

## 11.4 Meiosis

### Chromosome Number

For Questions 1–8, write *True* if the statement is true. If the statement is false, change the underlined word to make the statement true.

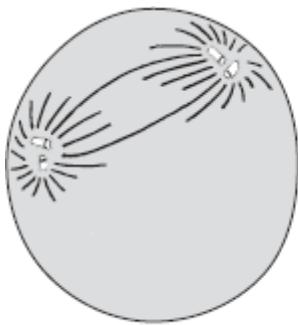
- \_\_\_\_\_ 1. The offspring of two parents obtains a single copy of every gene from each parent.
- \_\_\_\_\_ 2. A gamete must contain one complete set of genes.
- \_\_\_\_\_ 3. Genes are located at specific positions on spindles.
- \_\_\_\_\_ 4. A pair of corresponding chromosomes is homozygous.
- \_\_\_\_\_ 5. One member of each homologous chromosome pair comes from each gene.
- \_\_\_\_\_ 6. A cell that contains both sets of homologous chromosomes is haploid.
- \_\_\_\_\_ 7. The gametes of sexually reproducing organisms are haploid.
- \_\_\_\_\_ 8. If an organism's haploid number is 6, its diploid number is 3.

### Phases of Meiosis

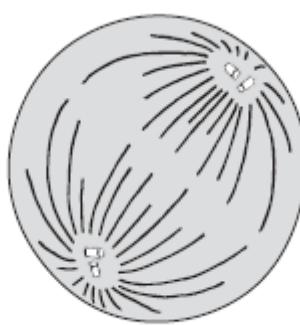
On the lines provided, identify the stage of meiosis I or meiosis II in which the event described occurs.

- \_\_\_\_\_ 9. Each replicated chromosome pairs with its corresponding homologous chromosome.
- \_\_\_\_\_ 10. Crossing-over occurs between tetrads.
- \_\_\_\_\_ 11. Paired homologous chromosomes line up across the center of the cell.
- \_\_\_\_\_ 12. Spindle fibers pull each homologous chromosome pair toward an opposite end of the cell.
- \_\_\_\_\_ 13. A nuclear membrane forms around each cluster of chromosomes and cytokinesis follows, forming two new cells.
- \_\_\_\_\_ 14. Chromosomes consist of two chromatids, but they do not pair to form tetrads.
- \_\_\_\_\_ 15. A nuclear membrane forms around each cluster of chromosomes and cytokinesis follows, forming four new cells.

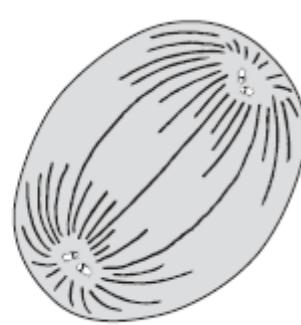
- 16.** Draw two homologous pairs of chromosomes (in different colors if you have them) in these diagrams to illustrate what happens during these three phases of meiosis.



Prophase I



Metaphase I



Anaphase II

*Use this diagram to answer Questions 18–20.*

- 18.** What does the diagram show?

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- 19.** During what phase of meiosis does this process occur?

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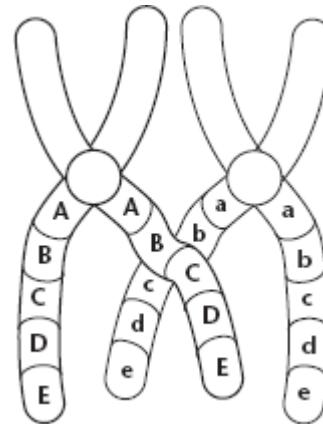
- 20.** What is the result of this process?

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## Comparing Meiosis and Mitosis

- 21.** Complete the table to compare meiosis and mitosis.



	Mitosis	Meiosis
Form of reproduction		
Number of daughter cells		
Change in chromosome number		
Number of cell divisions		

Difference in alleles between parent cell and daughter cells		
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For Questions 22–27, complete each statement by writing the correct word or words.

22. A diploid cell that enters mitosis with 16 chromosomes will divide to produce \_\_\_\_\_ daughter cells. Each of these daughter cells will have \_\_\_\_\_ chromosomes.
23. If the diploid number of chromosomes for an organism is 16, each daughter cell after mitosis will contain \_\_\_\_\_ chromosomes.
24. A diploid cell that enters meiosis with 16 chromosomes will pass through \_\_\_\_\_ cell divisions, producing \_\_\_\_\_ daughter cells, each with \_\_\_\_\_ chromosomes.
25. Gametes have a \_\_\_\_\_ number of chromosomes.
26. If an organism's haploid number is 5, its diploid number is \_\_\_\_\_.
27. While a haploid number of chromosomes may be even or odd, a diploid number is always \_\_\_\_\_.

## Gene Linkage and Gene Maps

28. What did Thomas Hunt Morgan discover that seemed to violate Mendel's principles?

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29. How did Morgan explain his finding?

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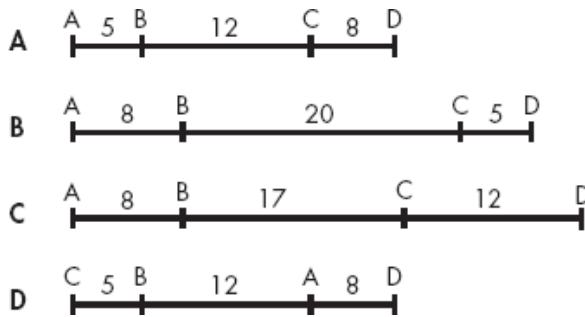
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30. How did Alfred Sturtevant use gene linkage to create gene maps?

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Use this diagram to answer Questions 35–38.



35. In which gene map is the probability of crossing-over between A and D greatest? \_\_\_\_\_
36. In which gene map is the probability of crossing-over between A and D the least? \_\_\_\_\_
37. In which map are genes C and D most closely linked? \_\_\_\_\_
38. In map D, which genes are least likely to cross over? \_\_\_\_\_