Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_

**Study Guide**

**Growth and Cell Division**

**Cell Division Overview**:

1. Cells have periods of formation, growth, development, and death called \_\_\_\_\_\_\_\_\_\_\_ \_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. Most of the life of any eukaryotic cells is spent during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is a period of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_--structure in the nucleus that contains hereditary material (DNA).

4. During interphase, a cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its chromosomes and prepares for cell division.

**Mitosis**:

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-- process in which the nucleus divides to form two identical nuclei.

6. Mitosis occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ interphase.

7. Remember “**PMAT**”.

8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the 1st stage; nucleus and nuclear membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the 2nd stage; pairs of chromatids line up across the \_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell.

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the 3rd stage; each pair of chromatids \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and move to opposite ends of the cell.

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the 4th stage; a new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms in each cell; cells begin to separate which is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. As a result of mitosis, each *body* cell produces \_\_\_\_\_\_\_ chromosomes which means they are (haploid / diploid).

13. Mitosis allows for growth and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ worn out and damaged cells.

14. How many cells are produced at the end of mitosis? \_\_\_\_\_\_\_\_\_\_

**Meiosis**:

15. As a result of meiosis, each *sex* cell produces \_\_\_\_\_\_\_\_\_\_\_\_ chromosomes which means they are (haploid / diploid).

16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs when an egg cell and sperm cell come together.

17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are formed in the male reproductive organs.

18. Eggs are formed in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reproductive organs.

19. The new cell that forms from fertilization is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

20. Following fertilization, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins to ensure that a new organism grows and develops.

21. In what phase does crossing over occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Why Is it important?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. How many cells are produced at the end of meiosis II? \_\_\_\_\_\_\_\_\_\_\_\_

23. Define karyogram (karyotype): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24. What is nondisjunction? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25. Name 3 disorders caused by nondisjunction. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

26. What is a normal karyotype for a male? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Female? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Asexual Reproduction**:

27. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reproduction is when a new organism is produced from \_\_\_\_\_\_\_ parent organism.

28. The 3 types of asexual reproduction are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Vocabulary to know**:

cell cycle meiosis Karyotype Trisomy

prophase interphase Nondisjunction Monosomy

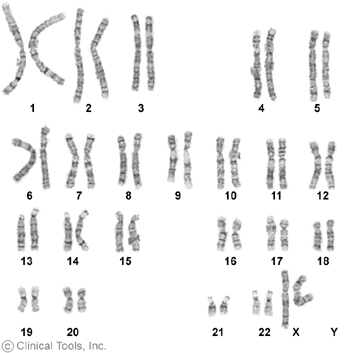
metaphase asexual reproduction chromatid Turner’s Syndrome #

anaphase budding centromere Down syndrome #

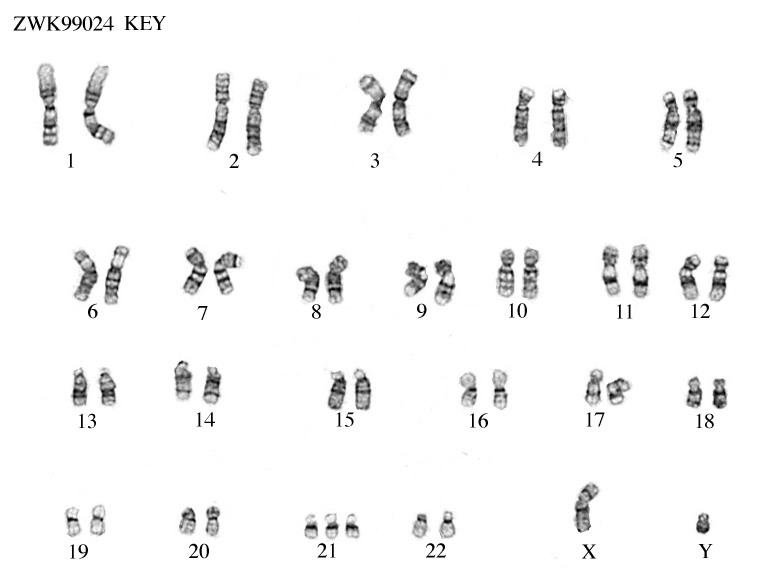
telophase binary fission spindle fibers Klinefelter’s syndrome #

cytokinesis regeneration centrioles Patau’s Syndrome #

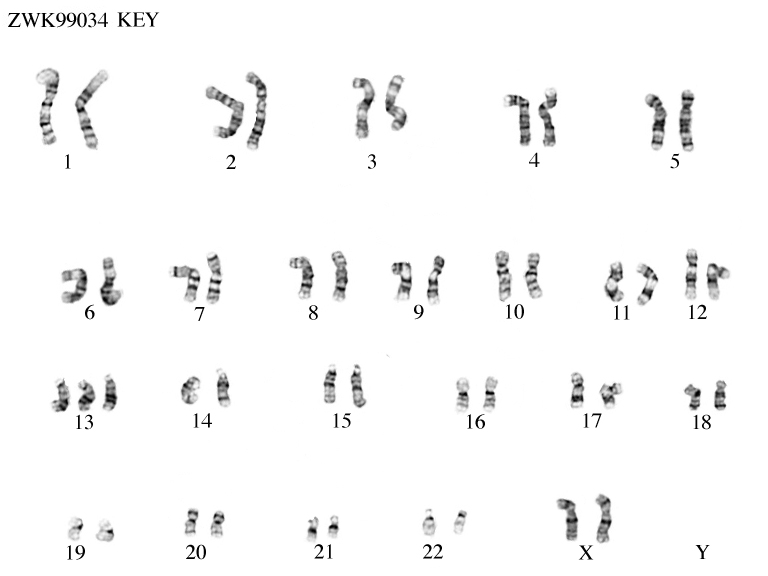
mitosis chromosome haploid/diploid Edward’s Syndrome #

**Karyotype Identification**

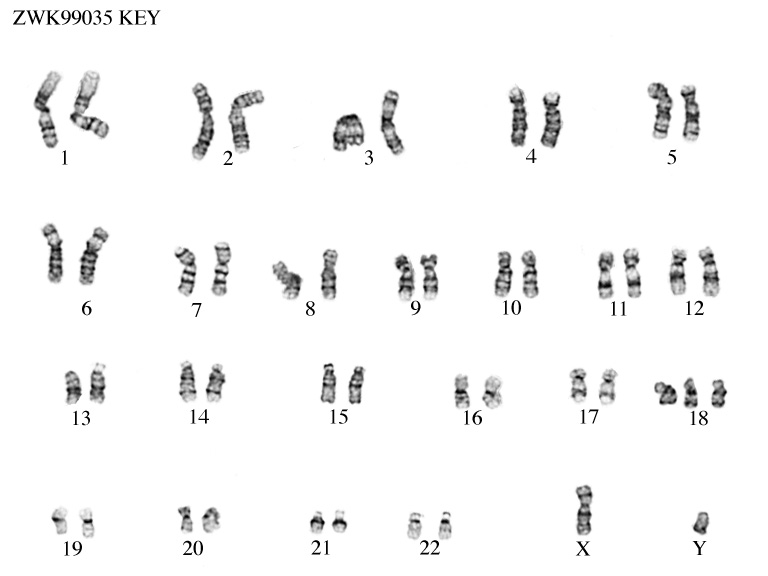
|  |  |
| --- | --- |
| Karyotype | #1 |
| Number of chromosomes |  |
| Sex of individual |  |
| Normal? Yes or no. |  |
| If abnormal, what abnormality? |  |
| If abnormal, what chromosome pair? |  |
| If abnormal, what syndrome? |  |



|  |  |
| --- | --- |
| Karyotype | #2 |
| Number of chromosomes |  |
| Sex of individual |  |
| Normal? Yes or no. |  |
| If abnormal, what abnormality? |  |
| If abnormal, what chromosome pair? |  |
| If abnormal, what syndrome? |  |



|  |  |
| --- | --- |
| Karyotype | #2 |
| Number of chromosomes |  |
| Sex of individual |  |
| Normal? Yes or no. |  |
| If abnormal, what abnormality? |  |
| If abnormal, what chromosome pair? |  |
| If abnormal, what syndrome? |  |



|  |  |
| --- | --- |
| Karyotype | #1 |
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