

Name _____

Course/Section _____

Date _____

Professor/TA _____



Activity 13.1 What is meiosis?

What is meiosis?

1. What is the overall purpose of meiosis?
2. In what types of organism(s) does meiosis occur? What type of cell division occurs in bacteria?

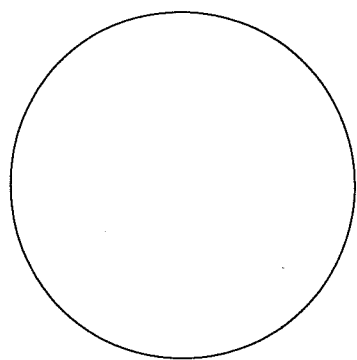
What are the stages of meiosis?



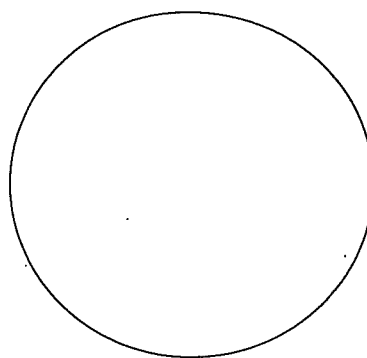
3. The fruit fly, *Drosophila melanogaster*, has a total of eight chromosomes (four pairs) in each of its somatic cells. Somatic cells are all cells of the body except those that will divide to form the gametes (ova or sperm). Review the events that occur in the various stages of meiosis.

Keep in mind that the stages of cell division were first recognized from an examination of fixed slides of tissues undergoing division. On fixed slides, cells are captured or frozen at particular points in the division cycle. Using these static slides, early microscopists identified specific arrangements or patterns of chromosomes that occurred at various stages of the cycle and gave these stages names (interphase, prophase I, and so on). Later work using time-lapse photography made it clear that meiosis is a continuous process. Once division begins, the chromosomes move fluidly from one phase to the next.

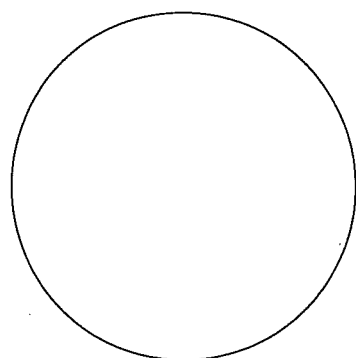
Assume you are a microscopist viewing fruit fly cells that are undergoing meiosis. In each of the circles (cell membranes) on the next pages, draw what you would expect to see if you were looking at a cell in the stage of meiosis indicated. If no circle is present, draw what you would expect to see at the given stage.



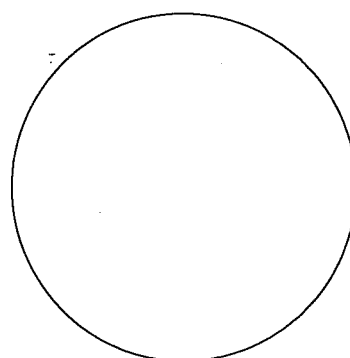
Prophase I



Metaphase I



Anaphase I



Telophase I

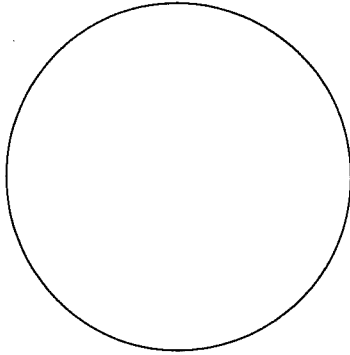
Cytokinesis

Daughter cells

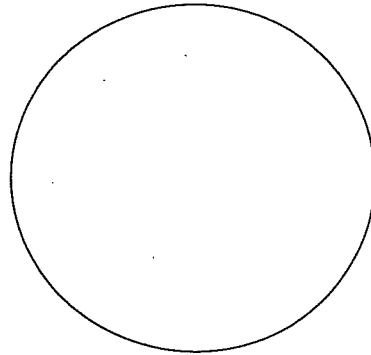
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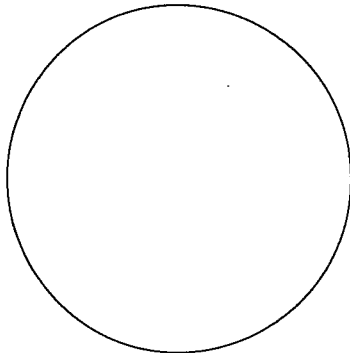
Follow one daughter cell through meiosis II.



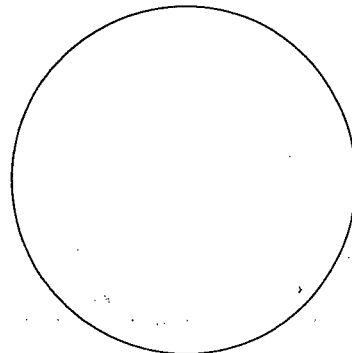
Prophase II



Metaphase II



Anaphase II



Telophase II

Cytokinesis

Daughter cells

What are the products of meiosis?

4. Consider a single cell going through meiosis.

a. How many cells are produced at the end of meiosis?

b. How many chromosomes and which chromosomes does each of the daughter cells contain?

5. Six centromeres are observed in a prophase I cell from another species of insect.

a. How many pairs of chromosomes does this organism contain?

b. For each stage of meiosis, indicate the number of centromeres you would expect to find and the number of copies of chromosomes attached to each centromere.

Stage of meiosis:	Number of centromeres visible	Number of chromosome copies attached to each centromere
Anaphase I		
Prophase II		