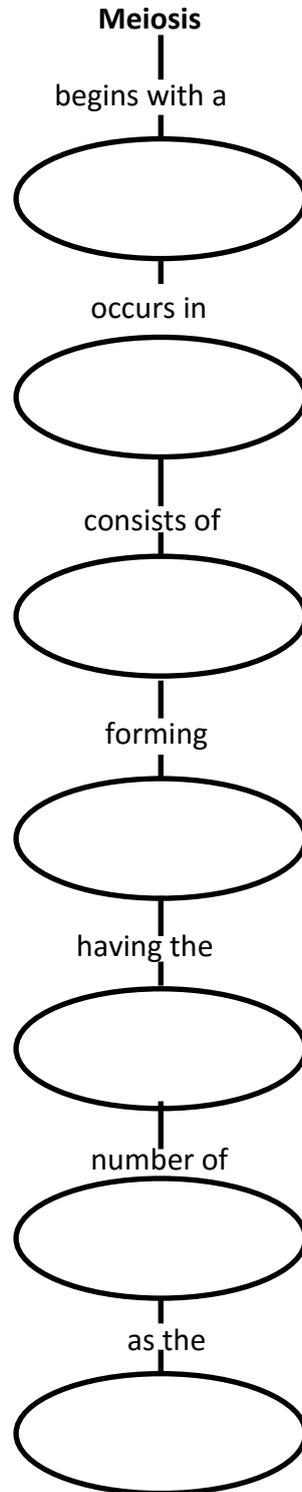
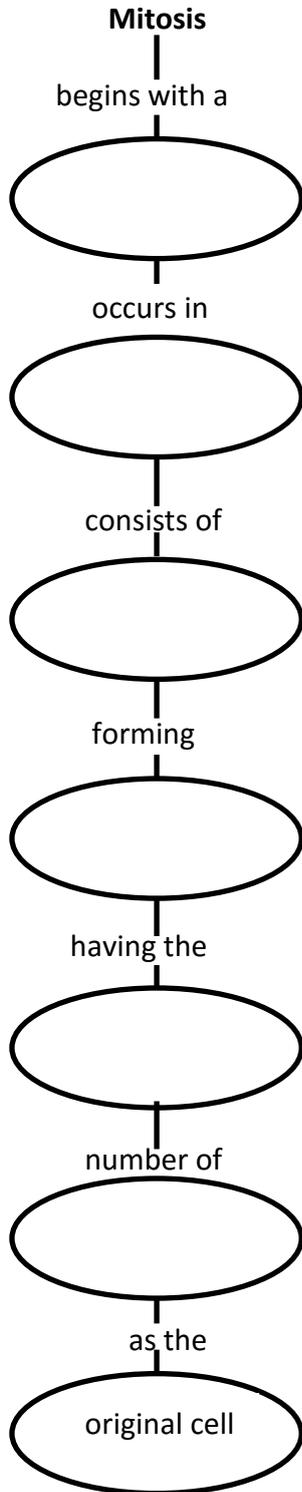


# Mitosis/Meiosis (Week 11A)

1. Directions: Complete the concept map comparing mitosis and meiosis. Use these words or phrases one or more times: *diploid cell, cell division, four haploid cells, original cell, two cell divisions, body cells, same, chromosomes, gamete-producing cells, half, two diploid cells.*



**An organism has body cells with 42 chromosomes. Use this information to answer #2-8**

2. A body cell prepares for cell division. How many chromosomes does it have at the beginning of prophase?
3. After the membrane pinches in half, how many chromosomes does each daughter cell have?
4. How many chromosomes did each of the sex cells have that formed this individual organism?
5. How many chromosomes does the egg cell of this organism have?
6. How many chromosomes do the body cells have during interphase?
7. What is the diploid number of this organism?
8. What is the haploid number of for this organism?
9. An organism has 12 chromosomes in its sperm cells. How many chromosomes does it have in its body cells?
10. An organism has 29 chromosomes in its egg cells. How many chromosomes does it have in its body cells?
11. An organism has 22 chromosomes in its body cells. How many chromosomes does it have in its sperm cells?
12. Define homologous chromosome.
13. Define sister chromatids.
14. Describe 2 parts of meiosis that are similar to mitosis.
  - a.
  - b.
15. Identify whether each process below occurs during *mitosis*, *meiosis*, or *both*.
  - a. Sister chromatids separate
  - b. Haploid cells are formed
  - c. Cell division occurs once
  - d. Homologous chromosomes pair

- e. 4 haploid cells are the final result
- f. Crossing over occurs
- g. Cell division occurs twice
- h. Replicated chromosomes line up in the middle of the cell
- i. 2 diploid cells are the final result

16. Define crossing over. At which phase does it occur?

17. Does the parent cell in Mitosis start off as diploid or haploid? Are the resulting cells at the end of Mitosis diploid or haploid?

18. Does the parent cell in Meiosis start off as diploid or haploid? Are the resulting cells at the end of Meiosis diploid or haploid?

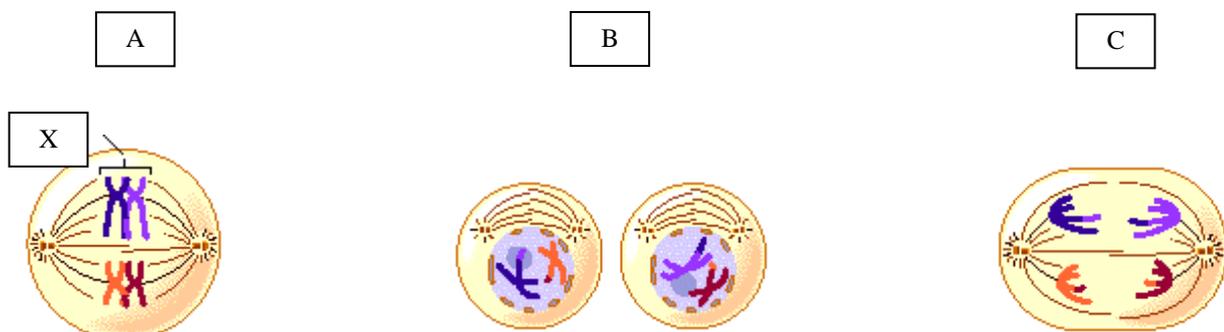
19. How does the number of chromosomes in a sex cell compare with the number of chromosomes in the parent cell?

20. Describe the differences in how the chromosomes line up in middle of the cell during Metaphase I of Meiosis and Metaphase of Mitosis.

21. Identify the phase in the cell in A. What is the name of Structure X?

22. Identify the phase in the cells in B. What is happening to the nuclear envelope? Why does this happen?

23. Identify the phase in the cell in C. What is being separated?



24. Explain why mitosis is referred to as a process of cell replication.

25. Explain why meiosis is referred to as a process of cell reduction.

26. What is the significance of chromosome 2 in human evolution?

27. What is a telomere? What is a centromere?

28. How were telomeres and centromeres used to prove humans' common ancestry with apes?

29. Do you find the interpretation of chromosome 2 convincing evidence that humans share a common ancestry with other great apes? Explain.

30. Knowing what you know now, do you think a hybrid could be produced between a chimp and a human? Why or why not?