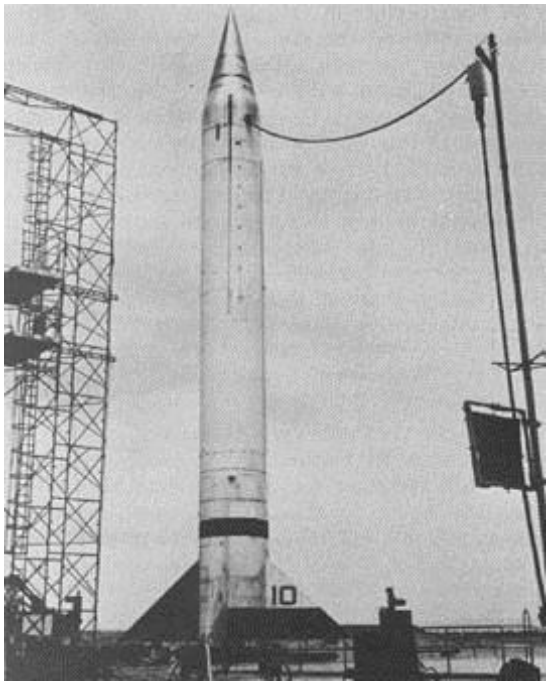
From the Earth to Outer Space



Many years ago, people here on Earth decided that they wanted to go into outer space.

This is something people had imagined for a very long time, in books and movies and stories grandparents told to their grandchildren. However, in the 1950s, people decided they really wanted to do it. There was just one problem: how would they get there?

One of the earliest movies about flying to the moon was made by Georges Méliès and released in 1902. It was called *A Trip to the Moon*. In this movie, the moon was made up of a man's face, covered in cream, and a whole tribe of angry natives lived there. That part was not very realistic. However, the spaceship didn't seem too far-fetched: it was a small capsule, shaped like a bullet, that the astronauts loaded into a giant cannon and aimed at the moon.

This movie was based on a book that came out many years earlier by an author named Jules Verne. One of the fans of the book was a Russian man, Konstantin Tsiolkovsky. The book made him think. Could you really shoot people out of a cannon and have them get safely to the moon? He decided you couldn't, but it got him thinking of other ways you could get people to the moon. He spent his life considering this problem and came up with many solutions.

Some of Tsiolkovsky's solutions gave scientists in America and Russia (where Tsiolkovsky lived) ideas when they began to think about space travel. They also thought about airplanes they and other people had made, and even big bombs that could fly themselves very long distances. How could they take all these ideas and make them into one thing that would safely get astronauts into space?

Many scientists spent years working together to solve the problem. They drew and discussed different designs until they agreed on the ones that were the best. Then, they built small models of those designs, and tested and tested them until they felt ready to build even bigger models. They made full-scale rockets, which they launched without any people inside, to test for safety. Often the rockets weren't safe, and they exploded right there on the launch pad, or shot off in crazy directions like a balloon that you blow up and release without tying it first. After many, many tests, they started to send small animals into space. Only after a long time did they ever put a person inside a rocket and shoot him into space.

Even after they began sending people into space, during the Gemini program in the 1960s, scientists were still trying to improve the shape of the rockets. The design changed many times, and eventually ended up looking like a half-rocket and half-airplane. This rocket, called the space shuttle, was used for many years. Now, the government lets private companies try their own designs for spaceships, and they have come up with many different, crazy-looking machines.

There is no single solution for sending a person into space. Thanks to the imaginations of people like Jules Verne and Konstantin Tsiolkovsky, and the hard work of the scientists who built and tested rockets over the years, humanity has developed reliable technology for space travel. Still, the work continues. Every day, the people who work on this problem share new designs, build test models, and try to imagine better ways to explore the vast deep mystery that is outer space.

Name: _____ Date: _____

1. According to the passage, where did people decide they wanted to go many years ago?

A outer space
B the North Pole
C the inside of a volcano
D the center of the earth

2. Getting to outer space is a problem mentioned in the passage. How was this problem solved?

A Georges Méliès made a movie that showed a tribe of angry natives living on the moon.
B Grandparents told their grandchildren stories about people traveling to outer space.
C Some rockets blew up on the launch pad or shot off in crazy directions.
D Scientists worked together to create a rocket that could send a person into space.

3. Read these sentences from the passage: "Many scientists spent years working together to solve the problem. They drew and discussed different designs until they agreed on the ones that were the best. Then, they built small models of those designs, and tested and tested them until they felt ready to build even bigger models. They made full-scale rockets, which they launched without any people inside, to test for safety.. . . . Only after a long time did they ever put a person inside of a rocket and shoot him into space."

What can be concluded from this information?

A Scientists in Russia were better at working together than scientists in America.
B Scientists in America were better at working together than scientists in Russia.
C Working together and doing tests were important to making a rocket.
D Most of the scientists who saw the movie *A Trip to the Moon* did not like it.

4. Why might people be interested in traveling to outer space?

A They are interested in meeting a tribe of angry natives on the moon.
B They are interested in watching movies and listening to their grandparents' stories.
C They are interested in seeing rockets blow up on a launch pad.
D They are interested in exploring the mystery of outer space.

5. What is this passage mostly about?

A the lives of Georges Méliès, Jules Verne, and Konstantin Tsiolkovsky
B the problem of getting people to outer space and how that problem was solved
C a movie about flying to the moon made in the 1920s
D a spaceship in the shape of a bullet that could be loaded into a giant cannon and aimed at the moon

6. Read the following sentences: "After many, many tests, they started to send small animals into space.. Only after a long time did they ever put a person inside of a rocket and **shoot** him into space."

As used in the passage, what does the word "**shoot**" mean above?

A to fix a problem
B to attack with a weapon
C to send with great force
D to break into many pieces

7. Choose the answer that best completes the sentence below.

People wanted to travel to outer space _____ they were able to.

A before
B never
C although
D instead

8. What problem did Konstantin Tsiolkovsky spend his life thinking about?

_____

_____

_____

_____

9. What effect did Tsiolkovsky's solutions have on scientists in America and Russia?

10. Was sharing ideas important to making human space travel possible? Explain why or why not, using evidence from the passage to support your answer.

Teacher Guide & Answers

Passage Reading Level: Lexile 1130

1. According to the passage, where did people decide they wanted to go many years ago?

- **A** **outer space**
- **B** the North Pole
- **C** the inside of a volcano
- **D** the center of the earth

2. Getting to outer space is a problem mentioned in the passage. How was this problem solved?

- **A** Georges Méliès made a movie that showed a tribe of angry natives living on the moon.
- **B** Grandparents told their grandchildren stories about people traveling to outer space.
- **C** Some rockets blew up on the launch pad or shot off in crazy directions.
- **D** **Scientists worked together to create a rocket that could send a person into space.**

3. Read these sentences from the passage: "Many scientists spent years working together to solve the problem. They drew and discussed different designs until they agreed on the ones that were the best. Then, they built small models of those designs, and tested and tested them until they felt ready to build even bigger models. They made full-scale rockets, which they launched without any people inside, to test for safety.. . . . Only after a long time did they ever put a person inside of a rocket and shoot him into space."

What can be concluded from this information?

- **A** Scientists in Russia were better at working together than scientists in America.
- **B** Scientists in America were better at working together than scientists in Russia.
- **C** **Working together and doing tests were important to making a rocket.**
- **D** Most of the scientists who saw the movie *A Trip to the Moon* did not like it.

4. Why might people be interested in traveling to outer space?

- **A** They are interested in meeting a tribe of angry natives on the moon.
- **B** They are interested in watching movies and listening to their grandparents' stories.
- **C** They are interested in seeing rockets blow up on a launch pad.
- **D** **They are interested in exploring the mystery of outer space.**

5. What is this passage mostly about?

- **A** the lives of Georges Méliès, Jules Verne, and Konstantin Tsiolkovsky
- **B** **the problem of getting people to outer space and how that problem was solved**
- **C** a movie about flying to the moon made in the 1920s
- **D** a spaceship in the shape of a bullet that could be loaded into a giant cannon and aimed at the moon

6. Read the following sentences: "After many, many tests, they started to send small animals into space.. Only after a long time did they ever put a person inside of a rocket and **shoot** him into space."

As used in the passage, what does the word "**shoot**" mean above?

A to fix a problem
B to attack with a weapon
C **to send with great force**
D to break into many pieces

7. Choose the answer that best completes the sentence below.

People wanted to travel to outer space _____ they were able to.

A **before**
B never
C although
D instead

8. What problem did Konstantin Tsiolkovsky spend his life thinking about?

Suggested answer: At minimum, students should respond that Konstantin Tsiolkovsky spent his life thinking about how people could get to the moon. Students may provide more detail, specifying that Tsiolkovsky thought about ways people could get to the moon besides being shot from a cannon.

9. What effect did Tsiolkovsky's solutions have on scientists in America and Russia?

Suggested answer: Tsiolkovsky's solutions gave scientists in America and Russia ideas about traveling into space.

10. Was sharing ideas important to making human space travel possible? Explain why or why not, using evidence from the passage to support your answer.

Suggested answer: Answers may vary, as long as they are supported by the passage. For instance, students may respond that sharing ideas was important to making human space travel possible, citing such examples as the influence of Tsiolkovsky's ideas on scientists and scientists working together to figure out which rocket designs were best.