

How Do the Number of Chromosomes in Body Cells and Sex Cells Compare?

Goal • Infer the relationship between the number of chromosomes in body cells and sex cells.

Think About It

What do peas, tomatoes, rabbits, chickens, and crayfish have in common? What do they have in common with you?

You might think that you have nothing in common with these organisms. This activity will show you that you do share certain characteristics even with a pea.

Cell Chart			
Organism	Body Cell Chromosomes	Egg Chromosomes	Sperm Chromosomes
Human	46	23	23
Pea	14	7	7
Tomato	24		
Corn	20		
Rabbit	44		
Chicken	78		
Mouse	40		
Crayfish	200		

There is a major difference between the number of chromosomes contained in a body cell and a sex cell. Every cell of your body has the same number of chromosomes *except* the reproductive cells (eggs or sperm). These cells have exactly half the usual number of chromosomes.

What to Do

Study the table. Use it to help you answer the questions below.

Questions

1. What relationship do you see between the number of chromosomes in the body cells and sex cells of humans and peas?

2. Fill in the numbers that complete the table.

3. The muscle cells in a housefly's leg contain 24 chromosomes. If each of the following cell types came from a housefly, how many chromosomes would each contain:

sperm _____ body cell _____

egg _____ eye cell _____

CHAPTER 2
ASSESSMENT

BLM 2-10

Sex Cells — A Different Story

Goal • Assess your understanding of cell types and cell reproduction.

What to Do

Read the instructions before answering each set of questions.

Fill in the Blanks

In the spaces provided, write the word or phrase from the following list that best completes the sentence. Answers may be used more than once.

mitosis, body cells, sperm, chromosomes, sex cells, eggs

1. Organisms produce _____ through mitosis.
2. The main job of _____ is to join together to produce a new organism.
3. In humans, _____ have 46 chromosomes.
4. Sex cells are the only cells that are not produced by _____.
5. The _____ are the female sex cells.
6. The _____ are the male sex cells.
7. _____ contain the instructions that tell a cell how to develop.

Questions

In the spaces provided, answer the following questions.

8. Humans have 46 chromosomes. How many chromosomes are in human sperm? _____
9. The eggs of basset hounds contain 39 chromosomes. How many chromosomes are in basset hound body cells? _____
10. How many chromosomes are in the sperm of a collie? _____
11. How many chromosomes are in a white blood cell of a human?
12. A goldfish has 94 chromosomes in each body cell, a human has 46, and a guinea pig has 64. What does this suggest about the complexity of an organism and the number of chromosomes it may have?

13. What is the relationship between chromosome numbers in body cells and sex cells?

