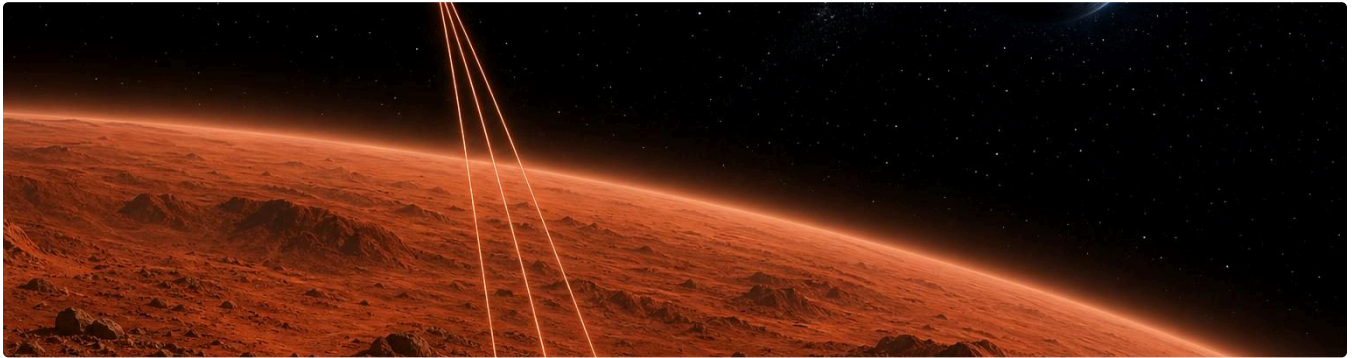


NASA Plans a Stronger Message Link for Mars

A new spacecraft around Mars could move more science data and help guide future missions.



A spacecraft relays signals between a rover on Mars and Earth.

NASA has chosen Blue Origin to build and run a new communications system for Mars, according to NASA. The **contract** could be worth about \$700 million. Blue Origin must deliver a high-performance **spacecraft** to NASA no later than Dec. 31, 2028.

The spacecraft will orbit Mars. An **orbiter** is a spacecraft that travels around a planet or moon instead of landing on it. This one will act like a relay station. It will pass along science data, pictures, **navigation** information, and important **mission** messages from spacecraft on or near Mars.

NASA calls the project the Mars Telecommunications **Network**. Telecommunications means sending information over long distances. On Earth, that can mean phone calls, video chats, and internet **signals**. Around Mars, it means helping robots and other spacecraft send their findings back across space.

The new system is meant to have high **bandwidth**. Bandwidth is the amount of information a system can carry at one time. Higher bandwidth can mean more data moves faster. For a Mars mission, that could matter if a spacecraft is

sending detailed images, measurements from science tools, or directions needed to move safely.

This matters because exploring Mars is not only about rockets and robots. It is also about communication. A rover can collect important information, but that information has to reach scientists. A future mission may also need clear signals to know where it is and what to do next. Without strong communication, even a successful spacecraft could be limited in what it can share.

NASA says the network will support both current and future Mars missions. The agency expects it to be working at Mars by 2030. That timing matters because NASA says demand for data will grow as more missions study the Red Planet, which is a common nickname for Mars because of its rusty color.

The project also connects to NASA's larger plan for space exploration. Under the Artemis program, NASA is sending **astronauts** to the Moon and using that work to prepare for future Mars missions. Robotic missions, meaning missions done by machines instead of people, are expect-

ed to help prepare the way for human exploration.

The contract shows another change in how space work is done. NASA says it is increasingly using **commercial** partners. A commercial partner is a private company that works with the government on a project. In this case, Blue Origin will design, develop, put together, launch, and operate the Mars network.

NASA says this lets the agency use private-sector skills while it focuses on exploration and science. That choice also raises useful questions. When a government agency hires a company, it can gain speed, tools, and experience. It also has to make sure the public gets value from the money spent.

For a middle school science class, the story connects to several ideas that already come up in class. Signals travel across distance. Machines need energy, instructions, and feedback. Scientists depend on data, which means information gathered through observation or measurement. Space exploration is not just one dramatic launch. It is a whole system of planning, engineering, communication, and problem solving.

The Mars Telecommunications Network is not a rover and not a human mission. It may not look as exciting as a rocket leaving Earth. But it could become part of the background system that makes future discoveries possible. Before people can explore farther from Earth, they need a reliable way to listen, send, guide, and learn.

Written from reporting by NASA.

THINK IT THROUGH

1. NASA is paying a private company to build and operate this Mars communication system. What are the strongest reasons for doing that, and what concerns should the public still have?

A strong answer: A strong answer weighs possible benefits such as expertise and speed against concerns about cost, oversight, reliability, and public value.

2. The new orbiter is not designed to land on Mars or collect samples itself. Make an argument for why a communication system can still be as important as a rover or lander.

A strong answer: A strong answer explains that data, images, navigation, and mission safety depend on communication, even if the relay spacecraft is less visible.

3. If future Mars missions can send back much more data, how might that change what scientists can ask and learn?

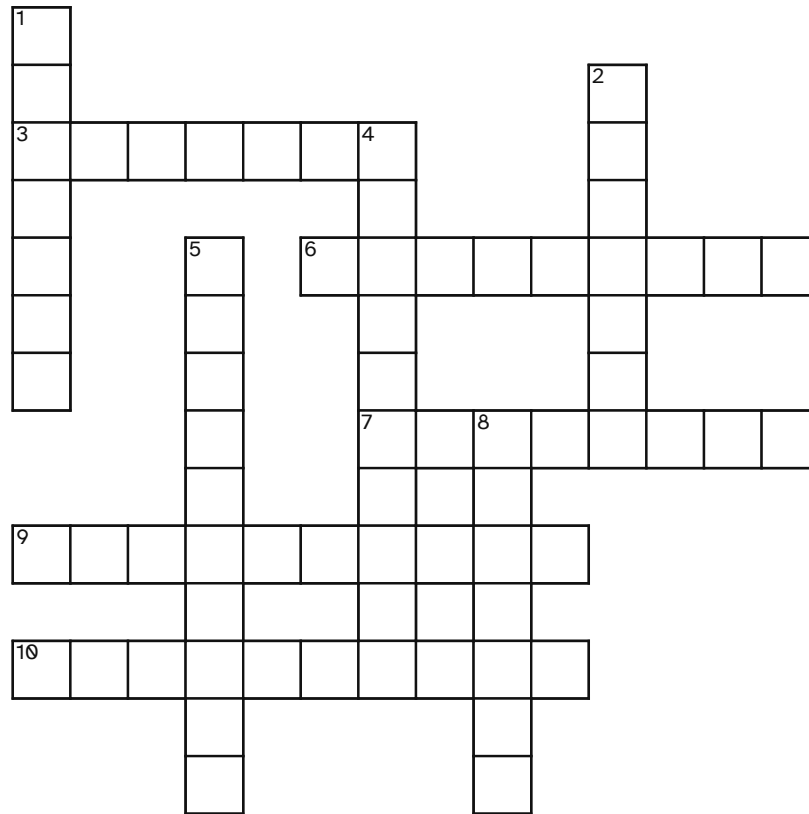
A strong answer: A strong answer connects higher bandwidth to richer evidence, more detailed images or measurements, and new questions that need large amounts of information.

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E T L U S D T Z R S U R N C T T A S
C K E I A T U M C W B O K O B V S I
R R R E U C E N W O H N N M A T O N
B C A H C N T E G N B O K M N T T Y
R H O Y C O A N P B D N P E D M A E
T A T C I L N E I T F W D R W I S N
T H S O R B I T E R A L H C I S T W
E O P O O K K W R B R D R I D S R R
S E A T A N T O N A V I G A T I O N
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ASTRONAUTS BANDWIDTH COMMERCIAL CONTRACT
MISSION NAVIGATION NETWORK ORBITER SIGNALS
SPACECRAFT

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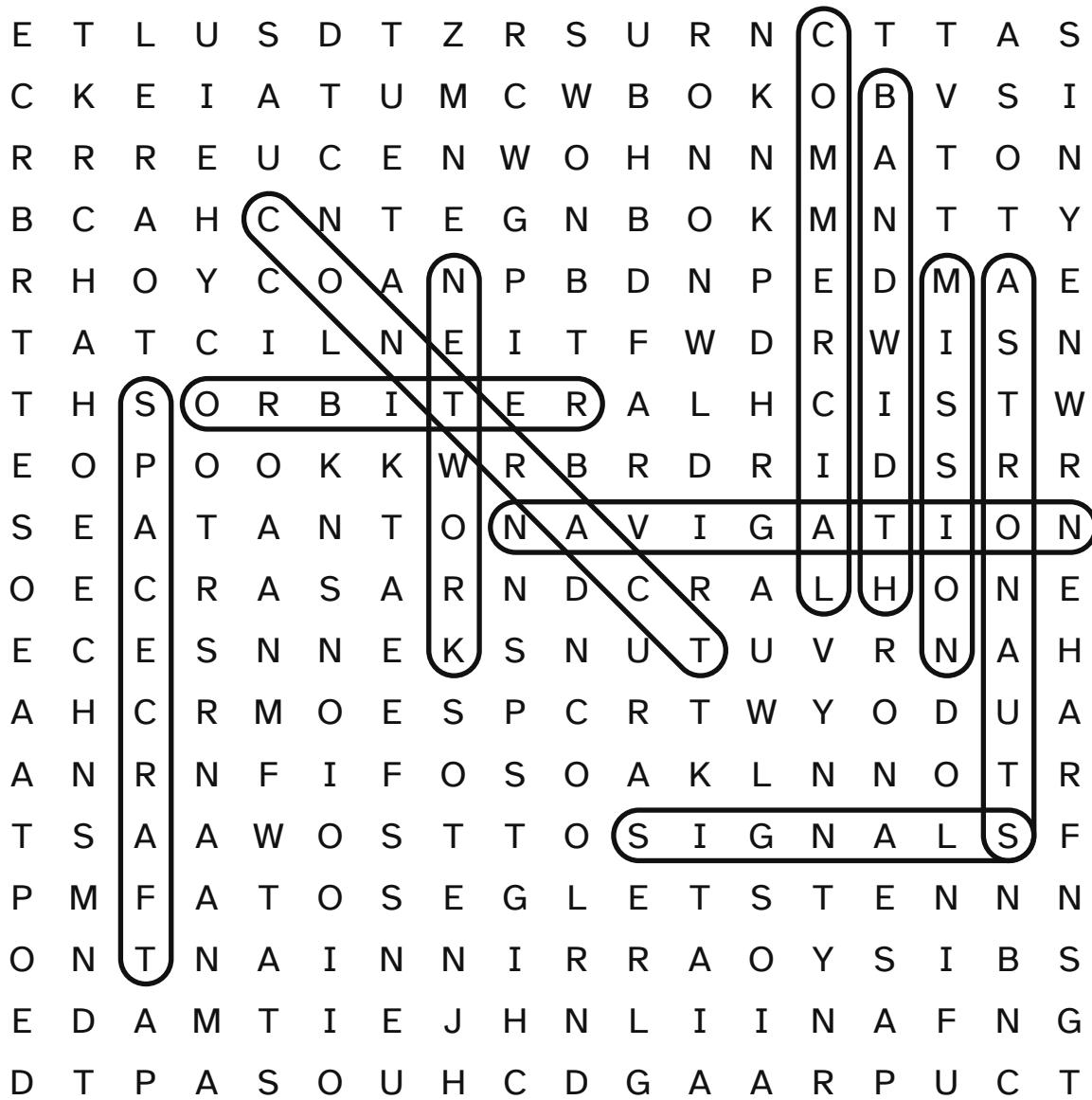
ACROSS

- 3 Messages sent by waves, light, or other means
- 6 Amount of data a system can handle at once
- 7 Formal deal listing duties for each side
- 9 People trained to travel and work beyond Earth's air
- 10 Finding location and selecting a safe route

DOWN

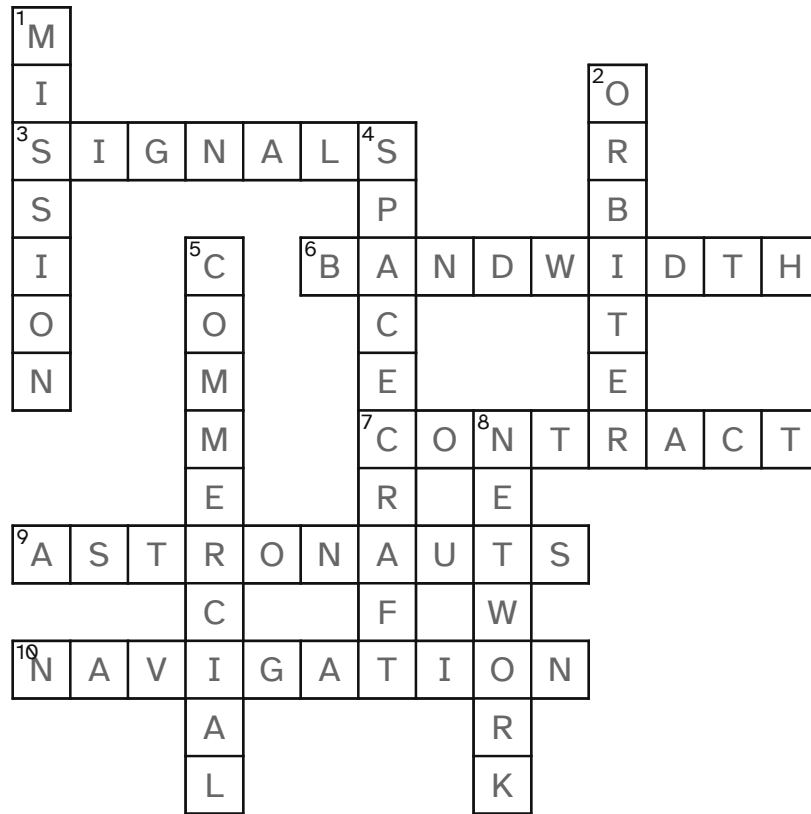
- 1 Planned job or journey with a goal
- 2 Vehicle that circles a world or moon without touching down
- 4 Vehicle built to travel beyond Earth's air
- 5 Related to private companies selling goods or services
- 8 Linked system that moves information among places

NASA Plans a Stronger Message Link for Mars — answer key



ASTRONAUTS BANDWIDTH COMMERCIAL CONTRACT
MISSION NAVIGATION NETWORK ORBITER SIGNALS
SPACECRAFT

NASA Plans a Stronger Message Link for Mars — answer key



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Where this came from

This article was written for 3andB from the reporting below. It is not a reprint — the wording is ours and the facts are theirs.

NASA

“NASA Selects Blue Origin as Mars Telecommunications Network Provider”

Published Tuesday, September 1, 2026

Read by us on Wednesday, September 2, 2026

<https://www.nasa.gov/news-release/nasa-selects-blue-origin-as-mars-telecommunications-network-provider/>

WHAT IS IN THIS PACKET

The article with a note on each question, a word search, a crossword, and the answer key to both.

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