

Name _____

Why Earth: Exploring the Mystery of Life's Existence

Open-Ended Response Answer Key

1. An astrobiologist would look for conditions such as the presence of liquid water, a stable atmosphere with essential gases, organic molecules, and geological processes that support nutrient cycling. These conditions are important because they are key to the survival and evolution of life.
2. Possible scenarios include life in subsurface oceans on icy moons, extremophiles living in harsh environments, or even airborne life on gas giants with thick atmospheres. Life might have adaptations that allow it to thrive in conditions very different from those on Earth.
3. Plate tectonics, for example, creates earthquakes and volcanic activity, shaping the landscape. It also allows for the recycling of nutrients, affecting the distribution of plant and animal life by providing essential elements.
4. Earth's long history allowed for gradual evolution and diversification of life forms. It led to the emergence of a wide variety of species over time. A planet with a shorter history might have less diverse life due to limited time for evolution and adaptation.

