

## Chromosomal Basis of Heredity Cheat Sheet by pokemonsz via cheatography.com/44231/cs/13104/

## Meiosis I Prophase I Chromosomes condense, homologous pairs align, synapsis (precise alignment, ensires 1 copy of each gene in a daughter cell). Synapsed set called a tetrad (4 chromatids). Then, crossing-over occurs (exchange of chromosome segments between pairs of homologous chromosomes, or nonsister chromatids). Chiasma forms, visible structure from crossover. X and Y chromosomes pair and synapse thru terminal ends (PARs). Metaphase Nucleoli and envelope 2N broken down, centroiles w/ spinde enternuclear area, kinetechore microtubules attach to sister kinetochores, tetrads align at metaphase plate. Anaphase Chromosomes of tetrad 2Nseparate (now dyads). Ν Sister chromatids remain attached at centromeres. DNA content is halved. Telophase Spindles dissasemble, Ν cytokinesis forms two haploid cells.

Meiosis		
Figure 12.9		
The stage of materials in an animal cell. Early repopulate I Commonweal and displaced, become and a spenda from the face of the cell Telegraphic I Telegraphics II Opproved II Telegraphics II Telegraphic	Middle prophase I Honological characteristics described in the second of	Late prophase I Prometaghase I husband or convenient so co
Anaphase II		Chromosomes in each totrad separate and begin regating toward opposite poles.
Metaphase II		Telophase I Checmosomes (each with two sister chromatics) complete migration to make the complete migration to the complete migration to the complete migration of the complet
	Prophase II	(DED)
Ó		Cytokinesis In most species, cytokinesis occurs to produce hao cells. Chromosomes do not replicate before melosis II.

Meiosis II	
Prophase	Chromosomes condense and
II	spindles form, kinetochores attach to tubules
Metaphase II	Alignment on metaphase plate.
Anaphase II	Centromeres separate, daughter chromosomes (still haploid) pulled to opposite sides.
Telophase II	Chromosomes decondense, nuclear envelope forms, cytokinesis. Four haploid cells produced, each with one chromosome from each

homologous pair.

## **Meiosis Results**

- ♥ Generates haploid nuclei with half the number of chromosomes found in diploid cell.
   (2N -> N) Diploid number restored in fertilization.
- ♥ Independent assortment of genes
  paternal and maternal chromosomes have an
  equal chance of aligning on one side of
  metaphase plate.
- ♥ Number of chromosome arrangements is 2<sup>n-1</sup>, n= # chromosomes pairs (haploid number).
- ♥ Number of chromosome combinations resulting from *independent assortment* is 2<sup>n</sup> (number of different *gametes*).
- ♥ Number of kinds of genotypes is 3<sup>n</sup>.

Ploidy	
Haploid	ONE copy of each chromosome. (N)
Diploid	TWO copies (homologues) of each chromosome. (2N)
Homologous pairs	Same gene loci, structure, and pair during meiosis.

## Allele Alternative forms of a single gene on the same locus that determine the same trait, but can produce different phenotypes.



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