

AP Biology

Chapter 13 Guided Reading Assignment

Name Answer Key

1. Compare and contrast asexual and sexual reproduction.

Asexual reproduction in a single individual passes genes to its offspring w/o fusion of gametes. Sexual Repro. involves two parents and a fusion of gametes.

2. Define the following terms:

- a. Life cycle - generation to generation sequence of stages
- b. Somatic cell - any other cell other than a gamete.
- c. Karyotype - ordered display of a cell's chromosomes.
- d. Homologous chromosomes - chromosomes which have the same genes at the same locus and are the same size
- e. Sex chromosomes - determine the sex of the individual XX or XY
- f. Autosomes = chromosomes not involved in sex-determination
- g. Diploid cell - having 2 sets of chromosomes
- h. Haploid cell - having 1 set of chromosomes.
- i. Fertilization - union of a sperm + an egg
- j. Zygote - a fertilized egg
- k. Meiosis - process of gamete formation

3. How are karyotypes prepared? - A picture of cell is taken in Metaphase and chromosomes are cut out and arranged.

4. Describe the three different types of life cycles.

Animal - gametes are the only haploid cells \rightarrow must fuse to form zygote

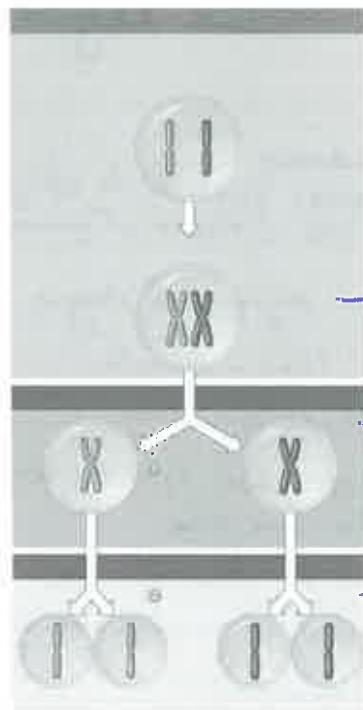
Plants + Algae - alternation of generations \rightarrow includes both a diploid + a haploid multicellular stage.

Fungi + Protists \rightarrow the only diploid stage is single celled zygote \rightarrow no multicellular diploid stage.

5. What exactly is meant by alternation of generations?

- organism has both a multicellular haploid + diploid stages

6. Complete the diagram below outlining an overview of meiosis.

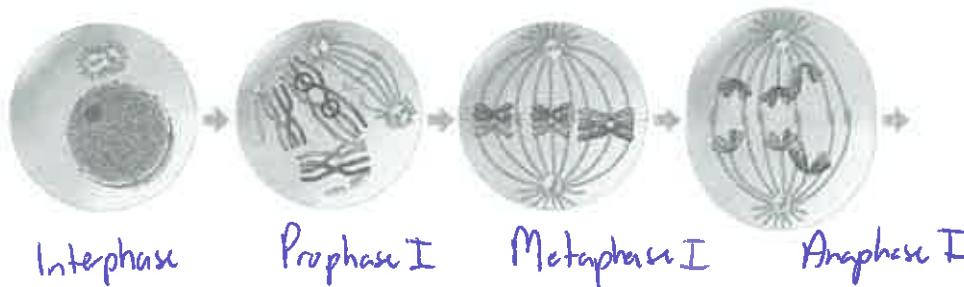


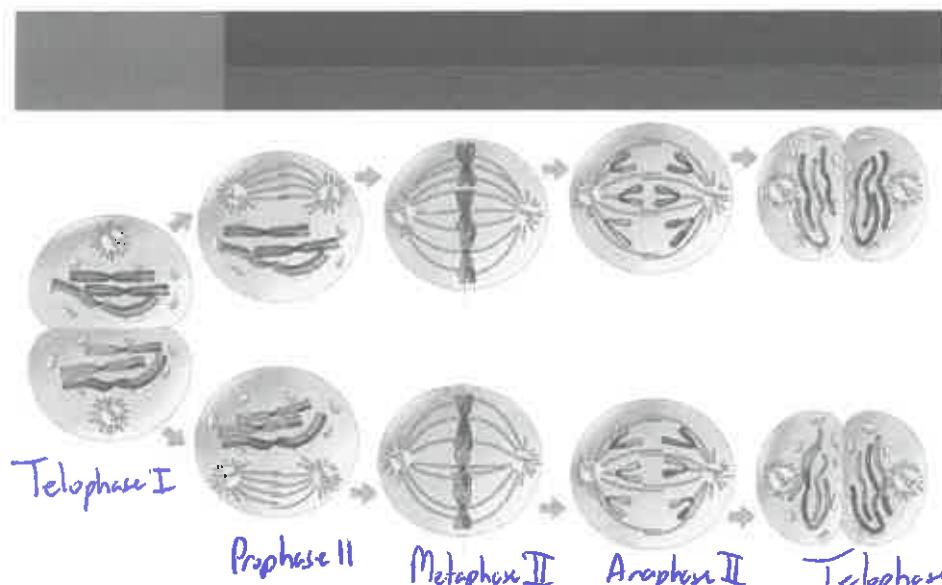
- chromosomes duplicate.
- Meiosis I — homologous pair separate resulting in haploid cells.
- Meiosis II — sister chromatids separate resulting in 4 haploid gametes.

7. What are the two broad goals of meiosis?

- half the chromosome sets (reduction division)
- separate sister chromatids (equational division)

8. Label the following diagrams of meiosis.





9. Summarize the comparison of mitosis and meiosis.

Mitosis	Meiosis
<ul style="list-style-type: none"> - one division - diploid daughter cells - identical - 	<ul style="list-style-type: none"> - two divisions - non-identical, haploid daughter cells - homologous pairing, - crossing over

10. Describe in detail the three sources of genetic variation in meiosis.

- Crossing Over during prophase I → shuffles the combination of genes
- Independent assortment → maternal + paternal chromosomes separate independently of each other during Anaphase I + II
- Random Fertilization - any sperm can fertilize any egg
→ combinations are endless.

