Meiosis Cheat Sheet

by Leahs_Notes via cheatography.com/24953/cs/6367/

What Is Meiosis?

Meiosis is the formation of gametes; the sex cells used in sexual reproduction (egg and sperm cells).

Usually, during interphase, body cells are diploid cells; they contain a full set of chromosomes (2n). Gametes are haploid (n). Each parent's gametes contain half the genetic material needed, so when a gamete from each parent fuse together, the offspring has a full set of genetic material (2n); half from each parent.

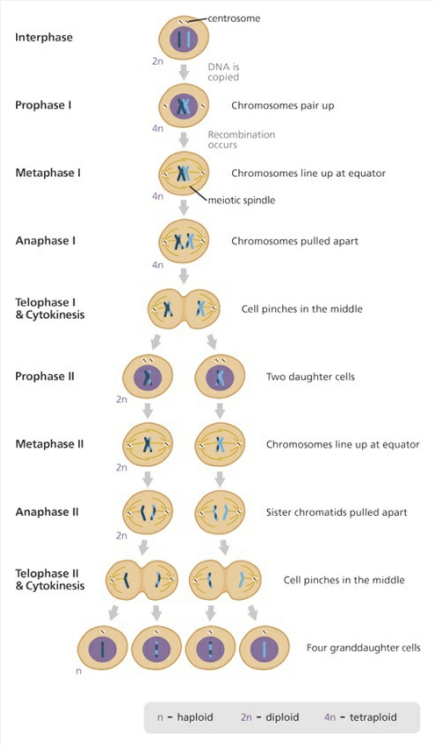
The Stages of Meiosis

1) Interphase	DNA within the cell is duplicated.	2n → 4n
2) Prophase I	Chromosomes form homologous pairs (tetrads), and crossing over occurs, where certain genes from each chromosome physically interact and swap over.	4n
3) Metaphase I	Tetrads line up at the equator of the cell.	4n
4) Anaphase I	Spindle fibers pull 1 chromosome from each tetrad to opposite poles of the cell.	4n
5) Telophase I	A cleavage furrow forms, which pinches the cell in the middle.	4n
6) Cytoki-nesis	The cell divides into 2 daughter cells.	4n → 2n
7) Prophase II	The reformed nuclear envelope breaks down.	2n
8) Metaphase II	Chromosomes line up at the cell's equator.	2n
9) Anaphase II	Each chromosome's sister chromatids are pulled to opposite poles of the cell by spindle fibers.	2n
10) Telophase II	A cleavage furrow forms.	2n
11) Cytoki-nesis	Each daughter cell divides into 2 cells, forming a total of 4 haploid cells for the whole process.	2n → n

What Causes Genetic Variation?

- Independent assortment, which occurs when chromosomes randomly line up at the equator.
- Crossing over, during prophase I, where genetic material is swapped by chromatids.
- Random fertilisation. During sexual reproduction, only one sperm will fertilise one egg, meaning it is random chance which combination of genetic information will be present in the parents' gametes.

Meiosis Diagram



How Are Mitosis and Meiosis Different?

Differences:	Mitosis	Meiosis
Number of cell divisions	1	2
Number of daughter cells	2	4
Genetic compos-ition of daughter cells	2n	n
Role in animals	Tissue growth, asexual reprod-uction	Formation of gametes (for sexual reproduction)

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