

Lab 16 Chromosomes and inheritance

Name _____

Seat number _____

Objectives:

- A. Comparison of meiosis and mitosis
- B. Comparison of meiosis I and mitosis
- C. Comparison of meiosis II and mitosis
- D. The stages of mitosis
- E. The stages of meiosis I
- F. The stages of meiosis II

A. Comparison of meiosis with mitosis

Please write only these words in the following section **Meiosis**, **Mitosis** or **BOTH** when you have determined what the statement is describing.

- 1) Nuclear divisions: _____
- 2) DNA replication occurs only once before: _____
- 3) _____ has 2 nuclear divisions.
- 4) There are 4 daughter cells produced in _____ and they are haploid | diploid (*CIRCLE ONE*)
- 5) There are 2 daughter cells produced in _____ and they are haploid | diploid (*CIRCLE ONE*)
- 6) _____ daughter cells *are not* genetically identical while _____ daughter cells *are* genetically identical.
- 7) _____ only occurs during reproductive cycle in gametes.
- 8) _____ occurs in all tissues during growth and repair.

B. Comparison of meiosis I with mitosis

Please write only these words: **Meiosis I**, **Mitosis** or a specific **phase** when you have determined what the statement is describing. You will also be asked to determine if the chromatids are single or duplicated.

1. Homologous chromosomes cross over during _____ (*NAME THE PHASE*) of _____
2. Paired homologous chromosomes meet in middle of _____ (*NAME THE PHASE*) during _____ and they are single/duplicated (*CIRCLE ONE*) chromatids
3. Individual chromosomes meet in middle in _____ (name the phase) during _____ and they are single/duplicated (*CIRCLE ONE*) chromatids.
4. Homologous pairs come apart in _____ (name the phase) of _____
5. Sister chromatids separate in mitosis/meiosis I (*CIRCLE ONE*)

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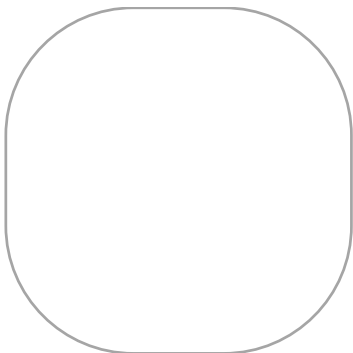
C. Comparison of Meiosis II with Mitosis

Please write only the words **meiosis II**, **mitosis**, or **both** when you have determined what the statement is describing.

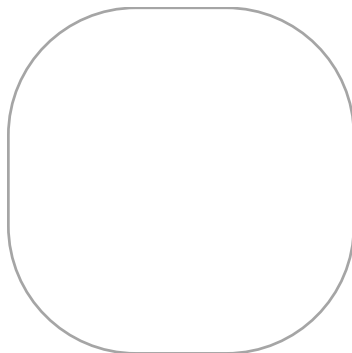
1. _____ is remarkably similar to _____.
2. Daughter cells from _____ have half the number of chromosomes as the daughter cells from _____.
3. If there are 8 chromosomes, then 8 chromosomes gather at the equator during _____ but only 4 chromosomes during _____.

D. The stages of mitosis

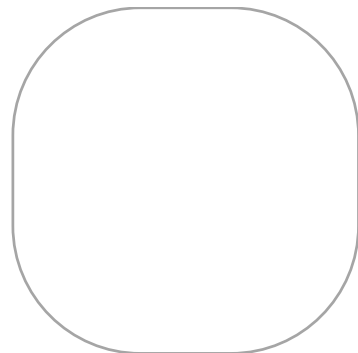
Draw in each of the circles below, illustrating the appropriate stage of mitosis and the resulting daughter cells. Use 4 chromosomes.



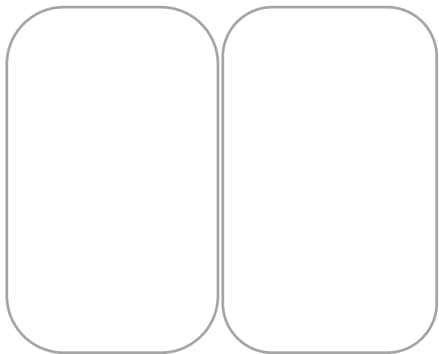
prophase



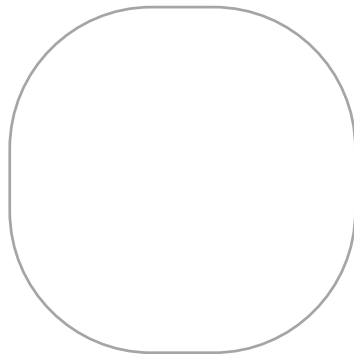
metaphase



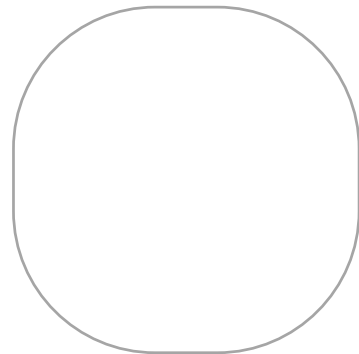
anaphase



telophase



daughter cells



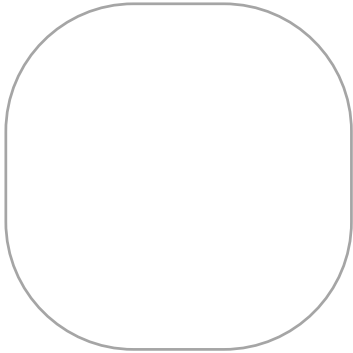
- 1) These daughter cells are haploid | diploid (*CIRCLE ONE*)
- 2) Are the daughter cells genetically identical? _____

Be sure you can identify the phases of the mitosis models also.

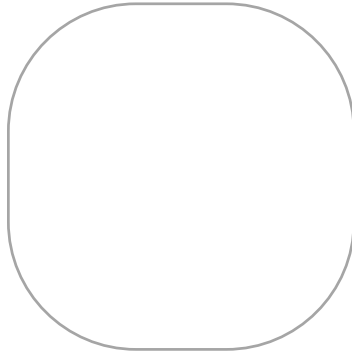
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E. The stages of meiosis I

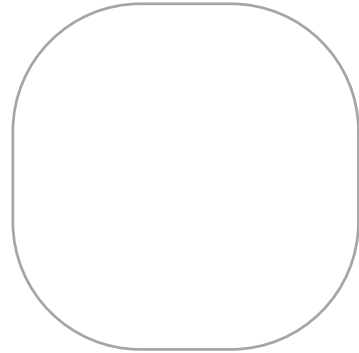
Draw in each of the circles below, illustrating the appropriate stage of meiosis I and the resulting daughter cells. Use 4 chromosomes and a red and blue pencil.



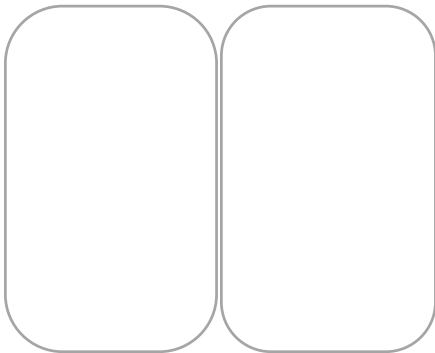
prophase



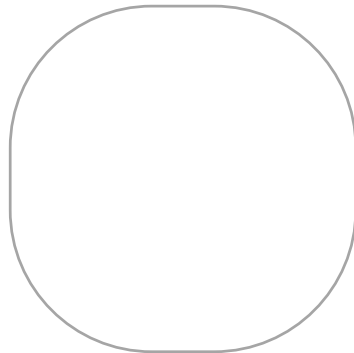
metaphase



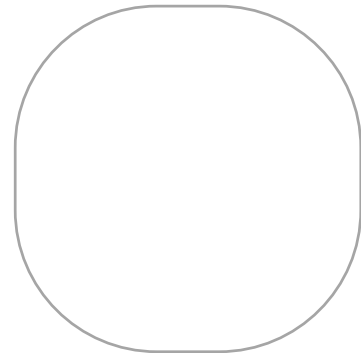
anaphase



telophase



daughter cells



- 1) These daughter cells are haploid | diploid (*CIRCLE ONE*).
- 2) They have single | duplicated chromosomes (*CIRCLE ONE*).
- 3) Something profound happens in prophase I, what is it? Why is it profound?

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F. The stages of meiosis II

Draw in each of the circles below, illustrating the appropriate stage of meiosis I and the resulting daughter cells. Use 4 chromosomes and a red and blue pencil.



prophase

metaphase

anaphase



telophase

daughter cells

- 1) These daughter cells are haploid | diploid (*CIRCLE ONE*).
- 2) They have single | duplicated chromosomes (*CIRCLE ONE*).
- 3) Are the daughter cells genetically identical? _____