



A Math and Science @ Work Special Series

CELEBRATING APOLLO

AP* HUMAN GEOGRAPHY Student Edition



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APOLLO-SOYUZ TEST PROJECT

Background

On May 25, 1961, President John F. Kennedy spoke before a special joint session of Congress and challenged the country to safely send and return an American to the Moon before the end of the decade. President Kennedy's vision for the three-year old National Aeronautics and Space Administration (NASA) motivated the United States to develop enormous technological capabilities and inspired the nation to reach new heights.

Eight years after Kennedy's speech, NASA's Apollo program successfully met the president's challenge. On July 20, 1969, the world witnessed one of the most astounding technological achievements in the 20th century. Neil Armstrong and Edwin "Buzz" Aldrin became the first humans to set foot on the Moon, while Mike Collins orbited the Moon in the Command Module. Armstrong's words, "That's one small step for [a] man, one giant leap for mankind," were heard around the world and inspired a generation. This amazing accomplishment required the collaboration of hundreds of thousands of determined individuals and the committed resources of our nation.

The successful launch of Sputnik I by the Soviets in the fall of 1958 initiated a technological competition between the United States and the Soviet Union; both nations wanted to prove their capability to reach the Moon. This competition began during the Cold War causing American fears that the technological advancements of the Soviets in space could also be used for military purposes. Despite being economically overshadowed by the United States, the Soviet Union continued its ominous presence in the space race.

The Apollo program began amidst this competition as NASA strived to meet Kennedy's goal. The program ran from 1961 to 1975 and set some major milestones in the history of human spaceflight. Apollo 8 was the first manned spacecraft to orbit a celestial body other than the Earth. Apollo 11 enabled the first human to set foot on the Moon. Apollo 17 marked the last lunar landing and the last human spaceflight mission beyond low-Earth orbit. The success of the Apollo program helped boost the confidence of Americans during a time of political turmoil.

In the late 1960's the United States and the Soviet Union both sought détente or a reduction in tension with each other. It was during this time, that the competition with the Soviets in space developed into a cooperative relationship. In 1967 both countries signed the Treaty on Peaceful Uses of Outer Space which banned weapons of mass destruction from orbiting satellites, celestial bodies, or outer space. In 1972 President Nixon and the Soviet leader, Brezhnev met at the Moscow Summit signing the Anti-Ballistic Missile Treaty and the Strategic Arms Limitation Treaty. This involved agreements that included exchanges in science, technology, education and culture. The Apollo-Soyuz Test Project was a joint space effort that followed these agreements.

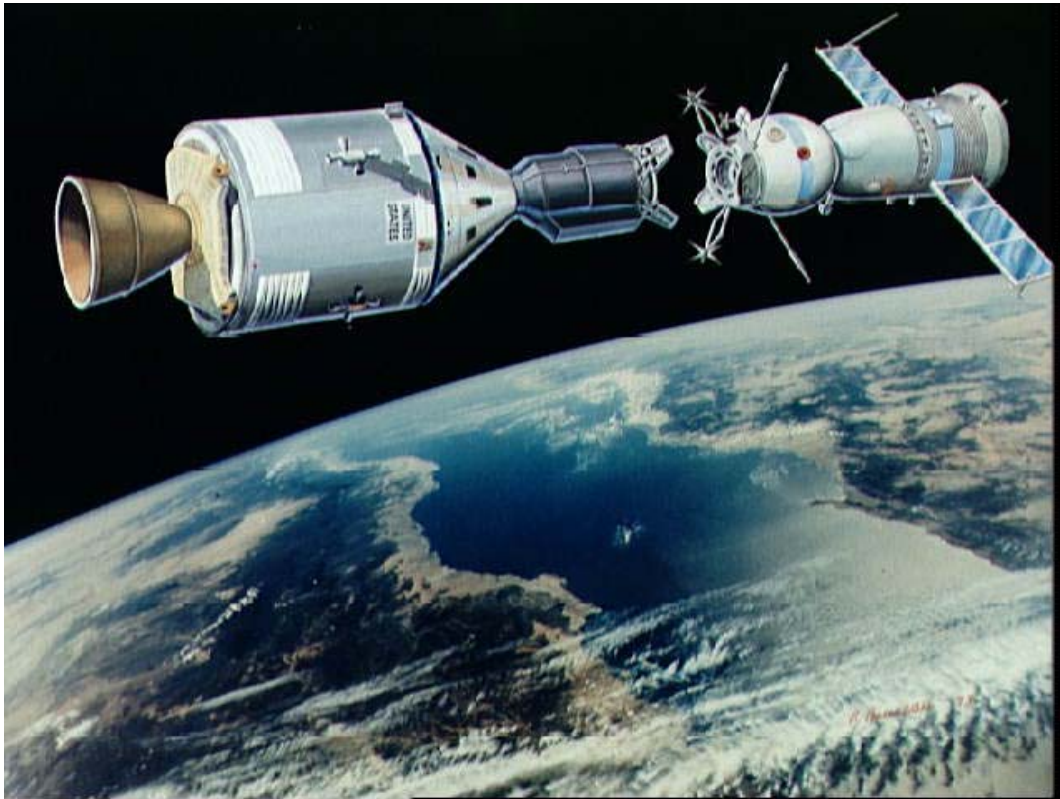


Figure 1: An artist's concept illustrating an Apollo-type spacecraft (on left) about to dock with a Soviet Soyuz-type spacecraft. An agreement between the United States and the Union of Soviet Socialist Republics provides for the docking in space of the Soyuz and Apollo-type spacecraft in Earth orbit in 1975.

This joint effort required three years of planning and preparation. American and Soviet crews spent a great deal of time together in formal mission training, getting to know each other, and learning about the other's culture. American astronauts visited Moscow and Soviet cosmonauts visited Houston as part of the training. Despite the language barrier, differing technologies, and two different political systems, the development of the program progressed with relative ease. All differences were settled with negotiation and compromise.

On July 17, 1975, the world watched as the Russian Soyuz spacecraft and the U.S. Apollo spacecraft docked. Shortly after the Soyuz commander announced, "Soyuz and Apollo are shaking hands now," the two Soviet crew members and three American crew members greeted each other with hand shakes. This joint space operation lasted for two full days. It was the final mission of the Apollo era and the first human spaceflight mission in which spacecrafts from two countries rendezvoused and docked in orbit.

Aside from its political significance, the Apollo-Soyuz Test Project resulted in a number of technological developments for both the United States and the Soviet Union. This shared experience opened a continuing collaboration between Russian and American scientists to provide a safer spaceflight environment for each country. This mission laid the ground work for all cooperative space efforts that would follow.

For more information about NASA's Apollo program visit www.nasa.gov.



Free-Response Question

Directions

You have 25 minutes to answer all parts of the following question. While a formal essay is not required, it is not enough to answer a question by merely listing facts. Your answer should be based upon your critical analysis of the question posed. It is recommended that you spend 5 minutes of your allotted time to plan or outline your response. Make sure you letter each of your answers with the corresponding question.



Figure 2: Astronaut Donald K. Slayton and Cosmonaut Aleksey A. Leonov are seen together in the Soyuz Orbital Module during the joint U.S.-USSR Apollo-Soyuz Test Project docking in Earth orbit mission in July 1975.

Question

The relationship between the United States and the Soviet Union regarding space exploration changed quite drastically during the Apollo Era. It transitioned from one of competition during the early Apollo missions to one of cooperation during the Apollo-Soyuz Test Project. Using your knowledge of political geography and of the time period 1958 – 1975, analyze the interaction between the United States and the Soviet Union as it related to space exploration.

Define and explain the following terms in your analysis.

- A. Centrifugal forces
- B. Centripetal forces