



Student Name: _____

Date: _____

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Read the following passage and answer the questions by circling the correct answer.

A World Without Airplanes?

What would the world be like if there were no airplanes? In the 100 years since airplanes were invented, they have changed the world a lot. In fact, it would be hard to imagine what life would be like without them. How would the world be different if the Wright brothers had stayed in the bicycle business? NASA [gloss 1] assembled a team of experts to answer that question. The team discussed the issue during an on-line chat forum [gloss 2].

The panel of experts agreed that without airplanes the world would be a bigger, slower place. Travel that takes a few hours on an airplane would take days or weeks without them. Ken Schrock is an engineer at NASA's Marshall Space Flight Center. He noted that if there were no airplanes, the increased traffic on land would mean more people would be hurt in traffic accidents. "If all the people flying for business or pleasure were driving, there would be more cars on the road, and statistically there would be more accidents," Schrock said. "Moving the cargo would also put more trucks and trains on the roads, or intersecting roads, and [result in] more accidents." In addition, longer transportation times would mean that goods would cost more. "A plane can easily fly overseas in a night," he said. "Crossing the Pacific in any kind of boat is going to take days, if not weeks. I think aircraft have changed the way we view the world. You can see in one view what would have taken a pioneer in a covered wagon weeks to make [it] across."

The panel also agreed that a world without airplanes would be a more divided place. "People would have much less exposure to other cultures," said Donald Mendoza. He's an aerospace engineer at NASA's Ames Research Center. Airplanes have made commerce around the world very useful and handy. They have also played a major role in the mixing of the world's populations. "People are able to visit and live in places they otherwise could not," he said. "Without aircraft, the world would seem much bigger because it would take much longer to travel great distances."

Without airplanes, the world might not have some of the advanced computers we enjoy today. "We would have computers without airplanes, but they probably would not be as powerful," Mendoza said. To study aircraft in flight, computers that can keep track of a large number of calculations are needed. To tackle this problem, thousands of processors were linked together. This makes it possible for them to tackle bigger and more complex tasks.

The use of computers for flight control systems has also led to new uses for computers. Military fighters and many commercial airliners are "driven" by their flight computers. The pilots just give inputs to the flight control system computers. To cover computer glitches, there are usually three computers to do the same job. They "vote" to look for two or three answers that are the same. If one of the answers is different, it is ignored. The answer that is the same on two computers is the one that is used to control the aircraft.

Even warfare would not be the same without airplanes. Having the best airplanes for battle has become a very important part of modern warfare. But this does more than just help the military. A lot of the technology created for military aircraft has also been used to benefit the world. Cargo planes designed for the military are being used to drop food to those in need in remote places. Better aircraft control systems that were designed for fighter jets are now used on passenger planes. Even the anti-lock brakes on cars were first used on airplanes.

Airplanes have also changed the way we think about our world. "I'm not sure whether airplanes create the need for speed or vice versa," said Andrew Hahn. He's an aircraft designer at Ames. "I think that history shows that whenever a faster gizmo comes on the scene, it changes everyone's expectations. On land, we saw stagecoaches, trains, and cars alter the speed of travel. On water, we saw Viking longboats, clipper ships, piston steamships, turbine steamships, and gas turbine ships each, in turn, shrink the planet a little more. Messaging went from messengers walking around to carts to the Pony Express to telegraph to radio to telephone to email, all the way to electronic chat rooms. Each time, what was perfectly useful yesterday became obsolete, and people just expect that messages or goods will be delivered at the latest benchmark speed. Airplanes have contributed to this, being the fastest way to move goods and people available. Because of air freight, I actually expect that something I order online today will be at my doorstep tomorrow."

Even if the airplane had not been invented, the world would still have aircraft. Even before airplanes were around, people were taking to the air in blimps. If the airplane had not been invented, blimps probably would have been used even more. People might also be flying in helicopters. Leonardo da Vinci came up with the

first helicopter design in the late 1400s. This was long before the first human flight. In fact, it was almost 400 years before the first person even went up in a balloon. If the airplane had not been invented when it was, Schrock believes it would have been invented sooner or later. "If the airplane hadn't been invented, I agree that research into faster transportation means would have uncovered it," he said.

So, what would the world be like without airplanes? It would be a world where going anywhere takes forever. A world where technology is lacking. A world where our understanding of the world around us is limited. Perhaps, someday, people will remember when the solar system used to be the same way.

[gloss 1] NASA – National Aeronautics and Space Administration

[gloss 2] on-line chat forum – a virtual meeting place that allows many people to communicate with each other on-line at the same time from separate locations

1. In the third from the last paragraph, the word obsolete means

- A. out of date.
 - B. better quality.
 - C. less expensive.
 - D. in high demand.
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2. Knowing the meaning of the Greek root *aero* helps the reader understand that "aeronautical" refers to traveling in

- A. air.
 - B. galaxies.
 - C. water.
 - D. machines.
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3. Read the sentence below from the passage.

It would be a world where going anywhere takes forever.

The sentence is an example of which type of figurative language?

- A. simile
 - B. onomatopoeia
 - C. hyperbole
 - D. personification
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4. What is the **main** topic of the passage?

- A. how airplanes were first invented
 - B. how airplanes have improved over time
 - C. how airplanes influence the world today
 - D. how airplanes are important to researchers
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5. In the first paragraph, the author asks questions **probably** to
- A. give the reader new information.
 - B. test how much the reader already knows.
 - C. get the reader interested in the passage.
 - D. show the reader that answers are hard to find.
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6. Which technique does the author **mainly** use to support the position that airplanes have changed the world?
- A. expert testimonials
 - B. appeals to emotion
 - C. bandwagon approach
 - D. citing statistics
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7. Which sentence from the passage **best** supports the author's position that airplanes have changed the world?
- A. "The panel of experts agreed that without airplanes the world would be a bigger, slower place."
 - B. "He noted that if there were no airplanes, the increased traffic on land would mean more people would be hurt in traffic accidents."
 - C. "Having the best airplanes for battle has become a very important part of modern warfare."
 - D. "Even if the airplane had not been invented, the world would still have aircraft."
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8. Which sentence from the passage is an opinion?
- A. "The team discussed the issue during an on-line chat forum."
 - B. "To study aircraft in flight, computers that can keep track of a large number of calculations are needed."
 - C. "Leonardo da Vinci came up with the first helicopter design in the late 1400s."
 - D. "In fact, it would be hard to imagine what life would be like without them."
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9. Which sentence from the passage **best** shows the author's bias about the importance of airplanes?
- A. "In addition, longer transportation times would mean that goods would cost more."
 - B. "The answer that is the same on two computers is the one that is used to control the aircraft."
 - C. "Airplanes have also changed the way we think about our world."
 - D. "If the airplane had not been invented, blimps probably would have been used even more."
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10. The purpose of the title is to
- A. introduce the topic of the passage.
 - B. explain the importance of the passage.
 - C. inform the reader about the author of the passage.
 - D. help the reader think about the setting of the passage.
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11. Which of these conclusions is **best** supported by information in the passage?

- A. Airplanes have changed the world.
 - B. Airplanes make the world seem much bigger.
 - C. Airplanes have led to increased traffic problems.
 - D. Airplanes make people more nervous about traveling.
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12. Which **best** expresses how airplanes have made the world a less divided place?

- A. They have helped to mix the various populations and cultures in the world.
 - B. Modern warfare has been improved by increased airplane technology.
 - C. They have made deliveries possible one day after an order is placed.
 - D. Thousands of airplane computer processors have been linked together.
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13. The author uses comparison and contrast as the structure of the passage **mainly** to

- A. explain how airplanes use technology.
 - B. show why people like to travel on airplanes.
 - C. explain the history of the invention of airplanes.
 - D. show the changes airplanes have made in the world.
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14. According to the passage, what would **most likely** happen if airplanes had not been invented?

- A. Travel would be less expensive.
 - B. Computers would not have been invented.
 - C. Bicycles would be the best way to transport products.
 - D. People would have a limited understanding of the world.
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15. According to the passage, how did airplanes influence the development of computers?

- A. Airplanes needed computers to be less expensive.
 - B. Computers had to be made smaller to be used on airplanes.
 - C. Teams of experts discussed questions in on-line forums.
 - D. Computers were made powerful enough to do many calculations.
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