

Name: _____ Date: _____

Your Celestial Flight Plan: 9th Grade Orbital Mechanics Quiz

Ground control needs your help verifying orbital data and planetary alignment as we transition from foundational astronomy to high school astrophysics.

1. Which specific phenomenon is responsible for the slightly bulging shape of Earth at the equator, known as an oblate spheroid?

- A. Centrifugal force from Earth's rotation
- B. The gravitational pull of the Sun
- C. Pressure from the polar ice caps
- D. The magnetic pull of the North Pole

2. True or False: Earth travels at a constant speed throughout its entire 365.25-day revolution around the Sun.

- A. True
- B. False

3. During a ____ tide, the gravitational forces of the Moon and the Sun are at right angles to each other, resulting in the lowest tidal range.

- A. Spring
- B. Ebb
- C. Neap
- D. Rip

4. Foucault's Pendulum is a famous experiment used specifically to provide physical evidence of what Earthly motion?

- A. Orbital period
- B. Axial rotation
- C. Precession
- D. Tidal locking

5. True or False: A total solar eclipse can only occur during the New Moon phase.

- A. True
- B. False

6. The imaginary line in the sky that the Sun appears to follow throughout the year is called the ____.

- A. Celestial Equator
- B. Prime Meridian
- C. Ecliptic
- D. Zenith

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7. Which of the following would happen if Earth's axial tilt were 0 degrees instead of 23.5 degrees?

- A. The planet would stop rotating
- B. There would be no distinct seasons
- C. The Moon would fly out of orbit
- D. Daylight would last 24 hours everywhere

8. The point in Earth's orbit where it is farthest from the Sun, occurring around July 4th, is known as _____.

- A. Perihelion
- B. Aphelion
- C. Solstice
- D. Equinox

9. True or False: The same side of the Moon always faces Earth because the Moon rotates at the same rate that it revolves.

- A. True
- B. False

10. Why does a lunar eclipse not happen every single month during a full moon?

- A. The Moon moves too fast
- B. The Sun's gravity blocks the shadow
- C. The Moon's orbit is tilted 5 degrees relative to Earth's orbit
- D. Earth rotates too quickly to catch the shadow