

Name _____

Pluto: The Dwarf Planet That Sparked Curiosity

Open-Ended Response Answer Key

1. Pluto's surface is composed primarily of rock and water ice, making it vastly different from Earth's diverse landscape. Its thin atmosphere consists of nitrogen, methane, and carbon monoxide, in contrast to Earth's oxygen-rich atmosphere. Pluto's extreme cold and distant location further distinguish it from Earth.
2. Charon is significant because it is so large compared to Pluto that the two bodies are sometimes considered a binary system. This means that they both orbit a common center of mass outside of Pluto's surface. Charon's presence plays a vital role in the unique nature of the Pluto-Charon system, as it contributes to the gravitational dynamics and overall characteristics of both bodies.
3. The reclassification of Pluto as a "dwarf planet" by the IAU in 2006 was based on the new criteria for classifying objects as planets. According to the IAU's definition, a planet must clear its orbit of other debris. Pluto shares its orbital neighborhood with other Kuiper Belt objects, which led to its reclassification. This decision clarified the classification of celestial bodies and highlighted the diverse nature of objects in our solar system.
4. The New Horizons mission to Pluto was of great importance as it provided us with the first close-up observations of Pluto and its moons. Some key discoveries included detailed images of Pluto's surface, the presence of nitrogen glaciers, ice mountains, and a diverse terrain. These findings expanded our understanding of Pluto's geological processes, atmospheric composition, and surface features, shedding light on this distant and mysterious world.

