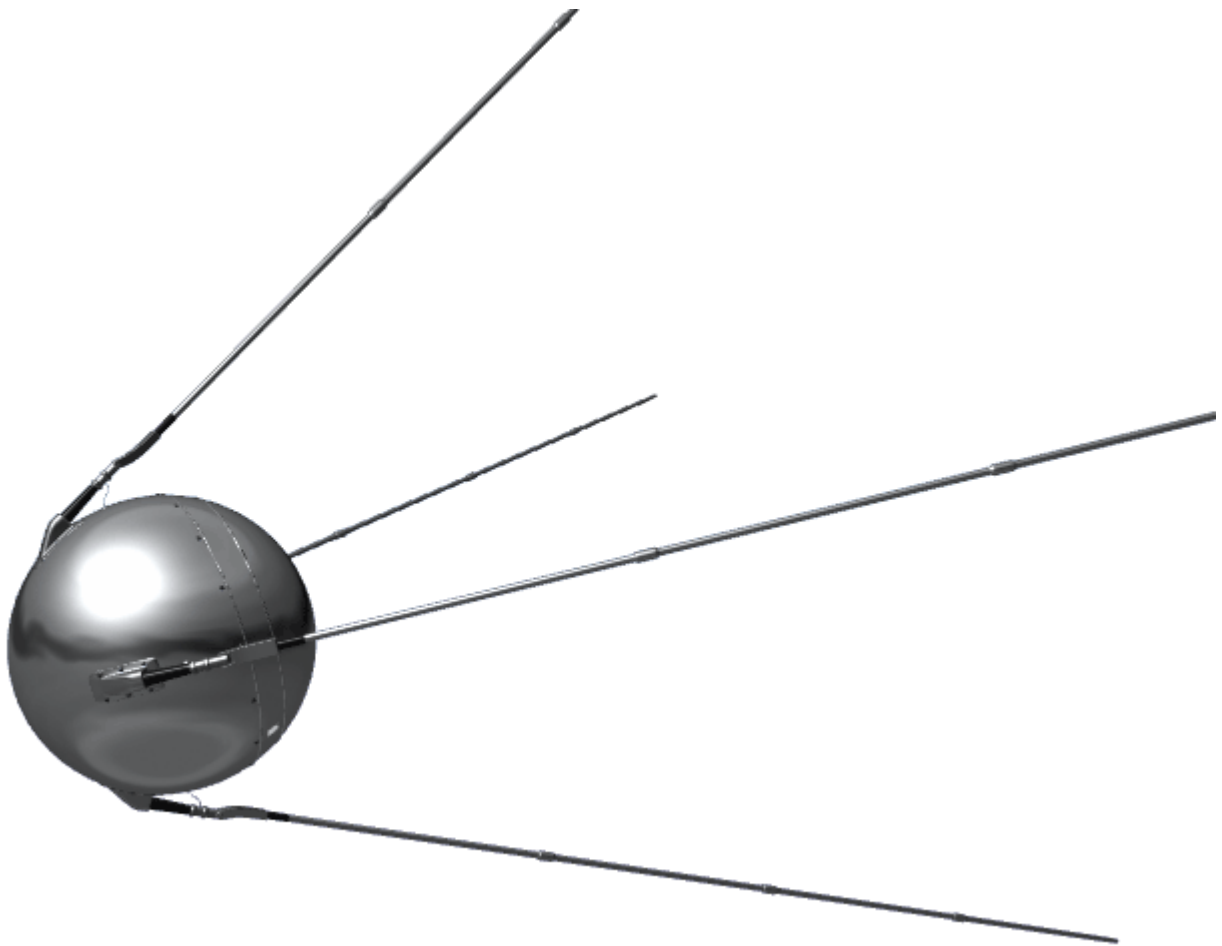
# SPUTNIK SATELLITE IN ORBIT

Sputnik I was the first Earth-orbiting artificial satellite. It was launched into an elliptical low Earth orbit by the Soviet Union on October 4, 1957, and was the first in a series of satellites collectively known as the Sputnik program. The unanticipated announcement of Sputnik 1's success precipitated the Sputnik crisis in the United States and ignited the Space Race within the Cold War. The launch ushered in new political, military, technological, and scientific developments. While the Sputnik launch was a single event, it marked the start of the Space Age.

Apart from its value as a technological first, Sputnik also helped to identify the upper atmospheric layer's density, through measuring the satellite's orbital changes. It also provided data on radio-signal distribution in the ionosphere.

The satellite travelled at 18,000 mi per hour, taking 96.2 minutes to complete an orbit, and emitted radio signals at 20.005 and 40.002 MHz which were monitored by amateur radio operators throughout the world. The beeps could be heard on American radios which people across the country turned in to listen to. The signals continued for 22 days until the transmitter batteries ran out on October 16, 1957.

Sputnik 1 burned up on January 4, 1958, as it fell from orbit upon reentering Earth's atmosphere, after travelling about 37 million miles and spending 3 months in orbit



# SPUTNIK II PUTS DOG IN SPACE

After the successful Sputnik I program the Soviet Union began a plan to put an animal into space to test the effects space would have on it. The program was called Sputnik II.

The technology to deorbit and return the satellite to Earth had not yet been developed, so there was no expectation for the animal's survival. Little was known about the impact of spaceflight on living things at the time of launch. Some scientists believed humans would be unable to survive the launch or the conditions of outer space, so engineers viewed flights by non-human animals as a necessary precursor to human missions.

The Soviets chose a dog named Laika, a stray, originally named Kudryavka (Little Curly). She underwent training with two other dogs, and was eventually chosen as the occupant of the Soviet spacecraft Sputnik 2 that was launched into outer space on November 3, 1957.

Laika likely died within hours after launch from overheating, possibly caused by a failure of the central R-7 sustainer to separate from the payload. Nonetheless, the experiment proved that a living passenger could survive being launched into orbit and endure weightlessness, paving the way for human spaceflight and providing scientists with some of the first data on how living organisms react to spaceflight environments.



On April 11, 2008, Russian officials unveiled a monument to Laika. A small monument in her honor was built near the military research facility in Moscow which prepared Laika's flight to space. It features a dog standing on top of a rocket



# YURI GAGARIN BECOMES FIRST MAN IN SPACE

Yuri Gagarin was a Soviet pilot and cosmonaut. He was the first human to journey into outer space, when his Vostok spacecraft completed an orbit of the Earth in April 1961.

Gagarin became an international celebrity, and was awarded many medals and titles, including Hero of the Soviet Union, the nation's highest honor. In his post-flight report, Gagarin recalled his experience of spaceflight, having been the first human in space.

“The feeling of weightlessness was somewhat unfamiliar compared with Earth conditions,” he said. “Here, you feel as if you were hanging in a horizontal position in straps. You feel as if you are suspended.”

The spaceflight consisted of a single orbit of the Earth (to this date the shortest orbital manned spaceflight). According to official records, the spaceflight took 108 minutes from launch to landing. As planned, Gagarin landed separately from his spacecraft, having ejected with a parachute 7 km (23,000 ft) above ground.

Vostok 1 marked his only spaceflight.

