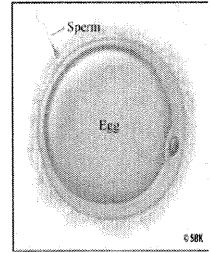


Chapter 11: Meiosis and Sexual Reproduction



Section 1: Reproduction

Asexual Reproduction

1. Reproduction is the process of producing OFFSPRING.
2. Asexual Reproduction, a SINGLE parent passes a complete copy of its GENETIC information to each of its OFFSPRING.
3. An individual formed by asexual reproduction is genetically IDENTICAL to its parent.
4. An example of an organism that reproduces asexually is a(n) AMOEBIA, BACTERIA.

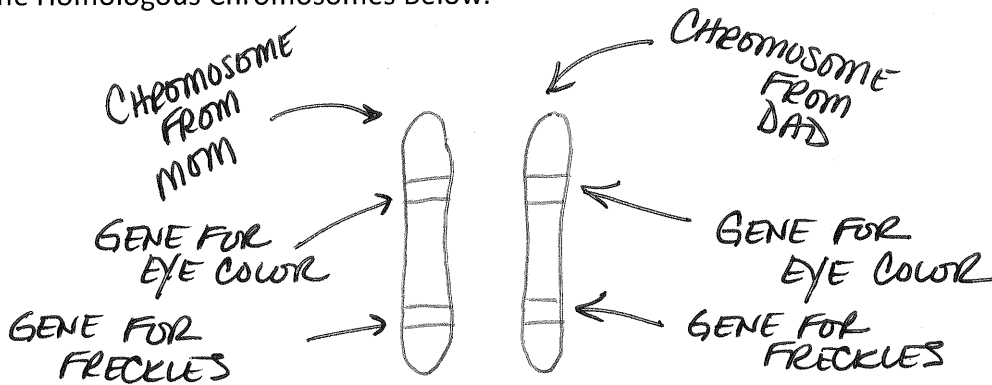
Sexual Reproduction

1. In sexual reproduction, TWO parents give genetic material to produce offspring that are genetically DIFFERENT from their parents.
2. Reproductive cells are called GAMETES.
3. When two gametes fuse together, the resulting cell is called a ZYGOTE which has a combination of genetic material from both parents. This process is called FERTILIZATION.
4. What is the advantage of sexual reproduction of a species? SEXUAL REPRODUCTION PRODUCES GENETICALLY DIVERSE ORGANISMS. A POPULATION OF DIVERSE ORGANISMS IS MORE LIKELY TO SURVIVE A MAJOR ENVIRONMENTAL CHANGE.

Chromosome Number

1. Each chromosome has thousands of GENES that play an important role in determining how an organism DEVELOPS and FUNCTIONS.
2. When fertilization of humans occurs, the zygote will contain 46 chromosomes. Therefore, the gametes (reproductive cells) must have 23 chromosomes each.
3. Regular body cells with two complete sets of chromosomes (one set from each biological parent) is called DIPLOID cell.
4. Gametes (reproductive cells) which have half the normal number of chromosomes are called HAPLOID cells.
5. Chromosomes that are similar in size, shape and kind of genes are called HOMOLOGOUS CHROMOSOMES.

6. Label the Homologous Chromosomes Below.

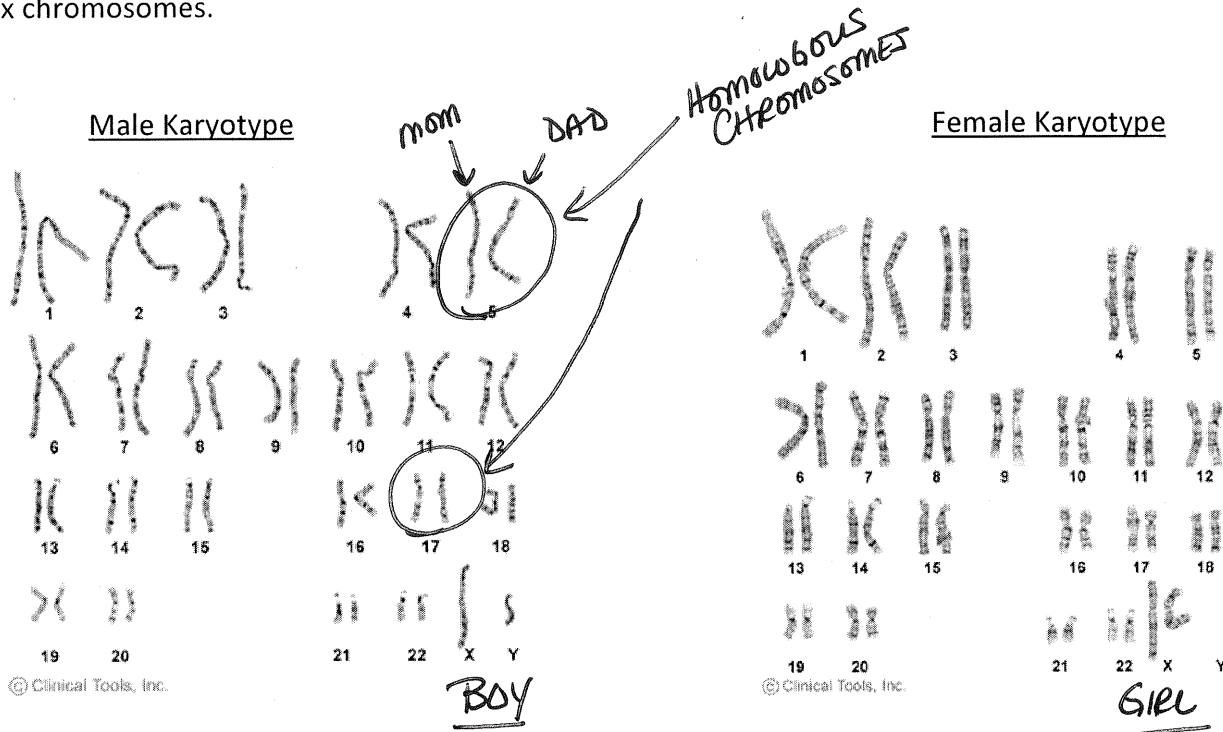


7. Autosomes are chromosomes with genes that DO NOT determine the SEX of an individual.

8. Sex Chromosomes have genes that determine the SEX of an individual.

9. Males have one X and one Y chromosome, while females have two X chromosomes.

10. Use the karyotype (picture of chromosomes below) to label homologous chromosomes, autosomes, and sex chromosomes.



Section 2: Meiosis

Stages of Meiosis

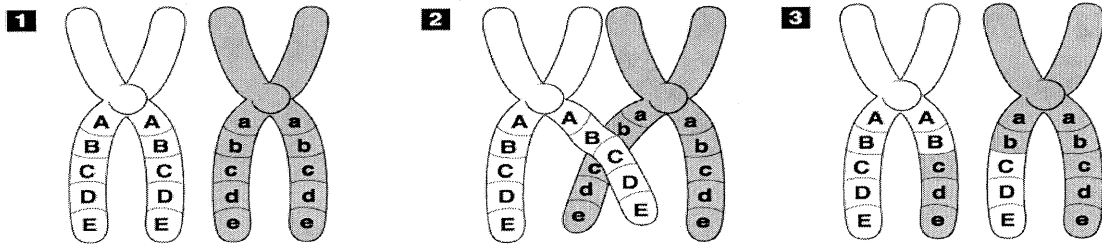
1. MEIOSIS is a form of cell division that produces daughter cells with HALF the number of chromosomes as the parent cell; making gametes (reproductive cells),

2. Before meiosis, the chromosomes of the original cell are COPIED. This occurs during interphase (DNA Replication).

3. During Meiosis I, HOMOLOGOUS CHROMOSOMES are separated and in Meiosis II the sister chromatids are separated.

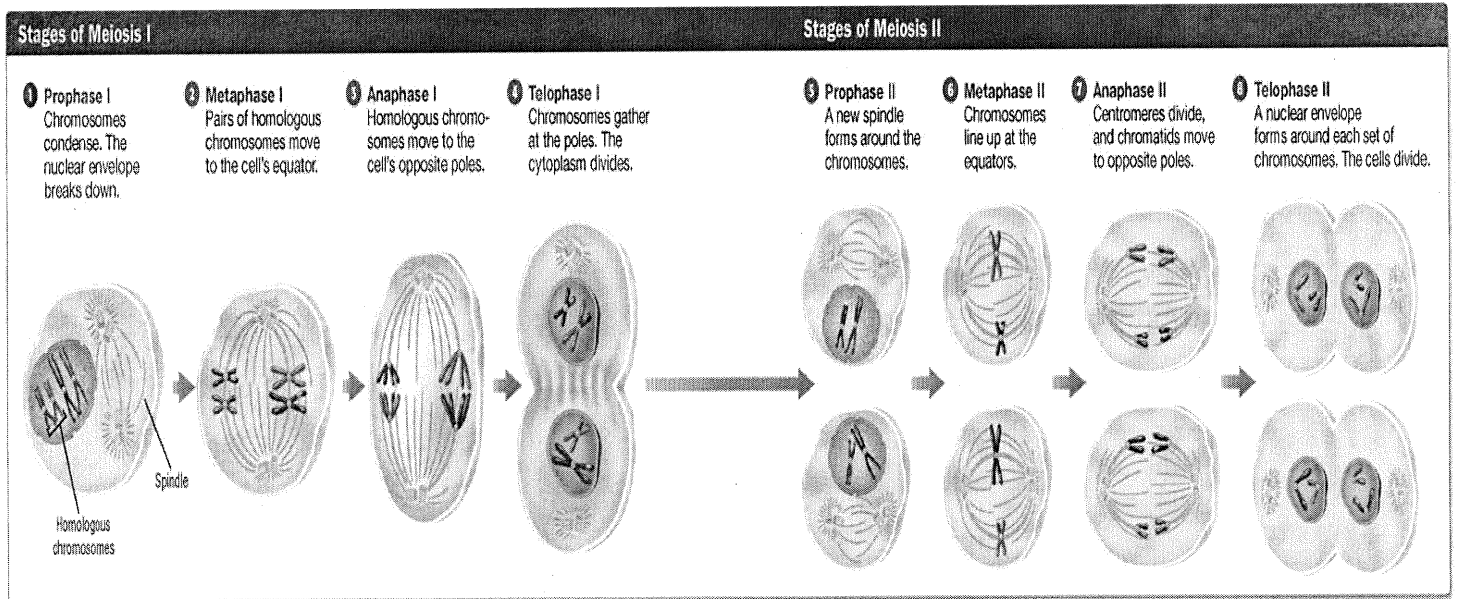
Meiosis I (Notes not directly from book!)

1. During Meiosis I, homologous chromosomes pair up and crossing over occurs. During crossing over, chromatids exchange GENETIC MATERIAL. This occurs during Prophase I of Meiosis I. Crossing over will create genetically DIFFERENT daughter cells.

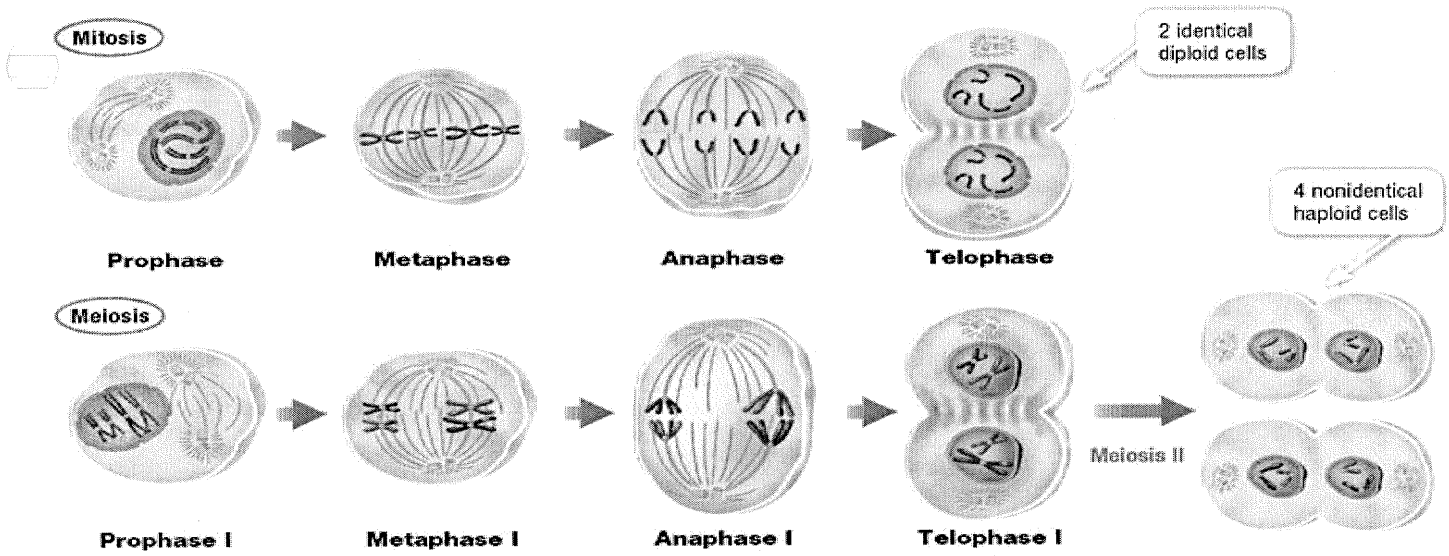


2. During Meiosis II, each daughter cell will be divided again by the sister chromatids being pulled apart.

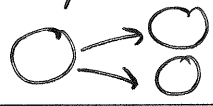
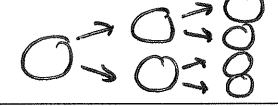
3. The end result of Meiosis is 4 genetically DIFFERENT cells with HALF the number of chromosomes. Human meiosis results in cells with 23 chromosomes.



Comparing Mitosis and Meiosis



Use the figure above and book page 252 to compare the two processes.

	Mitosis	Meiosis
Goal of Process	MAKE IDENTICAL COPIES OF REGULAR BODY CELLS (EX: SKIN CELLS)	MAKE REPRODUCTIVE CELLS (GAMETES) WITH HALF THE NUMBER OF CHROMOSOMES
Type of Cells Made	DIPLOID (BODY CELLS EX: SKIN)	HAPLOID (GAMETES EX: SPERM/EGG)
Number of Cells Made	 2	 4
Genetic Identity of New Cells	IDENTICAL	ALL GENETICALLY DIFFERENT
Compare Metaphase	EACH CHROMOSOME HAS ITS OWN SPINDLE	HOMOLOGOUS CHROMOSOMES SHARE A SPINDLE AT FIRST