



Venus? Maybe Later.

Article

PART 1

TOKYO, Japan. A Japanese space probe was supposed to begin orbiting Venus in December 2010. But it missed. Instead, the probe was captured by the sun's gravity. This was a huge setback for Japan's space program. However, the probe may try again in six years.

The probe is named Akatsuki. Its journey to Venus took nearly eight months. Venus is the second planet from the sun. Akatsuki was expected to orbit the planet. To do this, the probe would fire its engines as it neared Venus. This would push Akatsuki into the correct orbit. But that didn't happen. The next day, officials discovered that Akatsuki's engines failed to fire long enough. The probe kept going.

Still, it wasn't all bad news. Akatsuki appeared to be undamaged. It was working fine. The probe set off to orbit the sun. Still, officials are hopeful. The probe may be able to try again when it nears Venus in six years.

"Unfortunately, [Akatsuki] did not [begin] an orbit [around Venus]," said Hitoshi Soeno. Soeno works for JAXA. The group runs the Japanese space program. "But it appears to be [working]. And we may be able to try again when it passes by Venus six years from now."

Akatsuki was designed to record data about Venus' volcanoes. In addition, it would gather information about the planet's cloud cover and climate. The probe has cameras and other instruments to gather this information.

Why did scientists want to study Venus' climate? They hoped to learn more about how climate change works. This is a change in weather over long periods of time. Looking at climate change on another planet may help scientists know more about what is happening on Earth. It may help scientists learn what is causing a slow rise in temperatures on Earth.

The probe cost \$300 million. It would have been the first that Japan had put in orbit around another planet. Japanese scientists had hoped that the probe would be successful. In 2010, Japan brought a probe back from a trip to an asteroid. The failure of the Venus probe was a big letdown for Japan. It was also a disappointment for scientists around the world.

"The Planetary Society [is sorry] that the...Akatsuki spacecraft seems to have missed its [chance] to lock into an orbit of Venus," said Bill Nye. Nye is in charge of the Planetary Society. It is a private group that supports the exploring of space. "...Akatsuki has already [done] some [amazing] things on its voyage. This setback reminds us how difficult space exploration can be."

Information for this story came from AP.

PART 2

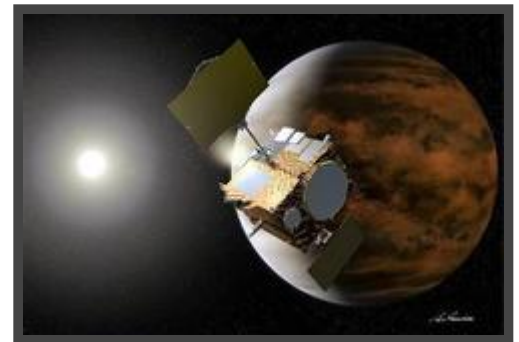


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AP/Akihiro Ikeshita via JAXA

Japan sent a spaceship to study the planet Venus. It missed the planet and can't try again for six years.

Dig Deeper

The Akatsuki probe did not move into Venus' orbit in 2010. Japan plans to try again in December 2015. Space travel can be difficult. There are many problems to solve. New technology is often needed. This technology can be useful on Earth.

Studying other worlds can teach us about our own. Scientists believe that Earth has changed a lot since it formed. Scientists look at other planets. They compare them to Earth. This tells them more about Earth's history. Scientists hope Akatsuki will orbit Venus. They want to study Venus' climate. This could teach them about the changes in Earth's climate.

But space exploration has done more than add to what we know. It has also led to new technology. This technology makes life on Earth easier. You probably benefit every day from the space program. Most likely, you use some material or product that was first developed for space. What is one of the most important benefits of space exploration? The development of satellite technology. Images and data from weather satellites have made weather forecasting better. Other satellites collect images of Earth's surface. The images show how the surface is being changed. It is being changed by natural events. It is also being changed by human activity. The data can be used for wildlife preservation. The data can also be used for things like the conservation of natural resources.

Have you ever come up with a new way to use something? NASA is the U.S. space agency. Engineers at NASA often find ways to use space technologies on Earth. Smoke detectors are spinoffs of space technology. Cold weather gloves are, too. Bed mattresses and ear thermometers are also spinoffs of space technology. Everything on a spacecraft must be small. It needs to be as lightweight as possible. Why? Because heavy spacecraft are harder to launch. Engineering design techniques are used to meet this need. They are also used to make devices on Earth better. Some of these devices are tools for diagnosing diseases. Others are devices that help people overcome disabilities.



Credit: NASA

This boy is able to communicate by using eye movements. NASA engineers helped develop the system he is using.

Materials and parts on a spacecraft have to handle harsh conditions. Extreme cold is an example; so is extreme heat. Fire-resistant materials were made for the space program. Now, these materials are in many homes and buildings. Firefighters wear protective suits. They are made from a special fabric. The fabric was first used in space suits. NASA engineers have also helped design other devices that help firefighters. These devices allow firefighters to avoid injury from inhaling smoke. Humans need safe environments in space. NASA has developed systems for purifying air and water. It also developed systems for purifying food. These systems now help people on Earth. They help protect people on Earth as well as in space.

Dictionary

asteroid (*noun*) a large rock that circles the sun

climate (*noun*) how hot, cold, rainy, and windy a place is over a long time

failure (*noun*) when something does not work

official (*noun*) person who holds an office or a position, often in the government

probe (*noun*) a spacecraft that travels through space to collect information

satellite (*noun*) an object that orbits a larger object

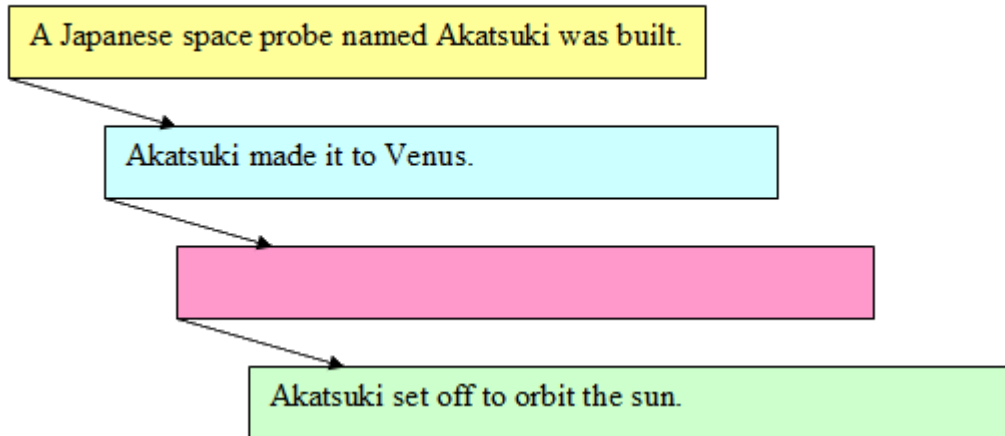
technology (*noun*) the use of scientific knowledge to solve problems and make new things

Activity

PART 1

Question 1

What Happened Next?



Based on the article, which fits best in the empty box above?

This question asks about when events happened. It does not ask where in the article the events appear. Look back at the article for clues, such as dates.

- Ⓐ Akatsuki was designed to record data about Venus.
- Ⓑ Akatsuki's engines failed to fire long enough.
- Ⓒ Japan spent \$300 million to build Akatsuki.
- Ⓓ Scientists decided to learn more about Venus' climate.

Question 2

The article talks mainly about _____.

- Ⓐ The Planetary Society
- Ⓑ Venus' climate
- Ⓒ A Japanese space probe
- Ⓓ Scientists around the world

Question 3

In the article, Bill Nye states:

"...Akatsuki has already [done] some [amazing] things on its voyage; this setback reminds us how difficult space exploration can be."

Look at the quote above and think about the article. Which would be the closest **synonym** for the word *voyage*?

- (A) Invention
- (B) Transfer
- (C) Journey
- (D) Upgrade

Question 4

Think about the article. Since they hope to learn more about climate change, then _____.

- (A) Scientists want to work with Bill Nye.
- (B) Scientists want to study Venus' climate.
- (C) Scientists want to capture Akatsuki.
- (D) Scientists want to join the Planetary Society.

Question 5

Based on the article, which is most likely to happen?

- (A) Scientists will realize that Venus is too dangerous to study.
- (B) Scientists will get rid of Akatsuki as soon as they can.
- (C) Scientists will prepare to work with Akatsuki in six years.
- (D) Scientists will decide that probes cost too much to build.

Question 6

Which two words from the article are the closest **synonyms**?

- (A) Gravity and exploration
- (B) Disappointment and letdown
- (C) Data and setback
- (D) Planet and climate

Question 7

The news article says all of the following **except** _____.

- (A) When the Planetary Society was formed
- (B) Why Akatsuki failed to orbit Venus
- (C) When Akatsuki may be near Venus again
- (D) Why officials are hopeful about the probe

Question 8

Suppose you were writing a summary of the article. Which of these would be **most** important to put in the summary?

- Ⓐ The JAXA group runs the Japanese space program.
- Ⓑ Bill Nye is in charge of the Planetary Society.
- Ⓒ A Japanese space probe missed going into orbit around Venus.
- Ⓓ Akatsuki cost Japan \$300 million.