**Meiosis**

**Chromosomes**

* In general all individuals of the same species have the **\_\_\_\_\_\_\_\_\_\_** number of chromosomes.
* Humans have **\_\_\_\_\_\_\_\_\_** chromosomes
* Species can generally only reproduce with other that have the **\_\_\_\_\_\_\_\_\_\_\_\_\_** number of chromosomes

**Mitosis Review**: When a single cell goes through mitosis, it produces 2 daughter cells that have the **same** numberchromosomes as the parent cell.

Consider the Question:

***One*** cell produces a daughter cell with the ***same*** number of chromosomes as itself. You are the product of ***two*** cells **(sperm & egg)**.

Why don’t you have ***twice*** as many chromosomes as your parents?

**Vocab Alert**

* Gamete:
* Haploid:
* Diploid:

**Diploid** **Cells** (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cells)

* Diploid cells have their chromosomes arranged in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* The genes in the **\_\_\_\_\_\_\_\_\_\_\_\_** chromosomes correspond to each other
  + So the chromosome with the gene responsible for eye colour will be paired with another chromosome with another eye colour gene that is located in the same place

**Stages of Meiosis**

**Interphase**: The cell is going about its normal activities, and at the end, prepares for meiosis.

* To prepare for meiosis the cells:
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** chromosomes to make *sister chromatids*.
  + The main features of interphase were the same as in mitosis: **\_\_\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and **\_\_\_\_\_\_\_\_\_** replication to make sister chromatids.

**Meiosis I**

* *Prophase I*
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** condense and become visible. Homologous chromosomes pair up.
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** occurs.
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_** form between centrioles.
  + Nuclear membrane dissolves.
* *Metaphase I*
  + Homologous chromosomes line up ***in******pairs***in the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the cell.
  + Each spindle fiber attaches to ***both*** in a pair of homologous chromosomes.

* *Anaphase I*
  + Spindles pull the ***homologous \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** towards opposite ends of the cell.
    - This is an important difference from mitosis!
* *Telophase I*
  + Each pair of homologous chromosomes is now at the **\_\_\_\_\_\_\_\_\_\_\_** side of the cell.
  + Nuclear membranes **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
  + **\_\_\_\_\_\_\_\_\_\_\_\_** dissolve.
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: The cell membrane pinches off to form two cells*.*

**Meiosis II**

* NOTE: (There is no interphase between meiosis I and meiosis II.)
* *Prophase II*:
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**visible. Nuclear membranes dissolve.
  + Centrioles replicate.
* *Metaphase II*
  + Chromosomes line up in the **\_\_\_\_\_\_\_\_\_\_\_\_** of the cell.
  + Spindles form.
  + Each spindle attaches to one **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** centromere*.*
* *Anaphase II*
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are pulled apart.
    - Like **mitosis**, but different from Anaphase I!
* *Telophase II*
  + Sister chromatids wind up at **\_\_\_\_\_\_\_\_\_\_\_\_\_** ends of the cell.
  + Nuclear membranes form.
  + Cytokinesis: The cell membrane **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** off.
  + There are now four **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** created from the single beginning cell.
  + Note: because of crossing-over, each has a unique genetic code!

