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## Space & Astronomy:

### Mars Exploration & Discovery

The **Perseverance Mars rover** has found significant chemical signatures in a rock sample from Jezero Crater, a location once believed to be an ancient lakebed. The sample, named "Sapphire Canyon," contains patterns and organic molecules that could indicate past microbial life. Scientists are particularly interested in the "Cheyava Falls" site, which shows chemical signatures potentially resulting from ancient biological reactions. This discovery, made from some of the mission's youngest sedimentary rocks, suggests Mars may have been habitable for a longer period than previously thought.

### Asteroid & Planetary Science

An asteroid named **2025 QV9**, roughly the size of a large airplane, made a close flyby of Earth on September 10. Traveling at over 10,000 mph, the asteroid's closest approach was about 1.25 million miles away, approximately five times the distance to the Moon. While this distance is considered "relatively close" in astronomical terms, NASA confirmed it posed no danger to Earth. This event highlights the importance of continuous monitoring of near-Earth objects.

Scientists have found evidence of flowing water on the parent asteroid of **Ryugu**, a celestial body from which the Hayabusa2 mission collected samples. The discovery suggests that water may have flowed on this asteroid much later than previously believed, changing our understanding of the early solar system.

### Missions & Launches

**SpaceX** has been attempting to launch the Nusantara Lima (N5), a communications satellite for an Indonesian company, using a Falcon 9 rocket. The launch faced several delays due to poor weather and technical issues, with a new target date set for September 11.

**NASA and SpaceX** are also preparing for a collaborative mission on September 14. A SpaceX Falcon 9 rocket will launch the Northrop Grumman Cygnus XL spacecraft, carrying over 11,000 pounds of supplies and scientific experiments to the International Space Station. The mission's cargo includes materials for producing semiconductor crystals and equipment for improving cryogenic fuel tanks.

### Skywatching

**Saturn** remains highly visible throughout September. It will reach its brightest on September 21, when it is in opposition to the sun, and its rings will appear nearly edge-on from Earth.

A **total lunar eclipse**, visible as a "blood moon," occurred on September 7-8. The eclipse was visible across Asia, Australia, eastern Africa, and parts of Europe, and lasted for an unusually long 82 minutes of totality.

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### MCQS

1: What is the significance of the "Sapphire Canyon" rock sample found by the Perseverance Mars rover?

- A) It is the first rock sample collected from Jezero Crater.
- B) It contains chemical signatures and organic molecules that could indicate past microbial life.
- C) It is composed of a previously unknown type of Martian mineral.
- D) It provides evidence of a massive flood event in Mars's history.

**Answer:** B) It contains chemical signatures and organic molecules that could indicate past microbial life.

The news states, "The sample, named 'Sapphire Canyon,' contains patterns and organic molecules that could indicate past microbial life." This discovery suggests Mars may have been habitable for a longer period than previously thought.

2: An asteroid named 2025 QV9 made a close flyby of Earth on September 10. Approximately how far away was its closest approach?

- A) The distance of the Moon.
- B) Half the distance of the Moon.
- C) Five times the distance to the Moon.
- D) Ten times the distance to the Moon.

**Answer:** C) Five times the distance to the Moon. The news explicitly says the asteroid's closest approach was "about 1.25 million miles away approximately five times the distance to the Moon."

3: What is the purpose of the upcoming collaborative mission between NASA and SpaceX on September 14?

- A) To launch a new Mars-bound rover.
- B) To deploy a new communications satellite into orbit.
- C) To send supplies and scientific experiments to the International Space Station.
- D) To test a new type of rocket engine in space.

**Answer:** C) To send supplies and scientific experiments to the International Space Station. The news notes, "NASA and SpaceX are also preparing for a collaborative mission on September 14. A SpaceX Falcon 9 rocket will launch the Northrop Grumman Cygnus XL spacecraft, carrying over 11,000 pounds of supplies and scientific experiments to the International Space Station."







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