

Name _____

Mitosis vs. Meiosis: A Cell Division Showdown

Open-Ended Response Answer Key

1. If an organism could only undergo either mitosis or meiosis, it might struggle to adapt to changing environments. Mitosis would support growth and repair, but without meiosis, genetic diversity would be limited, potentially hindering the species' ability to evolve.
2. Mitosis is responsible for the growth, repair, and maintenance of an organism's body cells, while meiosis is crucial for producing gametes for sexual reproduction. Mitosis occurs throughout an organism's life, while meiosis occurs only in reproductive organs.
3. Genetic diversity resulting from meiosis can help a species adapt to environmental changes. For example, in a changing climate, species with diverse traits may have a better chance of survival.
4. Advances in understanding mitosis and meiosis can lead to better treatments for genetic diseases, improved crop breeding techniques, and enhanced knowledge of how cells function, benefiting both human health and agriculture.

