



A Math and Science @ Work Special Series

CELEBRATING APOLLO

AP* HUMAN GEOGRAPHY Student Edition



*AP is a trademark owned by the College Board, which was not involved in the production of, and does not endorse, this product.

DIFFUSION OF NASA TECHNOLOGY

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.

Through the Apollo program, humans were able to explore the Moon. Since then, NASA's space program has expanded, enabling people to explore our solar system and to create the International Space Station. This orbiting research facility has allowed an uninterrupted human presence in space since November 2000. But how does the NASA space program affect you? How does NASA improve the lives of people on Earth?

For more than 40 years NASA technology has been adapted to meet the needs of the private sector, benefiting global competition and the economy. Commercial advancements in health, medicine, industry, consumer goods, transportation, public safety, computer technology, and environmental resources have all been impacted by NASA technology. Products such as artificial limbs, cordless power tools, water purification, and solar energy have all been created or enhanced using NASA technology. Can you think of ways that the diffusion of NASA technology affects you personally in your home?

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.

Question

Diffusion is an important concept in Human Geography:

- A. Define diffusion and explain the differences between relocation diffusion and expansion diffusion.
- B. Explain how diffusion has led to globalization and give an example of the diffusion of NASA technology on a global scale.
- C. List and define the three types of expansion diffusion. Provide one example of each type as it applies to the history of the United States from the mid to late 20th century.