

ZB **Zaner-Bloser**
NEXT GENERATION ASSESSMENT PRACTICE
English Language Arts / Literacy

Student Edition

Grade 8
Informative/Explanatory

Name _____

Date _____

PART I: Close Reading

Your Task

You will examine three sources about the exploration of space. Then you will answer three questions about what you have learned. In Part 2, you will write an article about how the exploration of space has changed throughout the years.

Steps to Follow

In order to plan and write your article, you will do all of the following:

1. Examine three sources.
2. Make notes about the information from the sources.
3. Answer three questions about the sources.

Directions for Beginning

You will have 35 minutes to complete Part I. You will now examine the three sources. Take notes because you may want to refer to them while writing your article. You can re-examine any of the sources as often as you like. Answer the questions in the spaces provided.

Ham the Astrochimp

A long time ago, a baby chimpanzee was born in Africa. His name was Chang. Later he would have a new name, one the whole world would know. As he slept, cradled in his mother's arms, he never could have dreamed of the adventure that lay ahead of him.

When he was old enough to leave his mother, Chang and other chimps were brought to New Mexico. There they would be trained to do something no other chimp had done before—travel into space as part of America's Project Mercury.

Chang was renamed Ham, in honor of Holloman Air Medical Center, where he was trained. Of all the chimpanzees at Holloman, Ham was one of the brightest and had a great personality. This was important, because if he was chosen to go into space, he would do so without his trainer at his side. No one knew if living creatures could function in the vacuum of space, so scientists at NASA decided to test a chimp before they sent a human being into the unknown.

Moving from New Mexico to Florida, Ham was chosen to be the first truly intelligent being to ride an American rocket into space. On January 31, 1961, the three-year-old chimp was fitted into a little pod, called a biopack, that would sit in the human-sized seat of the Mercury capsule. After

engineers made sure that the capsule and rocket booster were ready, Ham blasted off into the sky!

Unlike the future astronauts, Ham did not really fly the capsule. Instead his hands worked little levers that scientists could monitor back on Earth. They made certain he could follow directions, see clearly, and make decisions quickly in the weightless environment. As the capsule radioed signals back to their command center in Florida, the NASA team looked carefully at the control panels. It was clear Ham was doing everything he was trained to do as he flew faster and higher with each passing second.

The Redstone booster was not powerful enough to push the capsule into a full Earth orbit. But as the booster separated from the capsule, Ham reached the edge of outer space. Blinking lights told Ham which levers to pull, and he completed the tasks just as he had during training. Every time he was successful, a little treat would pop out of the front of the biopack for him to eat. With no window to look through, Ham had no reason to be frightened by his flight, even though he was miles above Earth. Just like Ham, the capsule was working perfectly, proving to the scientists that it was safe for future human flights.

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Meanwhile, Ham's capsule was going faster than the engineers had calculated. This meant he would be in space longer than planned. Ham would be weightless for 6.6 minutes rather than 4.9 minutes. It posed no danger to the little chimp, but it meant that his capsule would not land anywhere near the target. Planes and ships in the Atlantic Ocean would have to scramble to find him once he returned to Earth.

After the almost twenty-minute flight, the Mercury capsule landed safely in the Atlantic, but no one was there to see it. Ham was more than fifty miles away from the nearest ship, and his capsule began to leak. Every second mattered as gallons of water started to collect inside, threatening to carry Ham to the bottom of the ocean, where rescue would become impossible.

Nearly thirty minutes passed before an airplane spotted Ham's slowly sinking capsule. It took almost three hours for U.S. Marine helicopters to arrive and lift the spacecraft out of the water. Over four hundred gallons of water had leaked in, and the officers had no idea what the chimpanzee's condition was.

Once the capsule landed on the deck of the *USS Donner*, officers rushed to remove the hatch and look inside. Ham, the world's first astrochimp, was safe and glad to see the sunlight.

For his reward the men gave him an apple and half an orange, which he ate happily as news photographers took hundreds of photos.

The astrochimp became a worldwide celebrity and was featured on television and many magazine covers. But more importantly, Ham proved that intelligent creatures could go into the great unknown of outer space and return safely. America's manned space program was finally underway.

After the excitement of Ham's journey, he was taken to the National Zoo in Washington, D.C., where he lived for seventeen years. Thousands of adults and children visited him there, but he grew restless. He was kept in a large white cage by himself with only an old tire hanging from the ceiling to play with. People saw how unhappy he was and decided to move him to a new home.

At the North Carolina Zoological Park in Asheboro, Ham found a home where he could play outside in the trees. He spent the rest of his life there as a member of a large colony of chimpanzees. Ham is buried at the International Space Hall of Fame in Alamogordo, New Mexico, near a giant American flag.

Ham was America's first pioneer in space exploration, and his short flight paved the way for the historic missions that

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came later—from landing on the Moon to the construction of the International Space Station and beyond. Ham’s bravery

and good nature were an inspiration for all the space travelers who followed in his footsteps.

From Ham the Astrochimp by Richard Hilliard.
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Why were Ham the chimpanzee and his flight important to the future of space exploration? Give at least five facts and concrete details to support your answer.

Godspeed, John Glenn

When John Glenn was a boy living in Ohio, he and his dad took a ride in an airplane. This was a great thrill for young John, and he never forgot the feeling of flying through the sky. Many nights he lay in bed dreaming of flying planes when he grew up.

In college, John studied aerodynamics and took flight classes. After the bombing of Pearl Harbor, John volunteered in the U.S. Navy. He became a fighter pilot in the Marine Corps and flew during both World War II and the war in Korea. He won many medals, including the Distinguished Flying Cross, the highest honor a pilot can receive.

As peacetime settled in the 1950s, John became a test pilot. Flying experimental aircraft, he went higher and faster with every flight. As America entered the “space age,” John volunteered for a new and dangerous duty—becoming an astronaut.

Hundreds of men tested for this new service that would ultimately launch Americans into the vacuum of space. In 1959 John Glenn was selected along with six other test pilots to become America’s first astronauts—the Mercury Seven. John didn’t know where the Astronaut Corps would take him, but he was excited to be one of the first pioneers of this new frontier.

As the astronauts spent many months in training, America began to send chimpanzees into space. People started to

wonder if the astronauts were up to the difficult challenge of going into orbit. John and the others knew they were ready but needed to make sure the spacecraft was safe enough to take a man into space and bring him back to Earth.

The first missions to carry astronauts into orbit were called Mercury. The first two human missions went only to the edge of space, proving an astronaut could work in the weightless environment. The third mission would send an astronaut into orbit around Earth, circling the planet many times. John felt very honored when he was selected to take this historic flight.

On February 20, 1962, on a launch platform at Cape Canaveral, Florida, John was strapped into the small Mercury capsule, called *Friendship 7*. As the countdown ended, the giant Atlas rocket engine roared to life, slowly raising the spacecraft off the launch platform. As John’s capsule cleared the tower, astronaut Scott Carpenter radioed the world, “Godspeed, John Glenn,” wishing him good luck as he rose into the sky.

As the Atlas booster fell back to Earth, *Friendship 7* was pushed into orbit. For the first time in his life, John saw the curve of the earth glowing brightly in the inky blackness of space. The stars looked brighter than he had even seen them before, and the Moon looked close enough to touch. As his

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capsule orbited into the dark, he saw lights on the land far below him. John exclaimed, “It’s a beautiful sight!”

Everything was going perfectly, and John was told by Mission Control that he could expect at least seven orbits of the globe, each orbit taking only eighty-eight minutes. Although the *Friendship 7* capsule was very cramped, John felt comfortable in the weightless environment as he conducted experiments and piloted the capsule around the world. From every corner of the globe, people tuned in their radios and televisions to hear the updates on John’s flight.

Back at Mission Control in Florida, things looked good, until suddenly a beeping alarm sounded, indicating something was wrong. The heat shield on John’s capsule might be loose, and if it came off, John would burn up as the spacecraft reentered Earth’s atmosphere. Everyone decided that John would have to be brought back after only three orbits.

As the capsule plunged back to Earth, John’s spacecraft was engulfed in flame. His only protection was the heat shield that might not be working properly, and the retropack, which began to melt and break away from the bottom of the capsule. Everyone at Mission Control was nervous that John would not return safely. Even John was worried and started humming a tune to himself to stay calm. Hearing John’s voice through the

crackling radio, Mission Control knew he survived the fiery descent. He radioed to Scott and the others at the Cape, “That was a real fireball there!”

Almost two miles above the waters of the Pacific Ocean, a big parachute shot out of the capsule’s nose as the flames died down. *Friendship 7* floated gently into the waves as U.S. Navy ships moved in to pick up John and his capsule. The navy crew cheered wildly for John as he came aboard the large ship.

After the historic flight, John became a hero to millions of people around the world who were inspired by his courage in facing the unknown. Huge crowds lined the streets of Washington, D.C., as a parade took John and his wife, Annie, to meet the president. Later John gave a speech to Congress about the importance of space exploration and the quest to land on the Moon.

John left the Astronaut Corps and Marines in 1964 and later became a prominent U.S. senator. In 1998, he surprised the world when he went back into space aboard the space shuttle *Discovery*. Now a grandfather, John Glenn is living proof that life’s adventures never stop.

From Godspeed, John Glenn by Richard Hilliard.
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What are at least four facts that show why John Glenn's career as a pilot and astronaut was successful and important?

“An Ocean on Europa?”

From above, it seems as if you are flying over the Arctic Ocean. Huge chunks of ice several miles long crisscross the surface below. Some pieces appear to be floating like icebergs, and some look like glaciers.

But this place is not the North Pole or Antarctica. In fact, it's not anywhere on Earth. This is Europa, Jupiter's fourth-largest moon.

Startling pictures of Europa came from NASA's Galileo spacecraft. Partly because of these images, scientists think an ocean more than sixty miles deep may be hiding beneath Europa's icy crust.

On Earth, wherever there is liquid water there is also life. Scientists have found life even under frozen lakes and in the super-heated waters around hot springs under the sea.

“The possibility of life is what is exciting about Europa,” says Dr. Christopher Chyba, a scientist at the Search for Extraterrestrial Intelligence (SETI) Institute in California.

Spacecraft Galileo

Galileo began orbiting Jupiter in 1995 and is still out there sending back pictures and information. In addition to Europa, Galileo is studying Callisto, another moon suspected of having liquid water.

“We are absolutely certain there is some form of water on Europa,” says Dr. Torrence V. Johnson, Galileo's project scientist. “The question is whether there is liquid water.”

At Europa's chilly surface temperature of -260 degrees Fahrenheit, water would certainly freeze. But there is evidence for liquid water somewhere under the crust. Like Earth's Moon, most of Jupiter's moons are pockmarked with craters caused by impacts from comets and meteorites. But Europa has very few craters. Scientists think that something flowing, perhaps liquid water, has smoothed them over. Like the pieces of a jigsaw puzzle, large chunks of ice litter the surface of Europa, looking as if they could fit back together. In some areas, either slush or liquid water has burst through the surface and frozen, breaking apart the ice and forming dark ridges. These clues are exciting, but they don't prove that Europa has an ocean.

To have an ocean, something would have to create enough heat to melt the ice on Europa, which lies so far from the Sun.

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Heating Europa

All planets and moons are heated at least a little by the radioactive elements in their interiors. Europa is also heated by the effect of Jupiter's gravity.

Says Dr. Johnson, "If you take a rubber ball and squeeze it, it will get hot because of the friction you're creating inside the ball. That's what's happening to Europa as it goes around Jupiter."

This process is called *tidal warming*. On Earth, when we think of tides, we usually think of the ocean. The Moon's gravity pulls on Earth's oceans, causing the water to rise and fall.

But the Moon's pull also makes the Earth's rocky crust move up and down a little. This movement is called an "earth tide." The Earth's pull also causes an earth tide in the Moon's crust. Because of Jupiter's more powerful gravity, a similar but much bigger earth tide occurs on Europa.

Here's how these tides may heat Europa. The moon travels around the planet in an oval orbit that takes Europa close to Jupiter and its powerful gravity, then farther away, then back again.

As Europa approaches Jupiter, the planet's gravity stretches the moon until Europa looks a bit like a football. This football shape pulls back into a round shape again as

Europa moves away from Jupiter. Every three and one-half Earth days, Europa completes an orbit around the planet—and stretches back and forth between these two shapes.

This tug of war may cause enough friction inside Europa to melt some of the ice, creating an ocean.

Early in 2000, Galileo discovered new evidence for an ocean on Europa. Jupiter is a big magnet, and Galileo found that Europa is greatly affected by Jupiter's magnetic field.

Dr. Margaret G. Kivelson, a Galileo scientist, explains: "At Europa, Jupiter's magnetic field swings back and forth like the pendulum on a grandfather's clock. This changing direction drives electrical currents through Europa." For electrical currents to flow through the moon, it has to be covered by something that conducts electricity, such as a deep, salty ocean.

But Dr. Johnson says we still can't be sure there is liquid water on Europa. "Like many things in science, we've got an ongoing argument about this," he says.

What Kind of Life?

What would life look like? Says Dr. Chyba, "It's almost certainly the case that we're talking about microscopic life."

On Earth, all big forms of life, such as plants and animals, need "free" oxygen, which is not bound up in water molecules.

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So scientists think that complex life can't exist without free oxygen.

They also think there is no free oxygen on Europa. Sunlight is the key to making free oxygen on Earth. But the thick ice cover on Europa stops sunlight from passing through to the bottom.

Based on what we know about life on Earth, only microscopic life can survive without free oxygen. But Dr. Chyba says, "We only have the example of life on Earth." In fact, European life may be totally different.

NASA plans to launch the Europa Orbiter in the next few years. If this spacecraft finds evidence of liquid water, the hunt for life will begin. Someday, remote-controlled submarines might even explore Europa's ocean world.

Dr. Chyba says, "If there is an ocean on Europa and if there ever was life there, then there's every reason to think that life is still there today. That's what makes Europa so fascinating."

"An Ocean on Europa?" by Vicki Oransky Wittenstein.
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Columbus, Ohio.

What are scientists studying on the moons of Jupiter? Include at least four details from the reading to support your answer.

PART 2: Writing to Multiple Sources

You will now have 70 minutes to review your notes and sources, plan, draft, and revise an article. You may use your notes and refer to the sources. You may also refer to the answers you wrote to questions in Part I, but you cannot change those answers. Now read your assignment and the information about how your article will be scored; then begin your work.

Your Assignment

Write an article for your classmates. Explain the space program in the United States and how the exploration of space has changed throughout the years, using information from the sources to support your points. Give at least two examples of what happened on a mission before humans were sent into orbit. Provide three examples of how John Glenn's experiences affected the future of the space program. Finally, explain how technology is increasing our reach into space. Be sure to include at least three things scientists hope to find out as they explore the moons of Jupiter.

Article Scoring

Your article will be scored on the following criteria:

- I. **Focus and organization**—How well did you clearly state your topic and preview what is to follow? How well did your ideas flow logically using effective transitions? How well did you stay on topic throughout the article? How well did you provide a concluding section that follows from and supports the information or explanation presented?

Continued 

Article Scoring (continued)

2. **Elaboration of topic**—How well did you develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples? How well did you effectively express ideas using precise language domain-specific vocabulary that was appropriate for your audience and purpose?
3. **Conventions**—How well did you follow the rules of usage, punctuation, capitalization, and spelling?

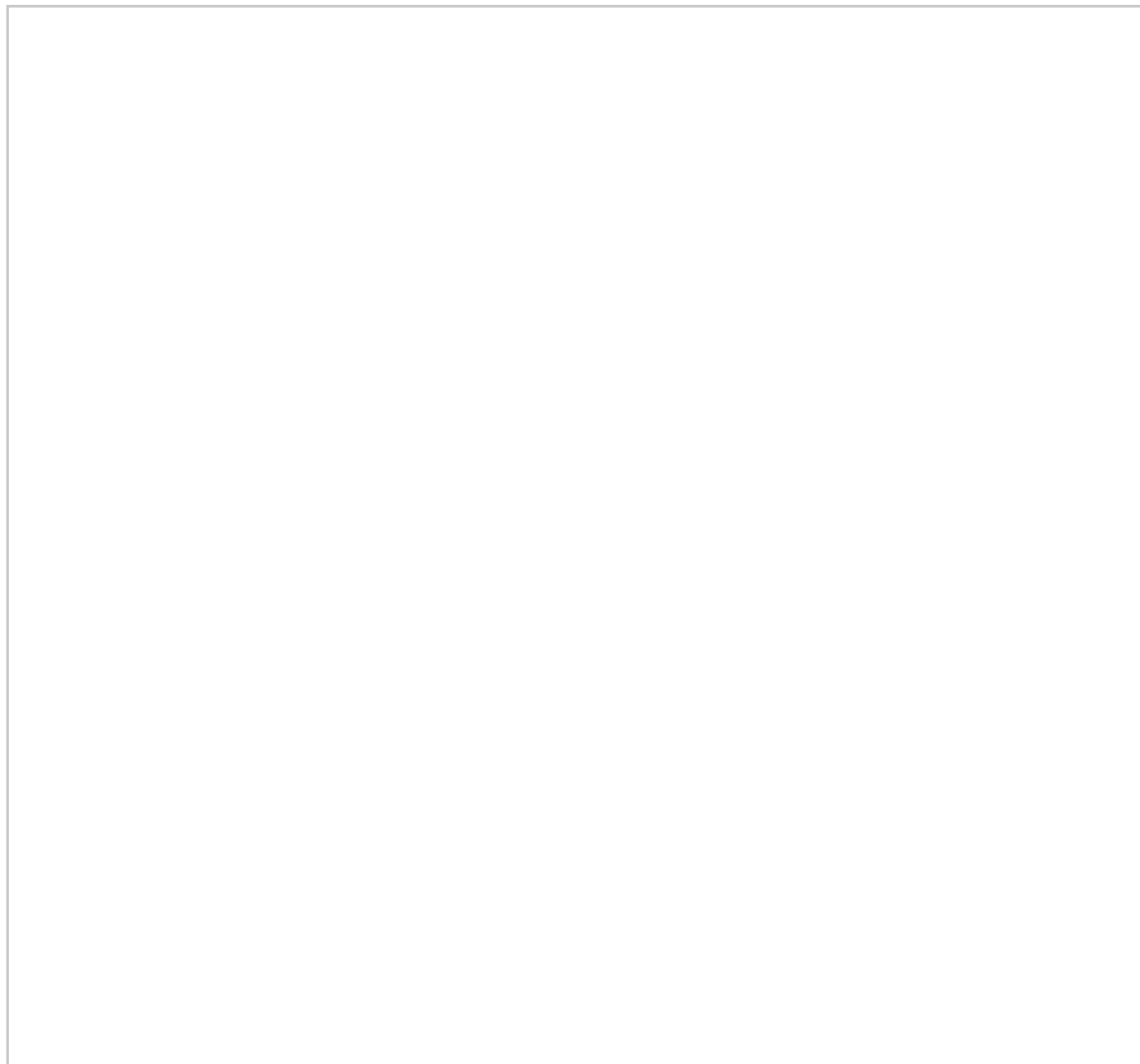
Now begin work on your article. Manage your time carefully so that you can:

- plan your article.
- write your article.
- revise and edit for a final draft.

Spell check is available to use.

Type your response in the space provided on the following page. Write as much as you need to fulfill the requirements of the task; you are not limited by the size of the response area on the screen.

Type your response below.



Go to the next
page if you need
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