

## Study Guide 6.1: Chromosomes and Meiosis

### KEY CONCEPT

Gametes have half the number of chromosomes that body cells have.

### VOCABULARY

somatic cell	autosome	fertilization
gamete	sex chromosome	diploid
homologous chromosome	sexual reproduction	haploid
meiosis		

### MAIN IDEA: You have body cells and gametes.

1. What are the two major groups of cell types in the human body?

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2. Where are gametes located?

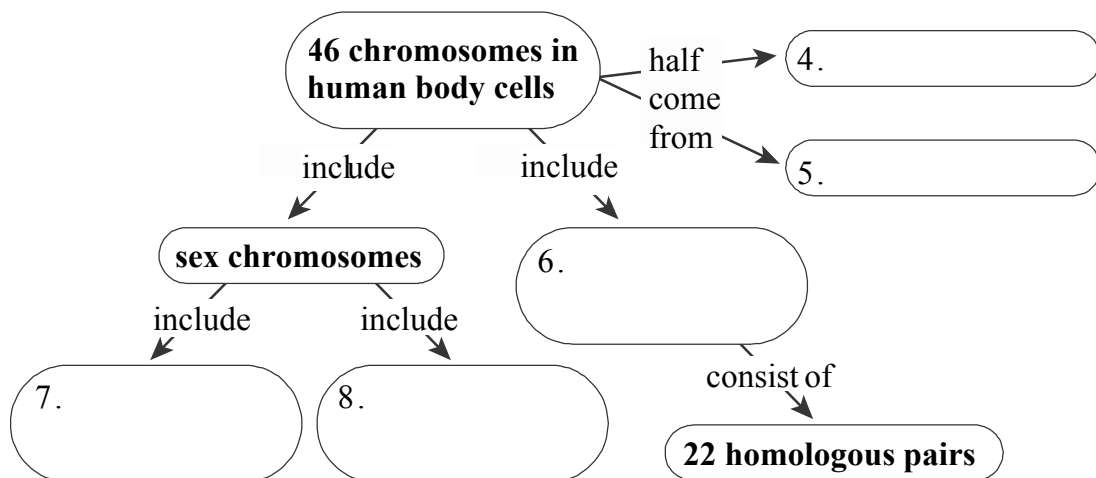
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3. How many chromosomes are in a typical human body cell?

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### MAIN IDEA: Your cells have autosomes and sex chromosomes.

Fill in the concept map below to summarize what you know about chromosomes.



9. What is the sex of a person with two X chromosomes?

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10. Which chromosome carries the fewest number of genes?

\_\_\_\_\_

**MAIN IDEA:** Body cells are diploid; gametes are haploid.

11. What happens to the nuclei of the egg and sperm during fertilization?

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12. What type of cells are haploid?

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13. What is the haploid chromosome number in humans?

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14. How many autosomes are present in each human gamete? How many sex chromosomes?

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15. Complete the following table to summarize the differences between mitosis and meiosis.

Mitosis	Meiosis
Makes diploid cells	
	Makes genetically unique cells
Happens throughout lifetime	
	Involved in sexual reproduction

**Vocabulary Check**

16. What are *homologous chromosomes*?

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17. The word *soma* means “body.” How does this relate to the meanings of *autosome* and *somatic cell*?

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## SECTION QUIZ 6.1: Chromosomes and Meiosis

Choose the letter of the best answer.

- \_\_\_\_\_ 1. A kidney cell is an example of which type of cell?
- a. sex cell
  - b. germ cell
  - c. somatic cell
  - d. haploid cell
- \_\_\_\_\_ 2. How many chromosomes are in a human gamete?
- a. 46
  - b. 23
  - c. 22
  - d. 44
- \_\_\_\_\_ 3. Which of the following best describes the genetic material a person receives from his or her father?
- a. 22 pairs of homologous chromosomes and an X and Y chromosome
  - b. 22 haploid cells and an X or Y chromosome
  - c. 23 diploid cells and an X and Y chromosome
  - d. 22 autosomes and an X or Y chromosome
- \_\_\_\_\_ 4. Which phrase best describes the process of meiosis?
- a. occurs in body cells
  - b. results in genetically identical cells
  - c. happens only in haploid cells
  - d. produces haploid gametes
- \_\_\_\_\_ 5. At fertilization, what happens to the sex cells?
- a. They retain half of their chromosomes.
  - b. Half of the cells copy their DNA twice.
  - c. Their nuclei fuse to form one nucleus.
  - d. One becomes an egg, and one becomes a sperm cell