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# NASA Spacecraft Captures Impressive Mars Images During Flyby

## Description

NASA's Psyche spacecraft successfully approached Mars earlier this month, capturing stunning images of the planet while using its gravity to propel itself towards a distant metallic asteroid. This event marks a significant step in the spacecraft's journey, vital for understanding planetary formation.

During its close encounter on May 15, Psyche flew approximately 2,900 miles above the Martian surface, executing a carefully planned gravity assist manoeuvre. This manoeuvre increased the spacecraft's speed by about 1,000 mph and altered its trajectory towards its primary target: the enigmatic asteroid 16 Psyche, located in the outer asteroid belt.

By capitalising on this encounter, mission controllers directed Psyche to photograph Mars from unique perspectives. The resulting images showcase Mars' polar ice caps, its wind-sculpted geological features, and crater formations in remarkable detail. NASA scientists highlighted that this successful flyby enabled them to test and calibrate the spacecraft's scientific instruments before reaching the asteroid.

Launched in October 2023, Psyche is on a journey spanning 2.2 billion miles to reach its namesake asteroid. Scientists theorise that 16 Psyche may be the exposed metallic core of an ancient planetary building block, which could reveal crucial insights into the processes that formed rocky planets like Earth.

The spacecraft is expected to arrive at the asteroid in summer 2029, where it will undertake several years of mapping to analyse the space rock's composition and structure. If confirmed as a fragment of a planetary core, 16 Psyche could provide scientists with an unparalleled understanding of the internal structures of terrestrial planets.

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## Vocabulary List:

1. **gravity** //ˈgrævɪti// (noun): force that pulls things toward a planet
2. **manoeuvre** //məˈnu:və// (noun): planned movement or action to achieve something
3. **trajectory** //trəˈdʒektəri// (noun): path something follows through the air or space
4. **calibrate** //ˈkæɪlɪbreɪt// (verb): make a tool or instrument accurate
5. **composition** //kəmˈpəzɪʃən// (noun): what something is made of physically
6. **metallic** //məˈtæɪlɪk// (adjective): made of metal; shiny and hard

## Comprehension Questions



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## Multiple Choice

1. What was the primary objective of NASA's Psyche spacecraft?
  - Option: To reach Mars
  - Option: To study the asteroid 16 Psyche
  - Option: To capture stunning images of Earth
  - Option: To land on the Moon
2. When was the Psyche spacecraft launched?
  - Option: July 2021
  - Option: October 2023
  - Option: March 2022
  - Option: December 2020
3. What significant event occurred on May 15 during Psyche's journey?
  - Option: It entered Mars' orbit
  - Option: It performed a flyby of Mars
  - Option: It landed on Mars
  - Option: It took off from Earth
4. How much did Psyche increase its speed during the gravity assist manoeuvre?
  - Option: 500 mph
  - Option: 750 mph
  - Option: 1,000 mph
  - Option: 1,500 mph
5. What geological features were showcased in the images captured by Psyche?
  - Option: Volcanoes and mountains
  - Option: Deserts and oceans
  - Option: Ice caps and craters
  - Option: Forests and rivers
6. What is theorised to be the true nature of asteroid 16 Psyche?
  - Option: A giant comet
  - Option: An ice rock
  - Option: A metallic core
  - Option: A gas giant



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### True-False

7. The Psyche spacecraft captured images of Mars during its flyby.
8. The spacecraft's primary mission is to map the surface of Mars.
9. Psyche is expected to arrive at its target asteroid in 2029.
10. The spacecraft's gravity assist manoeuvre turned it away from its target.
11. NASA scientists plan to use Psyche's findings to gain insights into rocky planet formation.
12. Psyche flew above the Martian surface at an altitude of 5,000 miles.

### Gap-Fill

13. NASA's Psyche spacecraft is on a journey spanning 2.2 billion miles to reach its namesake asteroid, \_\_\_\_\_.
14. The spacecraft performed a gravity assist manoeuvre, increasing its speed by about \_\_\_\_\_ mph.
15. Psyche was launched in \_\_\_\_\_ 2023.
16. The expected arrival at the asteroid is in the summer of \_\_\_\_\_.
17. During its flyby, Psyche flew approximately \_\_\_\_\_ miles above the Martian surface.
18. Psyche's images highlight Mars' polar ice caps, which are \_\_\_\_\_ features.

### Answer

**Multiple Choice:** 1. To study the asteroid 16 Psyche 2. October 2023 3. It performed a flyby of Mars 4. 1,000 mph 5. Ice caps and craters 6. A metallic core

**True-False:** 7. True 8. False 9. True 10. False 11. True 12. False

**Gap-Fill:** 13. 16 Psyche 14. 1,000 15. October 16. 2029 17. 2,900 18. geological



## Vocabulary quizzes

### Multiple Choice ( Select the Correct answer for each question. )

1. What force is responsible for keeping planets in orbit around the sun?  
Option: Electromagnetism  
Option: Friction  
Option: Gravity  
Option: Nuclear
2. Which term refers to the path followed by an object moving through space?  
Option: Velocity  
Option: Altitude  
Option: Trajectory  
Option: Orbit
3. What is the term for adjusting a measuring instrument for accuracy?  
Option: Standardize  
Option: Calibrate  
Option: Regulate  
Option: Compile
4. What do we call the layer of gases surrounding a planet?  
Option: Ocean  
Option: Lithosphere  
Option: Atmosphere  
Option: Crust
5. What term describes the action of driving or pushing forward?  
Option: Suspension  
Option: Propulsion  
Option: Restoration  
Option: Manipulation
6. In space missions, what does the term payload refer to?  
Option: The weight of the spacecraft  
Option: The materials carried into orbit  
Option: The costs of the mission  
Option: The number of missions planned
7. Which term best describes a journey undertaken for a specific purpose, especially exploration?



- Option: Journey
- Option: Expedition
- Option: Migration
- Option: Vacation

8. What is the term for working jointly with others towards a common goal?

- Option: Isolation
- Option: Segregation
- Option: Collaboration
- Option: Competition

9. What term describes an attitude of doubt or disbelief?

- Option: Optimistic
- Option: Sceptical
- Option: Trusting
- Option: Indifferent

10. What term refers to activities intended for profit or in business?

- Option: Domestic
- Option: Commercial
- Option: Civic
- Option: Academic

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**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. The spacecraft needed to \_\_\_\_\_ in order to enter the desired orbit.
12. The new material used in the construction of the lander was found to be \_\_\_\_\_.
13. The research team focused on the \_\_\_\_\_ regions for their surveys.
14. It's essential to minimize any \_\_\_\_\_ during data collection.
15. The results of the \_\_\_\_\_ phase were promising, indicating potential success.
16. The new technology aims to \_\_\_\_\_ issues faced by previous systems.
17. They were able to \_\_\_\_\_ the necessary components for the mission.
18. Repeated \_\_\_\_\_ led to a delay in the launch schedule.



19. We must assess the \_\_\_\_\_ of the experiments' results.
20. His \_\_\_\_\_ grew as he waited for the results of the test.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. Gravity pulls objects towards each other, which is why we stay grounded on Earth.
22. To avoid obstacles in its path, the spacecraft had to manoeuvre skillfully.
23. The trajectory of the rocket was calculated meticulously to ensure a successful launch.
24. It is important to calibrate instruments before starting any measurement.
25. The composition of the atmosphere is vital for sustaining life.
26. The sculpture had a distinctive metallic sheen that attracted many viewers.
27. The new data portal is user-friendly and highly accessible to researchers worldwide.
28. The experimental design was innovative and pushed the boundaries of current knowledge.
29. Successful projects often result from good collaboration among team members.
30. The underperformance of the project was attributed to a lack of resources.

## Answer

**Multiple Choice:** 1. Gravity 2. Trajectory 3. Calibrate 4. Atmosphere 5. Propulsion 6. The materials carried into orbit 7. Expedition 8. Collaboration 9. Sceptical 10. Commercial

**Gap-Fill:** 11. manoeuvre 12. metallic 13. equatorial 14. bias 15. experimental 16. alleviate 17. procure 18. postponements 19. validity 20. impatience

**Matching sentence:** 1. gravity 2. manoeuvre 3. trajectory 4. calibrate 5. composition 6. metallic 7. accessible 8. experimental 9. collaboration 10. underperformance

## CATEGORY

1. Sci/Tech - LEVEL6

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