

The following information applies to all parts.

4. The process of meiosis enables animals that reproduce sexually to produce gametes.

Part A

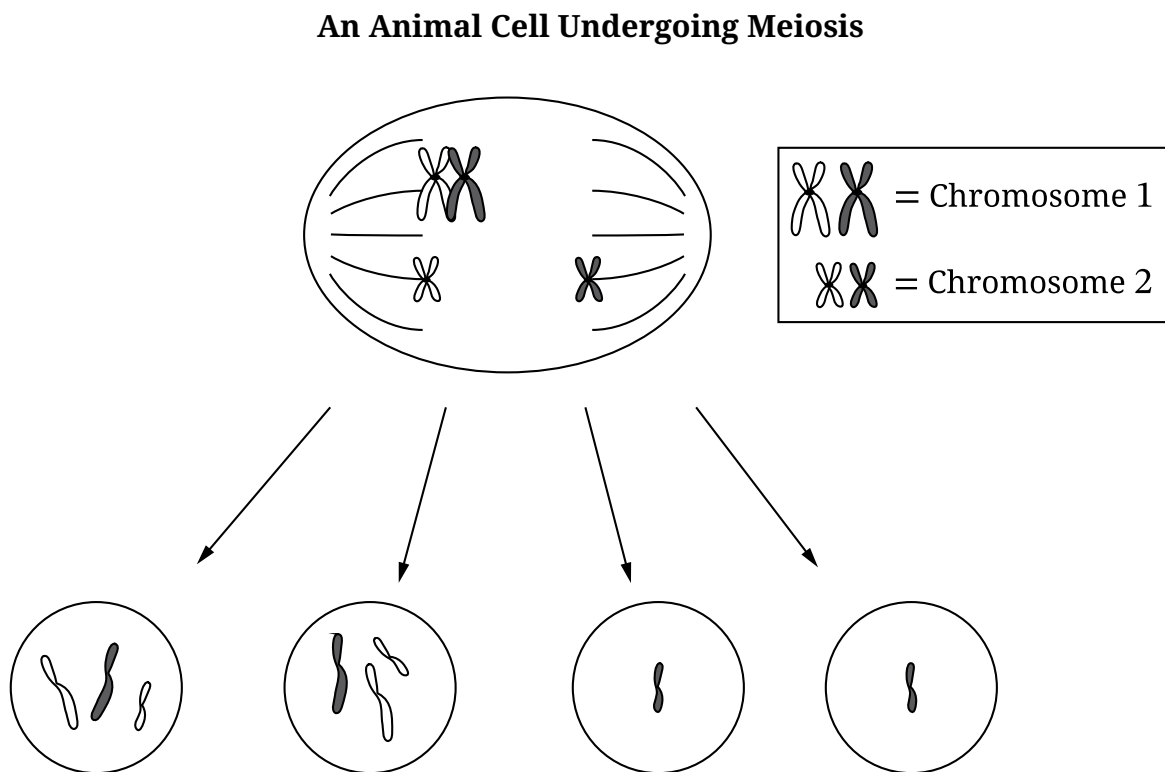
Describe one characteristic of chromosome movement during Meiosis I.

Part B

Explain why chromosomes are more visible when viewed under a microscope during mitosis or meiosis than at any other time in the cell cycle.

Part C

An animal cell with two pairs of homologous chromosomes (a diploid number of four) has undergone meiosis to produce four gametes, and an error occurred at one step, as shown in the figure. One set of chromosomes is represented in white, and the other set is represented in gray.



Assume that each gamete produced by the cell shown in the figure is fertilized by a gamete with a complete haploid set of chromosomes. Also assume gene regulation on Chromosome 1 is not affected by the number of copies of Chromosome 1 in the four resulting viable zygotes. **Predict** the difference in mRNA production from genes on Chromosome 1 among the four possible zygotes.

Part D

Triploidy describes a condition in which an organism has three complete sets of chromosomes in each cell. Provide reasoning to **justify** the claim that most organisms with triploidy cannot produce gametes with the chromosome number typical of the species.