Meiosis

1. Final Goal: four genetically different chromosomes; genetic variation
2. The main idea to remember is that in Meiosis 1, the chromosomes cross over and the split. In Meiosis 2, the sister chromatids split. This creates more genetic variation between the cells
   1. These cells are used to create offspring
   2. We want the offspring to be genetically different for natural selection
3. Steps of Meiosis I
   1. In interphase of the cell cycle, the S phase occurs again which is the synthesis of DNA.
      1. The 46 chromosomes each have a sister chromatid now
   2. Prophase
      1. The chromosomes find each other to cross over, or swap alleles
         1. But when doing this they do not touch, they just get very close
   3. Metaphase
      1. Spindle pulls the chromosomes so that they line up in the middle
      2. In this stage independent assortment occurs
         1. Independent assortment is when the chromosomes pair determines randomly which one is on the right and which is on the left. This creates more genetic variation.
   4. Anaphase
      1. The chromosomes separate and move to separate ends of the cell
   5. Telophase
      1. The nuclear envelope can reform but the cell also might just jump right into meiosis II.
   6. Cytokinesis
      1. The splitting of the two cells
   7. Meiosis II starts
      1. Everything in meiosis II is the same besideds(use the word except?) that now the sister chromatids separate. There is no crossing over or splitting chromosomes.
      2. Also cytokinesis occurs in both of the two cells, so at the end there are 4 genetically different cells.