

CHAPTER 4.1 MEIOSIS

I. Keywords

Use the terms to complete the paragraph

diploid	gamete	gene	haploid
fertilization	Crossing over	Homologous chromosomes	

A segment of DNA on a chromosome that controls the production of protein is called a _____. A _____ cell contains two copies of each chromosome. A sex cell, or _____ is called a _____ cell because it contains one copy of each chromosome. _____ are pairs of chromosomes, one from each parent. _____ is when two gametes combine to form a zygote.

II. Complete the worksheet →

III. Overview of Meiosis

four half gametes telophase haploid prophase

Meiosis is a process where a single cell divides twice to produce _____. During meiosis one, the cell divides twice to form _____ daughter cells. These four daughter cells only have _____ the number of chromosomes of the parent cell – they are _____ and contain 23 chromosomes. Meiosis consists of four different phases, they are: _____, metaphase, anaphase and _____

IV. Watch the video and complete the task

Task: Match the statement to the correct stage of Meiosis

Statement	Stage of Meiosis
• The stage in which the chromosome number is reduced from $2n$ to n	
• The stage in which crossing over produces exchange of genetic information	
• The stage in which four nuclei form around the chromosomes	
• The stage in which sister chromatids line up at the equator	
• The stage in which homologous chromosomes line up at the equator	
• The stage in which each pole contains only one member of the homologous chromosomes	
• The stage in which sister chromatids separate and move to opposite poles	
• The stage in which the spindle apparatus forms and chromosomes condense a second time	

V. Complete the worksheet on stages of Meiosis

VI. Difference between Meiosis and Mitosis

Statement	Mitosis	Meiosis
Number of DNA Replication		
Number of cell division		
Number of daughter cells		
Chromosome number of daughter cells		
Genetic variation		

VII. Complete the worksheet →

VIII. Fill in the blanks.

1. The processes that cause genetic variation from sexual reproduction:
 - a) _____ over during meiosis – **Prophase I**
 - b) Independent _____ of _____ during meiosis – **Metaphase I**
 - c) _____ fertilization of gametes
2. An *Escherichia coli* bacterium daughter cell inherits the exact DNA from its parent cell during the process of _____
3. In _____, an organism inherits genetic material from a single parent.
4. Sexual reproduction increases _____, while asexual reproduction does not.
5. _____, simple animals, and most plants can reproduce sexually or asexually. However, _____ can reproduce only sexually.
6. The advantage of _____ is that the rate of accumulation of beneficial mutations is faster. (meaning the beneficial genes multiply faster over time)

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Revision