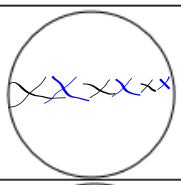
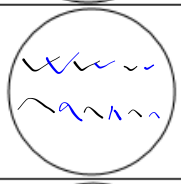
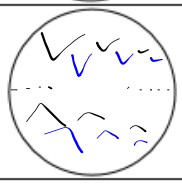
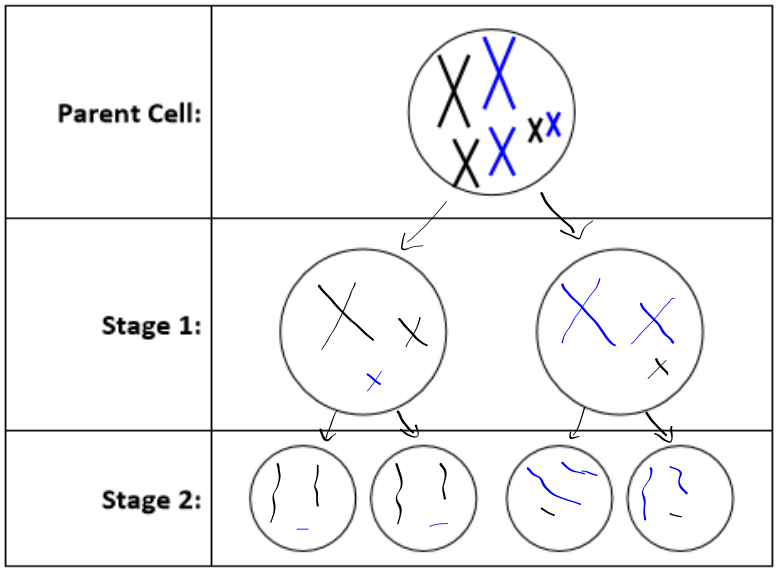
1. For the following diploid cell with three chromosome pairs, illustrate the indicated phases of **mitosis**. The size of the chromosome represents the chromosome number (the largest chromosome is #1; the second largest is #2; the smallest is #3) and the color indicates the parental origin (black is from mom, blue is from pop):

~5 min

Prophase:	
Metaphase:	
Anaphase:	
Telophase:	

2. For the following diploid cell with three chromosome pairs, illustrate the end products of stage 1 and stage 2 of **meiosis**. The size of the chromosome represents the chromosome number (the largest chromosome is #1; the second largest is #2; the smallest is #3) and the color indicates the parental origin (black is from mom, blue is from pop):

5 min.



5 min

3. For mitosis, when does DNA replication occur? During "S" phase, prior to mitosis
4. For meiosis, when does DNA replication occur? During "S" phase, prior to meiosis 1
5. How many daughter cells are produced at the end of a mitotic cell division? Where does the parent cell go? 2 – parent cell splits
6. How many daughter cells are produced during a meiotic cell division? Where does the parent cell go? 4 – parent cell splits; 2 daughter cells split

5 min

7. Describe the genetic relationship as either "identical" or "not identical" between:
   a) The parent cell and the daughter cells of a mitotic cell division IDENTICAL
   b) The parent cell and the daughter cells of stage 1 during a meiotic cell division NOT IDENTICAL
   c) The parent cell and the daughter cells of stage 2 during a meiotic cell division ORIGINAL – NOT; NEW PARENT = IDENTICAL
   d) The two daughter cells of stage 1 during a meiotic cell division NOT IDENTICAL
   e) The four daughter cells of stage 2 during a meiotic cell division (compare all the cells to each other) EACH PAIR: Identical PAIRS → NOT IDENTICAL
8. What is the main purpose of a mitotic cell division? How does it help an organism? MITOSIS MAKES CLONES OF CELLS SO ORGANISMS CAN GROW
9. What is the main purpose of a meiotic cell division? In other words, what is the ultimate function of the cells that an organism produces during meiosis? TO REDUCE # OF CHROMOSOMES (Diploid → haploid) SO ORGANISMS CAN REPRODUCE SEXUALLY