Honors Biology
Unit 5: Patterns of Inheritance

Due by Tuesday February 7th!

Name: _____ Period: _____

Lab 14: Illustrating the Phases of Meiosis

Instructions: Read the lab instructions on the class copy lab page. Follow the procedure to be able to answer the questions that are listed on this page. ANSWER THE QUESTIONS IN COMPLETE SENTENCES!

1. What does diploid mean? _____

   _____

2. What does haploid mean? _____

   _____

3. In the circle on the right, draw the diploid cell that you created in step A. Use red and green colored pencils to complete your diagram.

#3

4. How many total chromosomes are in your cell? _____
5. What does homologous mean? _____

   _____

#7

6. How many <u>pairs</u> of homologous chromosomes are in your cell? _____
7. In the circle on the right, draw the cell in its first phase of meiosis after the chromosomes have replicated.
8. What does sister mean? _____
9. Describe what generally occurs during Prophase I: _____

   _____

10. In the circle on the right, draw the cell in Prophase I.

#10

11. Describe the cross-over event. What happens? What is the result?

    _____

    _____

    _____

12. In the space below, diagram the cross-over event that you generated on your chromatids. Be sure to diagram all of your chromosomes!

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13. Are any of your chromosomes genetically the same? Genetically different? Explain your answer. _____

_____

_____

14. Why is the cross-over event important in cells? _____

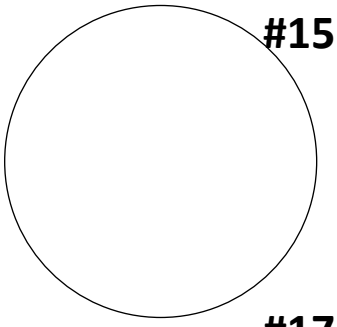
_____

15. In the circle on the right, diagram the chromosomes in Metaphase I.
16. Describe how Metaphase I in meiosis is different and how it is similar to metaphase in mitosis. _____

_____

_____

#15

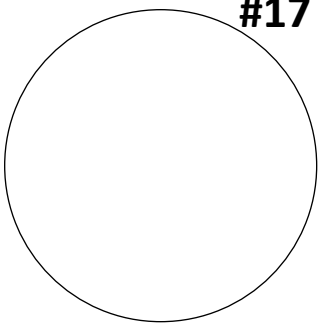


17. In the circle on the right, diagram the chromosomes in Anaphase I.
18. Describe how Anaphase I in meiosis is different and how it is similar to anaphase in mitosis. _____

_____

_____

#17



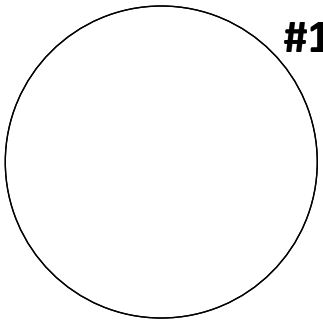
19. In the circles on the right, diagram the chromosomes in Telophase I after the cells have split.
20. How many chromosomes are in each cell now? _____
21. Are sister chromatids still held together? _____
22. Are the cells diploid or haploid at this point? _____
23. Describe what happens during Prophase II:

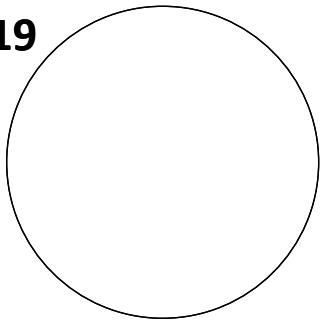
_____

_____

_____

#19





24. Why is there no Interphase II during Meiosis II? _____

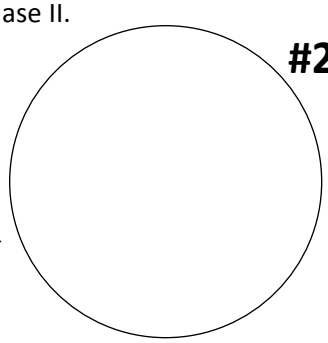
_____

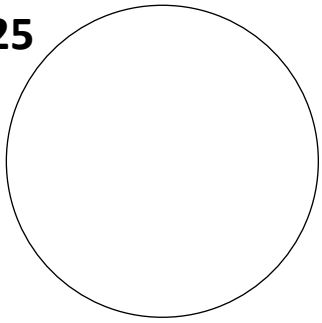
25. In the circles on the right, diagram the chromosomes in Metaphase II.
26. Describe how Metaphase II in meiosis is different and how it is similar to metaphase in mitosis. _____

_____

_____

#25





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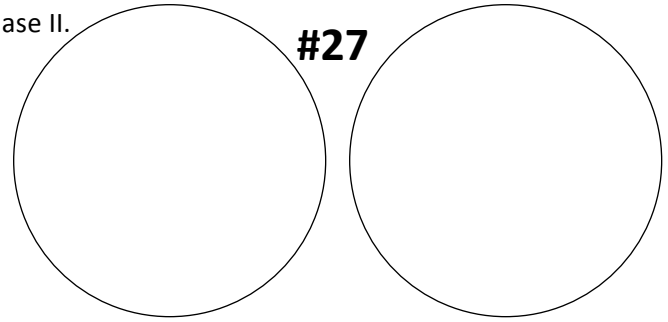
27. In the circle on the right, diagram the chromosomes in Anaphase II.

#27



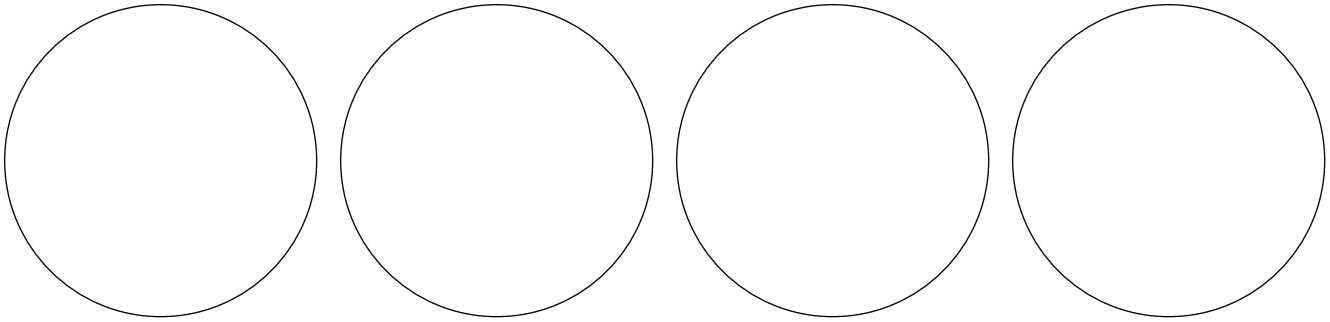
28. Describe how Anaphase I in meiosis is different and how it is similar to anaphase in mitosis. _____

_____

_____

_____

29. In the circles below, diagram the chromosomes in Telophase II.



30. Answer the following about the final cells at the end of this meiosis process:
    a. At the beginning, meiosis started with _____ mother/germ cell and meiosis ended with _____ daughter cells.
    b. What are the four cells called? (hint: sex cells!) _____. In males, these cells are called _____ and in females these cells are called _____.
    c. Was the mother/germ cell at the beginning haploid or diploid? _____
    d. Are the daughter/gamete cells at the end haploid or diploid? _____
31. Does *mitosis* result in genetic variation among offspring cells? Why or why not? _____

_____

_____

32. Does *meiosis* result in genetic variation among offspring cells? Why or why not? _____

_____

_____

33. Complete this table comparing mitosis and meiosis:

	Mitosis	**Meiosis**
Number of cells at beginning of process?		
Number of cells at end of process?		
Are daughter cells haploid or diploid?		
Are offspring cells identical to or different from the parent cell?		
In what type of cells does the process occur?		

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