Ch 13.3 Notes through Slide #31

Prophase I = Same as Mitosis with one extra step

* Copied chromatin (looks like spaghetti) coils together tightly to form chromosomes
* Nucleolus disappears
* Nuclear membrane breaks down
* Spindle fibers formed from centriole
  + Centrioles start moving to opposite ends of the cell
* Crossover only in Prophase I

Crossing over happens because it allows more genetic variation

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* Homologous chromosomes are the equivalent chromosomes that your mom and dad gave you. Example: chromosome 1 from mom and chromosome 1 from dad are homologous, they carry the same genes
* Homologous chromosomes pair up and cross over= swap bits of information
* Two homologs form synaptonemal complex= attached together
* Chiasmata= where crossing over is occurring
  + When they pair up, they form a structure called a tetrad because there are four chromosomes since each one duplicated during interphase

Metaphase I

* Tetrads (paired homologous chromosomes) are lined up at the center of the cell (called metaphase plate)
* Spindle fibers attached to the centromere and are what lines the chromosomes up
  + Note: Because materal and paternal chromosomes line up and go to each side this decreasing genetic diversity

Anaphase I

* Breakdown of proteins responsible for sister chromatid cohesion allowing homologs to separate
* Homologs move to opposite poles
  + Guided by the spindle apparatus
* **Sister chromatid cohesion persists at the centromere**
  + Causes chromatids to move as a unit toward the same pole

Telophase I

* Separated **homologous chromosomes** are on opposite ends of the cell
* Nuclear membrane forms around each set of chromosomes
* DNA uncoils
* Spindle fiber breaks down

Cytokinesis

* Occurs during Telophase I
* Cell pinches and creates a cleavage furrow making 2 daughter cells
* These daughter cells are haploid, because they only contain ONE set of information for each chromosome
* The sister chromatids are pretty much identical (ignore the part that crossed over to help understand this part), so it’s like getting two copies of the same information
* The two daughter cells are NOT identical to each other
* Starting chromosomes got shuffled around and it was a 50/50 for EACH chromosome pair

Ends with 2 daughter cells with 46 chromosomes each which aren’t half and half but instead have a small portion from each parent

* Note: Because they don’t have a full set of DNA from each parent they are actually haploid even thought they have some from both parents