

Name _____

Neptune: The Mysteries of the Blue Giant

Open-Ended Response Answer Key

1. Methane in Neptune's upper atmosphere is significant because it absorbs red light and reflects blue light, giving the planet its blue color. This process differs from other planets where the coloration is often due to other gases or atmospheric compositions. Understanding the role of methane in Neptune's coloration helps scientists study the planet's atmosphere and composition.
2. The dynamic weather patterns on Neptune include features like the Great Dark Spot, which is a massive storm system. These features are unique because they can change or disappear over time, unlike the more stable features on some other planets. Studying these patterns provides insights into the complex and dynamic nature of planetary atmospheres and helps us understand how weather and storms operate on distant planets.
3. Exploring distant planets like Neptune is crucial because it helps us understand the outer regions of our solar system and the diversity of planetary environments. Through future missions, scientists hope to answer questions about Neptune's atmosphere, its rings and moons, and its unique characteristics. This exploration can also shed light on the formation and evolution of outer planets and the broader processes that shape our solar system.
4. A future mission to Neptune might aim to study its atmosphere, weather patterns, rings, and moons in detail. Scientific goals could include understanding the composition and dynamics of its atmosphere, observing the formation and evolution of storm systems, and investigating the origins of its rings and moons. Such findings could significantly advance our knowledge of the outer planets, their unique features, and the processes that govern their behavior.

