

Name _____

Birth of Cosmic Snowballs: How Comets Are Formed

Short Answer Key

1. Comets are primarily formed in two regions of our solar system: the Oort Cloud and the Kuiper Belt. They consist of ices (such as water, carbon dioxide, methane, and ammonia), along with dust and rocky materials.
2. The stable orbits of icy bodies in the Oort Cloud and Kuiper Belt are disturbed by cosmic events, including the gravitational pull of nearby stars and the passage of other celestial objects. These disturbances nudge some icy bodies out of their stable orbits, setting them on a path to becoming comets.
3. As comets approach the inner solar system, the increasing warmth from the Sun causes the ices within them to vaporize. This process releases gas and dust, creating the characteristic coma (a cloud-like envelope) and tails of comets.
4. The gas and dust tails of comets form when they pass by the Sun. The heat and solar wind push the gas and dust away from the Sun, creating the striking tails that can be visible from Earth.
5. The study of comets' formation is essential for understanding the history and evolution of our solar system because comets are believed to be "cosmic time capsules" that preserve materials from the early solar system. By analyzing comets, scientists can learn about the composition of the early solar system and gain insights into the conditions and processes that led to its formation.

