

Name _____

Unraveling the Age of the Universe: How Do We Know its Age?

Open-Ended Response Answer Key

1. Answers will vary, but students might describe the universe's age as the amount of time that has passed since the universe began with the Big Bang. They could use relatable analogies, such as comparing it to the age of a tree or the time it takes to grow a garden.
2. Scientists studying the cosmic microwave background radiation might collect data on its temperature variations, its distribution across the sky, and its polarization. They may also seek to understand the patterns and fluctuations in the radiation to glean insights into the early universe's conditions.
3. Answers will vary, but students might consider significant cosmic events, such as the formation of galaxies, the birth of stars, and the emergence of life on Earth, corresponding to specific months or days on the cosmic calendar. They could also speculate about when key scientific discoveries or future cosmic events might fall.
4. Knowing the age of the universe deepens our understanding of the cosmos by providing a fundamental framework for studying its evolution. It helps answer questions about the universe's origin, its eventual fate, and the processes that have shaped it over billions of years. Additionally, it inspires curiosity and exploration, driving scientific discovery and technological advancements.

