

## Lost on the Moon

Your spaceship has just crash-landed on the light side of the moon. You were scheduled to rendezvous with a mother ship 200 km away on the surface of the moon, but the rough landing has ruined your ship and destroyed all equipment on board, except for the 15 items listed below.

Your crew's survival depends on reaching the mother ship, so you must choose the most critical items for the 200-km trip. Your task is to rank the 15 items in terms of their importance for survival. Place 1 by the most important item, 2 by the second most important, and so on through 15, the least important.

You will rank these items twice. First you will rank them on your own (Phase 1), and then you will consult with your group and rank them again (Phase 2). Share your individual solutions and reach a consensus ranking for each of the 15 items that best satisfies all group members. NASA experts have determined the best solution; their answers will be revealed later.

<i>Item</i>	<i>Phase 1 Your Rank</i>	<i>Error Points</i>	<i>Phase 2 Team Rank</i>	<i>Error Points</i>	<i>NASA's Rank</i>
A. Box of matches	_____		_____		_____
B. Food concentrate	_____		_____		_____
C. Fifty feet of nylon rope	_____		_____		_____
D. Parachute silk	_____		_____		_____
E. Solar-powered portable heating unit	_____		_____		_____
F. Two .45-caliber pistols	_____		_____		_____
G. One case of dehydrated milk	_____		_____		_____
H. Two 100-pound tanks of oxygen	_____		_____		_____
I. Stellar map of moon's constellation	_____		_____		_____
J. Self-inflating life raft	_____		_____		_____
K. Magnetic compass	_____		_____		_____
L. Five gallons of water	_____		_____		_____
M. Signal flares	_____		_____		_____
N. First-aid kit with injection needles	_____		_____		_____
O. Solar-powered FM receiver-transmitter	_____		_____		_____
<b>Total</b>					

# The Space Race

## Original requirements to be an astronaut:

- Under 40 years of age.
- No more than 5'10" tall.
- In top physical condition.
- Graduate of test pilot school.
- Jet pilot.
- 1500 hours of flight time.
- Bachelor's degree or the equivalent.

Accepted 7 out of 110 applicants.

## America's Mercury Astronauts

M. Scott Carpenter (Navy)  
L. Gordon Cooper, Jr. (Air Force)  
John H. Glenn, Jr. (Marine Corps)  
Virgil I. "Gus" Grissom (Air Force)  
Walter M. Schirra, Jr. (Navy)  
Alan B. Shepard, Jr. (Navy)  
Donald K. Slayton (Air Force)

## TIMELINE

1957

Laika- Russian dog. Took flight with Sputnik 2.

1958

Gordo- American monkey. Flew on the Jupiter Missile AM 13.

1961

Ham- American chimp. Took flight with Mercury 2.

Yuri Gargarin- Russian man. First human to orbit the earth.

Alan Shepard- First American man in space. 15 minute flight aboard the Mercury Freedom 7. (May 5- only 3 weeks after the Russians)

Shepard walked on the moon as commander of the Apollo 14 mission in 1971. He died of leukemia in 1998.

3

Gus Grissom- Second American in space. 15 minute flight aboard the Liberty Bell 7. Craft sank when hatch blew off. Controversial, many believe Grissom blew the hatch too soon. He says he did not.

The spacecraft Grissom initially landed was brought to the surface very recently. He took part in a two-man mission named Molly Brown in 1965. He also was chosen to take part in the first Apollo mission to the moon in 1967. During their first trial, a fire in the cabin occurred during a launch pad test. All three members of the flight crew died.

1962

John Glenn- Circled the earth three times. Spent 5 hours in space in the Friendship 7. (Feb. 20) This made him a national hero. He was not allowed to fly any more missions because he was such an important icon to the American people.

Glenn became a U.S. Senator. In 1998, at 76 years of age he flew with the Shuttle Discovery to monitor the effects of space on the elderly.

Scott Carpenter- Orbits the earth 3 times. He spends four hours in space on the Aurora 7. (May 24)

Carpenter did not take part in any other missions.

Wally Shirra- Six orbits around the earth. This took 9 hours aboard the Sigma 7. (Oct. 3)

Later flew with both the Gemini 6 and Apollo 7 missions. He earned a total of 295 hours of space flight time.

1963

Gordon Cooper- Flew the last Mercury mission. Aboard the Faith 7, he circled the earth 22 times. This took one day and ten hours. (May 15)

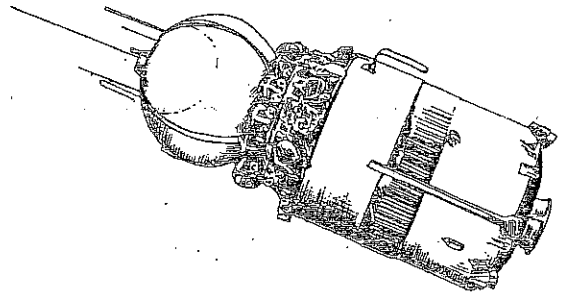
Cooper later flew with the Gemini 5 crew and logged a total of 225 space flight hours.

Note: Deke Slayton never flew a Mercury mission. He remained an active participator in the astronaut program. He logged a total of 217 hours of space flight time. He was a member of the Apollo-Soyuz Test project, which is where he earned most of his flight hours. He died in 1993 from complications from a brain tumor.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

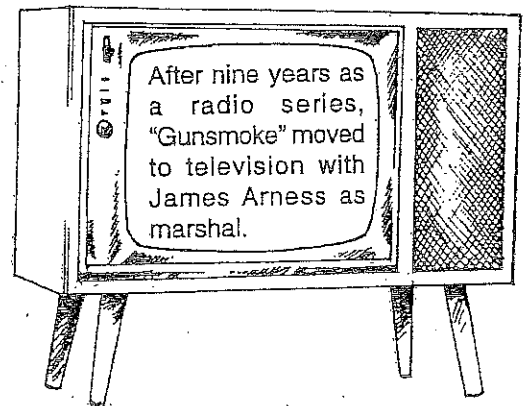
# Russians Lead the Space Race in 1961

- The Russian astronaut, Yuri Gagarin, became the first man to orbit Earth on April 12, 1961. The United States wasn't far behind in the "space race." Less than a month later, the U.S. spacecraft *Freedom 7* carried astronaut Alan Shepard into space.
- Time-Life Books™ began publication.
- IBM's Shoebox™, an early computer, could recognize 16 voice commands and do simple arithmetic.
- The FCC approved FM stereo broadcasting.
- Two new shows, "Ben Casey" and "Dr. Kildare," began a popular type of TV series, the medical drama.
- President Kennedy appointed Dr. Janet G. Travell as the first woman to hold the post of personal physician to the president.
- John F. Kennedy presented the first live presidential news conference from Washington, D.C.
- In his inaugural address on January 20, 1961, John F. Kennedy inspired a new wave of patriotism with the words, "Ask not what your country can do for you; ask what you can do for your country."
- He must have been "smarter than the average bear" because in 1961 Yogi Bear got his own cartoon series.



Use the Internet or other reference sources if needed.

1. On your own paper, write what you think JFK meant in his inaugural speech.
2. What do the initials FCC and FM stand for?  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Where did Yogi Bear live? \_\_\_\_\_



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# To the Moon—and Back

Tragedy canceled the United States' plans to send astronauts to the moon in 1967. Three astronauts scheduled to make the first trip to the moon on *Apollo 1* were killed during a routine test when the oxygen in the capsule burst into flames. Those killed were Ed White, Gus Grissom, and Roger Chaffee.

Four days later, two astronauts died in another fire in a flight simulator. All manned flights were canceled for over a year.

Finally, in December 1968, *Apollo 8* carried three men into orbit around the moon and back to Earth.

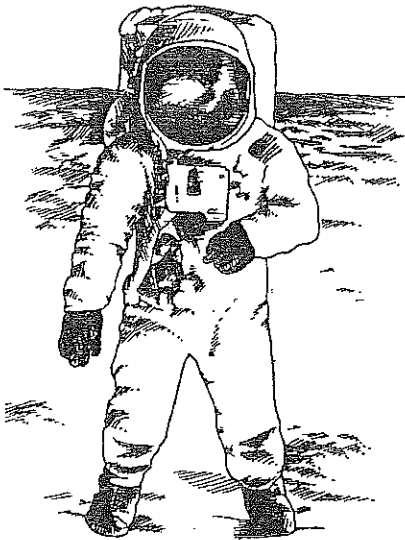
Eventually, the stage was set for the next mission: landing men on the moon and returning them safely to Earth. After a four-day journey, three astronauts aboard *Apollo 11* reached their destination.

After orbiting the moon, Neil Armstrong and Edwin "Buzz" Aldrin landed the lunar module *Eagle* on the surface of the moon on July 20, 1969.

An estimated 600 million people watched as Neil Armstrong became the first person to walk on the moon's surface. Most who saw the event remember his first words: "That's one small step for man, one giant leap for mankind."

While on the moon, Armstrong and Aldrin set up a solar wind experiment, a seismometer to detect moonquakes, and a laser reflector, which allowed scientists to make very accurate measurements of the distance from Earth to the moon.

The astronauts brought back samples of rocks and soil from the moon. Before they left, they planted an American flag and erected a plaque attached to the landing craft's descent stage. On the plaque was a map of Earth, the signatures of Richard M. Nixon and the three astronauts, and these words:



HERE MEN FROM THE PLANET EARTH  
FIRST SET FOOT UPON THE MOON  
JULY 1969, A.D.  
WE CAME IN PEACE FOR ALL MANKIND

1. Knowing the tragedies that had happened during the testing and training, how would you have felt if you were one of the people training to be an astronaut?

\_\_\_\_\_

2. Use the Internet and other reference sources. Who was the third astronaut on this mission with Armstrong and Aldrin?

\_\_\_\_\_

3. What do you think Armstrong meant in his first words when walking on the moon?

\_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# The Hubble Space Telescope

At a cost of \$1.5 million, NASA launched the Hubble Space Telescope (HST) in 1990 with high expectations of success from the first orbiting observatory. Once in orbit, however, one of the mirrors was discovered to be incorrectly ground, resulting in blurred pictures.

In 1993, a crew on the space shuttle *Endeavor* went into orbit on a successful service mission to make repairs.

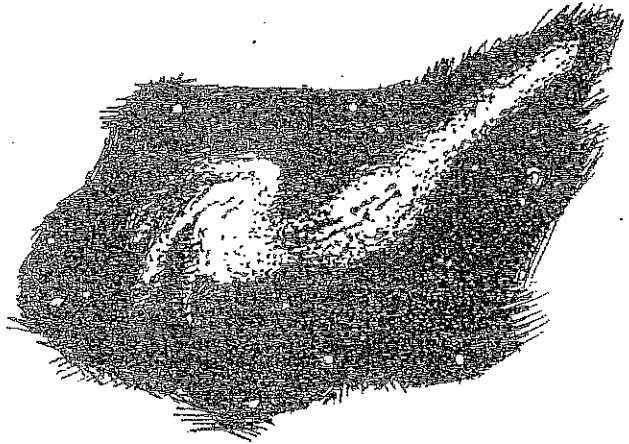
The HST has provided data for calculating the rate at which galaxies are moving away from the Milky Way and for the number of galaxies in the universe. This information can be used to calculate the age of the universe.

Scientists announced in June 1994 that the HST had provided the first convincing evidence of the existence of a black hole, which had been purely theoretical up until this point.

The detailed images of Jupiter, provided by the HST when fragments of the comet Shoemaker-Levy 9 collided with the planet in 1994, allowed scientists to analyze the chemical make-up of Jupiter's atmosphere.

In another service mission in 1997, astronauts aboard the shuttle *Discovery* replaced some equipment with newer technology and installed an infrared telescope.

Thanks to the HST, we also have images of a planet outside our solar system.



Use the Internet or other current reference sources to learn more about the Hubble Space Telescope.

1. Is the HST still in orbit? \_\_\_\_\_
2. Is it still working? \_\_\_\_\_
3. When was the last service mission sent to make repairs? \_\_\_\_\_
4. What type of repairs or changes were made? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
5. Do scientists plan to send another service mission? If yes, when and why?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
6. What else have scientists learned from the information sent by the HST?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_