

Skills Worksheet

Directed Reading B**Section: Meiosis** (pp. 188–193)

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

In asexual reproduction, the offspring receive an exact copy of the parents DNA they are like clones of the parent. They result from mitosis NOT fertilization NOT meiosis. Asexual reproduction is a faster way to reproduce.

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

The parents must reduce the number of chromosomes in half before passing them on to the offspring.
Example, 46v must be reduced to 23v and then passed on to the offspring.

3. Genetic information is located on structures called **chromosomes**.

CHROMOSOME NUMBERS

46 chromosomes

4. Human body cells usually have
- 20 chromosomes.
 - 23 chromosomes.
 - 46 chromosomes.
 - 78 chromosomes.

homologous chromosomes

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

sometimes different

6. Alleles for genes carried on homologous chromosomes are
- always the same.
 - always different.
 - never the same.
 - sometimes different.

CHROMOSOMES IN REPRODUCTION

diploid cells

7. Cells with homologous pairs of chromosomes are called
- homozygous cells.
 - homologous cells.
 - diploid cells.
 - haploid cells.

Directed Reading B *continued*

sex cells
called gametes

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?

During meiosis the homologous pairs of chromosomes are separated into different cells called gametes.

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

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

a special diploid cell called a zygote

MEIOSIS

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.

23
chromosomes

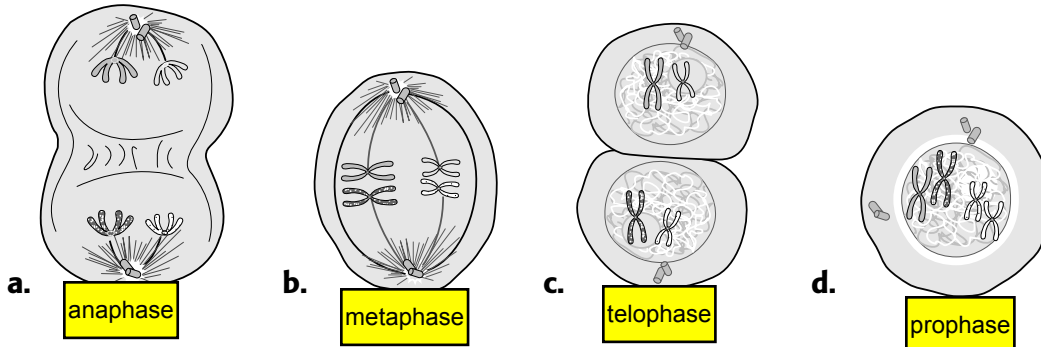
13. Human egg cells have
- a. 46 chromosomes.
 - b. 23 chromosomes.
 - c. 10 chromosomes.
 - d. 1 chromosome.

zygote has
46 chromosomes

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.



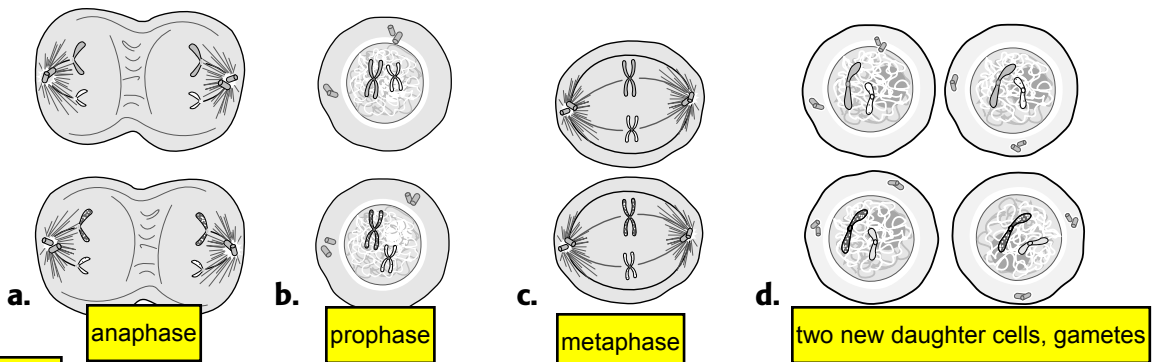
prophase 15. Chromosomes are copied before meiosis begins, and the chromatids are joined together.

metaphase 16. Pairs of homologous chromosomes line up along the equator of the cell.

anaphase 17. Homologous chromosomes separate and move to opposite ends of the cell.

telophase 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.



gametes 19. Two cells contain one member of the homologous chromosome pair.

metaphase 20. Chromosomes line up along the equator of each cell.

anaphase 21. Chromatids pull apart and move to opposite ends of the cell; nuclear membrane re-forms; cell divides.

two new daughter cells, gametes 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.

RR x rr = Rr offspring will have a R dominant allele and will be round seeds.

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

Exactly one half of an offspring's genetic material (23v's) come from each parent.

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

The mitochondria has it's own DNA

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

The mother's mitochondria is passed from the egg to the cytoplasm. The sperm does not send it's mitochondria into the egg, only 23v's come from the sperm.
