

Skills Worksheet

Directed Reading B

Section: Meiosis (pp. 188–193)

1. In asexual reproduction, why do offspring have the same genotype as the parent?

2. Before sexual reproduction can occur, what must happen to the genetic material from each parent?

3. Genetic information is located on structures called _____.

CHROMOSOME NUMBERS

- _____ 4. Human body cells usually have

- a. 20 chromosomes.
- b. 23 chromosomes.
- c. 46 chromosomes.
- d. 78 chromosomes.

- _____ 5. In body cells, pairs of chromosomes that have the same sequence of genes and the same structure are called

- a. homozygous chromosomes.
- b. homologous chromosomes.
- c. diploid chromosomes.
- d. haploid chromosomes.

- _____ 6. Alleles for genes carried on homologous chromosomes are

- a. always the same.
- b. always different.
- c. never the same.
- d. sometimes different.

CHROMOSOMES IN REPRODUCTION

- _____ 7. Cells with homologous pairs of chromosomes are called

- a. homozygous cells.
- b. homologous cells.
- c. diploid cells.
- d. haploid cells.

Directed Reading B *continued*

- _____ **8.** Before an organism can reproduce sexually, it must make
- a.** diploid cells.
 - b.** sex cells.
 - c.** proteins.
 - d.** homologous cells.

9. Why don't sex cells have homologous pairs of chromosomes?

10. Cells that do not have homologous pairs of chromosomes are called _____ cells.

11. What kind of cell is formed when chromosomes from a sperm cell and an egg cell combine?

MEIOSIS

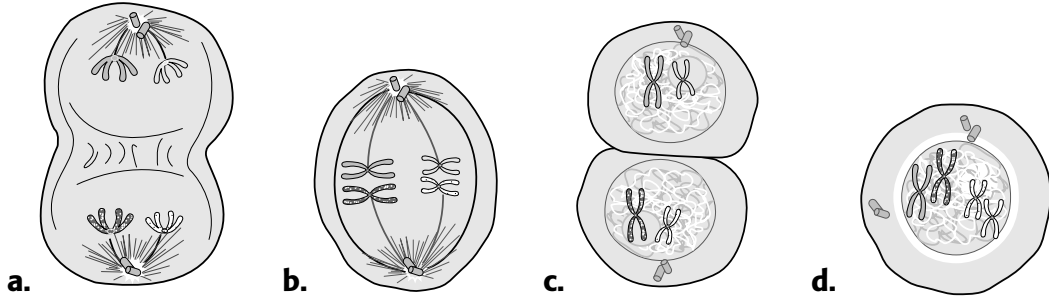
- _____ **12.** A process in cell division that produces cells that have half the usual number of chromosomes is called
- a.** meiosis.
 - b.** mitosis.
 - c.** fertilization.
 - d.** pollination.

- _____ **13.** Human egg cells have
- a.** 46 chromosomes.
 - b.** 23 chromosomes.
 - c.** 10 chromosomes.
 - d.** 1 chromosome.

- _____ **14.** The new cell that forms when human egg and sperm cells join has
- a.** 46 chromosomes.
 - b.** 23 chromosomes.
 - c.** 10 chromosomes.
 - d.** 1 chromosome.

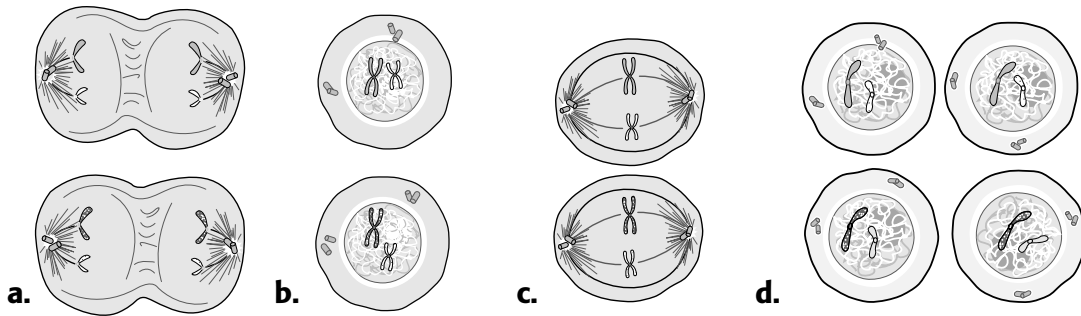
Directed Reading B *continued*

Match the labels to the illustrations showing the first division during meiosis. Write the letters in the space provided.



- _____ **15.** Chromosomes are copied before meiosis begins, and the chromatids are joined together.
- _____ **16.** Pairs of homologous chromosomes line up along the equator of the cell.
- _____ **17.** Homologous chromosomes separate and move to opposite ends of the cell.
- _____ **18.** Nuclear membrane re-forms; the cell divides.

Match the labels to the illustrations showing the second division during meiosis. Write the letters in the space provided.



- _____ **19.** Two cells contain one member of the homologous chromosome pair.
- _____ **20.** Chromosomes line up along the equator of each cell.
- _____ **21.** Chromatids pull apart and move to opposite ends of the cell; nuclear membrane re-forms; cell divides.
- _____ **22.** Four new haploid cells form; each new cell has half the number of chromosomes present in the original cell.

Directed Reading B *continued*

23. If a male plant that is true breeding for the recessive trait for wrinkled seeds is crossed with a female plant that is true breeding for the dominant trait for round seeds, what shape will the offspring's seeds have? Explain why.

24. How much of an offspring's genetic material is contributed by each parent?

25. Outside the nucleus, what is one structure where genetic material is stored in an animal cell?

26. Why is the mitochondrial DNA in the cells of offspring the same as the mitochondrial DNA in the offspring's mother?
