Notes:

* We all come from \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ cell.
* Mitosis replicated a cell with a complete set of \_\_\_\_\_\_\_\_\_ chromosomes into two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells that are each \_\_\_\_\_\_\_\_\_\_\_\_\_ to each other.
* If mitosis was the only way cells divide, we would all be \_\_\_\_\_\_\_\_\_\_ of our parents.
* Since all of our chromosomes are not identical, we call them **homologous chromosome pairs.**
  + “Homo” means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; and “logous” means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Haploid cells have \_\_\_\_\_\_\_\_\_\_ of a full set of chromosomes.
* Does meiosis go through the same phases as mitosis? Yes or No
* Each double chromosome lines up next to its homologue; your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ version is lined up next to your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ version.
* During Prophase I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs where the double chromosomes tangle up. When they \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sections of the DNA it is called recombination.
* Since all 4 chromatids have swapped some DNA at random, that means that all 4 chromatids are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Later on in the process, each chromatid will end up in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sex cell; that’s why all eggs produced by the woman have a slightly different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ code, the same for sperm and men.
  + This is why we all look different!
* Can male sex chromosomes go through crossover and/or recombination? Yes or No.
* At the end of Meiosis I, we now have 2 \_\_\_\_\_\_\_\_\_\_\_\_\_ cells each with \_\_\_\_\_\_\_\_\_\_\_ double chromosomes that are new unique combinations of the original pairs.
* The aim of meiosis is to end up with \_\_\_\_\_\_\_\_\_ cells.
* In Anaphase II, the chromosomes are separated into separate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This is different than in Anaphase I!
* In meiosis we go from 1 original cell to \_\_\_\_\_\_\_\_\_\_\_\_ new cells with \_\_\_\_\_\_\_\_\_\_\_ single chromosomes each.

**Questions:** Use COMPLETE sentences to answer the questions below. You may work with your group.

Think:

* How many phases of meiosis are there? What are these phases?
* What is the same between Mitosis and Meiosis? What is different?
* What is the goal of meiosis?

Discuss:

Look at your notes above and review what crossing over and recombination do to homologous chromosomes.

* Can male sex chromosomes (X,Y) go through crossing over and recombination? Why or why not? Be sure to explain you answer!

…And Finally

In the video, he talks about having a brother, yet he and his brother do not look like. If they come from the same mom and dad with the same DNA, same chromosomes, same genetic code, why do brothers and sisters not look exactly the same to each other or to their parents?

This hard about this question, talk with your group, and give examples to support your answer.