

Comprehension Questions - Module 11: Meiosis

Sexual vs. Asexual Reproduction

1. Compare and contrast sexual and asexual reproduction, including advantages and disadvantages of each.
2. Explain why sexual reproduction increases genetic diversity.
3. How do gametes differ from somatic cells in terms of chromosome number and function?

Meiosis Overview

1. Compare and contrast mitosis and meiosis in terms of purpose, number of divisions, and outcomes.
2. Explain why meiosis is necessary for sexual reproduction.
3. Describe the overall process of meiosis and its two divisions.

Meiosis I

1. Describe the phases of Meiosis I and explain how it differs from mitosis.
2. Explain what happens during crossing over and why it is important.
3. How does independent assortment contribute to genetic diversity?
4. Describe how homologous chromosomes pair and separate during Meiosis I.

Meiosis II

1. Compare and contrast Meiosis II and mitosis.
2. Explain how Meiosis II produces haploid gametes from the products of Meiosis I.

3. What is the final outcome of meiosis in terms of chromosome number and genetic diversity?

Genetic Variation

1. Explain the three mechanisms that contribute to genetic variation during meiosis (crossing over, independent assortment, random fertilization).
2. Calculate the number of possible genetic combinations that can result from meiosis and fertilization.

Errors in Meiosis

1. Explain how errors in meiosis can lead to chromosomal abnormalities.
2. Describe nondisjunction and its consequences.