Chapter 10

Mendel and Meiosis, *continued*

Reinforcement and Study Guide

Section 10.2 Meiosis

In your textbook, read about genes, chromosomes, and numbers.

Examine the table. Then answer the questions.

Chromosome Numbers of Some Common Organisms

Organism	Body Cell (2*n*)	Gamete (*n*)
Human	46	23
Garden pea	14	7
Fruit fly	8	4
Tomato	24	12
Dog	78	39
Chimpanzee	48	24
Leopard frog	26	13
Corn	20	10

1. What is the diploid number of chromosomes in corn?

_____

2. What is the haploid number of chromosomes in corn?

_____

3. Is the chromosome number related to the complexity of the organism?

_____

4. How many pairs of chromosomes do humans have?

_____

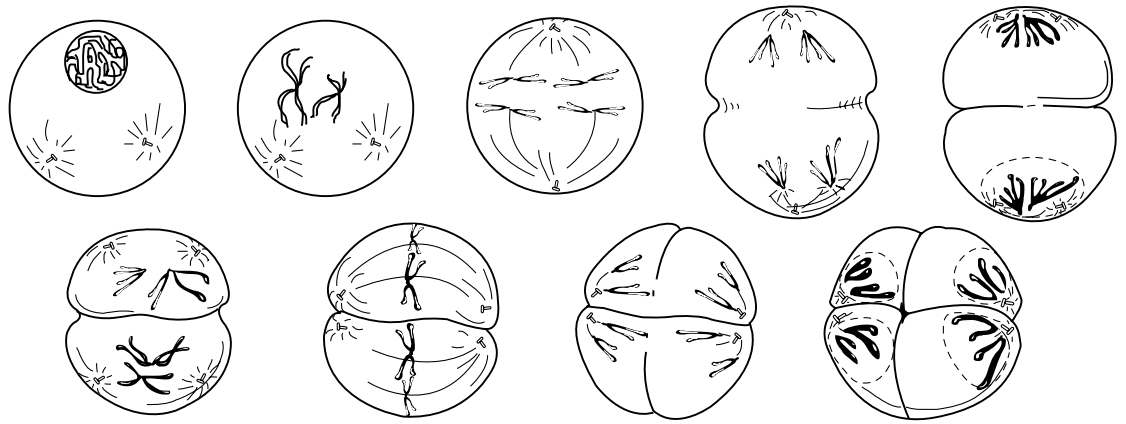
5. What process maintains a constant number of chromosomes within a species?

_____

In your textbook, read about the phases of meiosis.

Label the diagrams below. Use these choices: Metaphase I, Metaphase II, Interphase, Telophase I, Telophase II, Anaphase I, Anaphase II, Prophase I, Prophase II.

6. _____ **7.** _____ **8.** _____ **9.** _____ **10.** _____



11. _____ **12.** _____ **13.** _____ **14.** _____

The following statements describe interphase and and meiosis I. Identify each phase. Then place them in sequential order using the numbers 1 through 5. Use 1 for the phase that occurs first and 5 for the phase that occurs last.

Statement	Name of Phase	Sequence
15. Homologous chromosomes line up at the equator in pairs.		
16. The cell replicates its chromosomes.		
17. Homologous chromosomes separate and move to opposite ends of the cell.		
18. The spindle forms, and chromosomes coil up and come together in a tetrad; crossing over may occur.		
19. Events occur in the reverse order from the events of prophase I. Each cell has only half the genetic information; however, another cell division is needed because each chromosome is still doubled.		

In your textbook, read about how meiosis provides for genetic variation and about mistakes in meiosis.

For each statement below, write <u>true</u> or <u>false</u>.

_____ **20.** Reassortment of chromosomes can occur during meiosis by crossing over or by independent segregation of homologous chromosomes.

_____ **21.** Genetic recombination is a major source of variation among organisms.

_____ **22.** The random segregation of chromosomes during meiosis explains Mendel's observation that genes for different traits are inherited independently of each other.

_____ **23.** Nondisjunction always results in a zygote with an extra chromosome.

_____ **24.** Down syndrome is a result of polyploidy.

_____ **25.** Mistakes in meiosis can occasionally be beneficial.