

For the following pictures identify what phase of the cell cycle is occurring in the indicated cell. Then use the pictures to answer the questions below.

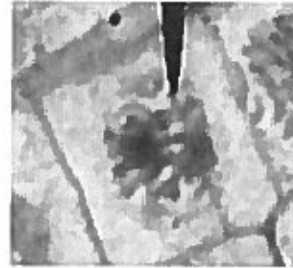
a. metaphase



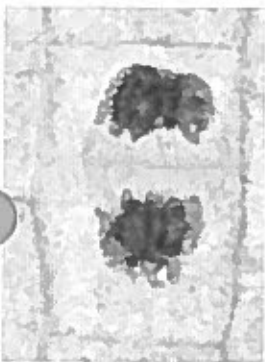
b. anaphase



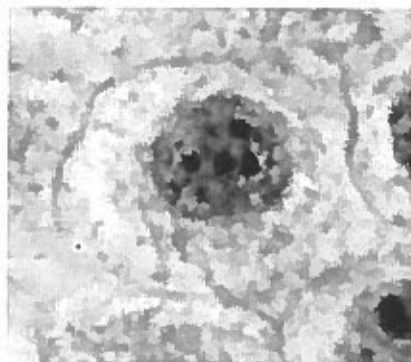
c. prophase



d. telophase



e. interphase



Identify the phase of the cell cycle that is described in each sentence below.

1. Phase in which chromosomes are not visible interphase
2. Phase in which spindle fibers line chromosomes up in the middle of the cell metaphase
3. Phase in which the sister chromatids are at opposite ends of the cell telophase
4. Phase in which the chromosomes de-condense and unwind telophase
5. A cleavage furrow forms in plant cells during this phase cytokinesis
6. Chromatids are becoming visible in this phase. Nucleus disappears. prophase
7. Sister chromatids separate in this phase anaphase
8. DNA is duplicated. interphase

1. What type of cell undergoes meiosis? Gamete cells or Somatic cells

2. What are homologous chromosomes?

chromosomes with the same genes, same size

3. For each of the following state if the cell is haploid or diploid.

Sperm cell = haploid

Liver cell = diploid

Egg cell = haploid

Stomach cell = diploid

4. If the diploid number in a liver cell is 52, how many chromosomes are there in the egg of this organism?

26

5. During meiosis, the chromosome number:

a) is doubled

b) is reduced

c) remains the same

d) becomes diploid

6. Cells starting mitosis & meiosis begin with a (haploid or diploid) set of chromosomes.

diploid

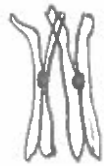
7. How many times do cells divide during meiosis? 2 X

8. What are the stages of meiosis called?

Meiosis I: prophase I, metaphase I, anaphase I, telophase I /cytokinesis

Meiosis II: prophase II, metaphase II, anaphase II, telophase II /cytokinesis

9. Draw a tetrad: What phase do you first see this in?



prophase I

10. Which of the following best describe the term "crossing over"?

- a.) An exchange of information between two homologous chromosomes
- b.) A molecular interaction between two sister chromatids
- c.) A molecular interaction between two non-sister chromatids
- d.) A separation of two sister chromatids

11. Crossing-over can be found in the stage of

- a.) Prophase I
- b) Prophase II
- c) Anaphase I
- d) Anaphase II

12. Which letter in figure #2 represents meiosis? Why?

C (meiosis I) D (meiosis I + II)

13. Which letter in figure #2 represents mitosis? Why?

A

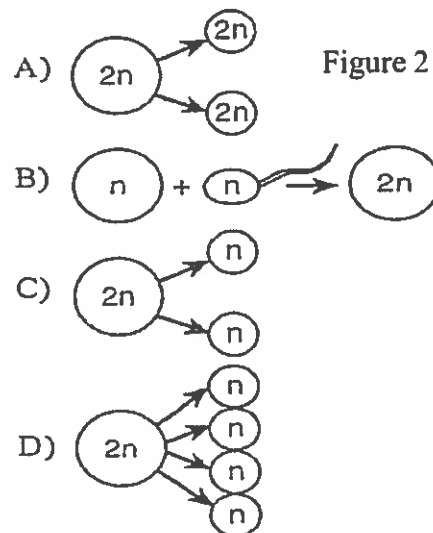


Figure 2

...er"?

14. Is DNA copied before Meiosis II? No

15. How many cells form at the end of Meiosis II and how many chromosomes do they contain? 4, n (haploid)
(23)

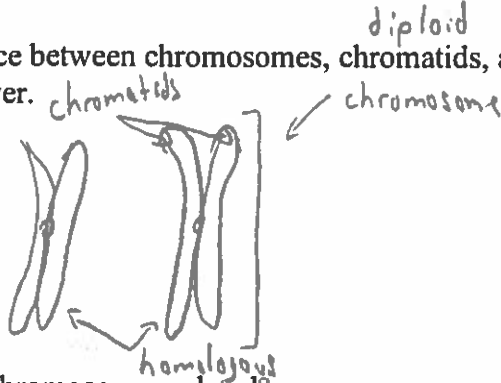
16. A sperm cell is a (gamete, zygote), and is (haploid, diploid).

17. When a sperm cell and an ovum/egg merge, they undergo the process of fertilization, and give rise to a (gamete, zygote), which is (haploid, diploid).

18. What is the ultimate goal/purpose of mitosis? What term do we use to describe the new cells?

replace cells, grow more cells, conserve chromosome number

21. What is the difference between chromosomes, chromatids, and homologous chromosomes? You may draw a picture as your answer.



22. How are DNA and chromosomes related?

DNA is wound up into chromosomes

23. What is the difference between a haploid, diploid, and zygote?

Haploid: n
Diploid: $2n$
Zygote: $2n$

25. What does Meiosis create? Haploids or Diploid? Somatic cells or gametes?

26. What is a gamete? How do we represent the chromosome number: $2n$ or n ?

sex cell

27. What is crossing over? When does it happen? Draw a picture.

prophase I

