Name: _____ Period: _____

Chapter 4 Review

1. What type of cell undergoes meiosis? ***sex cells (gametes)*** or ***body cells (somatic)***

2. For each of the following, is the cell diploid or haploid?

Body cell _____ Muscle cell _____

Egg cell _____ Heart cell _____

Sperm cell _____ Bone cell _____

3. If the diploid number in a white blood cell of an organism is 62, how many chromosomes are there in the egg of this organism?

4. The muscle cells of a dog have 78 chromosomes. How many chromosomes will each of the following have:

dog's skin cell _____
dog's egg cell _____
dog's liver cell _____

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

6. Why does meiosis reduce the number of chromosome in gametes (think fertilization)?

7. An egg cell is a (***sex cell*** *or* ***zygote***), and is (***haploid*** *or* ***diploid***).

8. Asexual reproduction of cells is accomplished by:
   a) mitosis
   b) meiosis
   c) cytokinesis
   d) photosynthesis

9. Sexual reproduction of cells is accomplished by:
   a) mitosis
   b) meiosis
   c) cytokinesis
   d) photosynthesis

10. Which process(es) begin with DNA replication?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

11. Which process(es) end with cytokinesis?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

12. Which process(es) contain only 1 division of cells?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

13. Which process(es) contain 2 divisions of cells?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

14. Which process(es) result in 2 identical cells?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

15. Which process(es) result in 4 different cells?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

16. Which process(es) occur in body cells (such as skin, muscle, and bone)?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

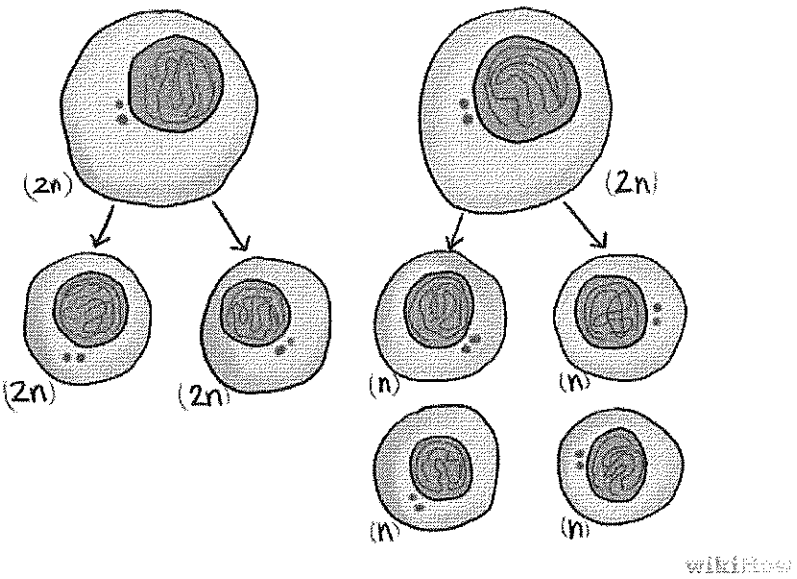
17. Which process(es) occur to make gametes (sex cells)?
    a) mitosis
    b) meiosis
    c) both mitosis and meiosis
    d) neither mitosis or meiosis

18. What is the process of sperm and egg combining?
    a) fertilization
    b) nondisjunction
    c) mutation
    d) crossing over

Complete the table by checking the correct column(s) for each description.

Description	Mitosis	Meiosis
19. Involved in the production of gametes		
20. Involved in growth and repair		
21. Promotes genetic variation in organisms		
22. Consists of one nuclear division		
23. Produces daughter cells that are genetically identical		
24. Involves two sets of nuclear divisions		
25. Produces daughter cells that are not identical		
26. Results in four haploid gametes		

27. Both diagrams below show cell division. ***Label them as either mitosis or meiosis.***



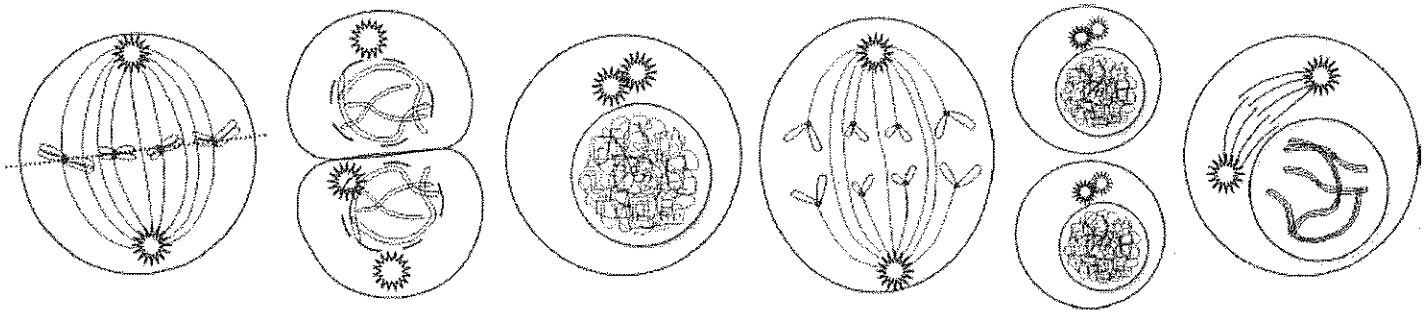
_____ _____

28. How are meiosis and mitosis different/same?

Different:

Same:

Use the following diagram to answer the next three questions.



29. Refer to the diagram. Arrange the stages in order.

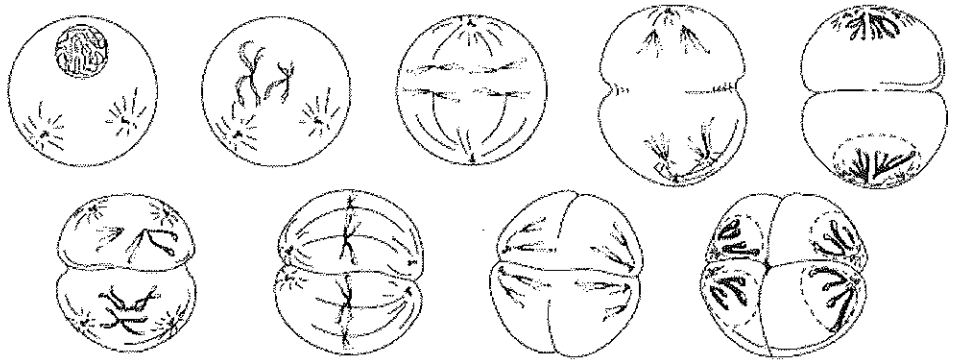
a) I, II, III, IV, V, VI
b) VI, II, I, IV, V, III
c) III, VI, I, IV, II, V
d) V, II, IV, I, II, VI

30. What is the name of this process?

a) metaphase
b) mitosis
c) meiosis
d) mucousis

Label the diagrams below. Use these choices: Metaphase I, Metaphase II, Interphase, Telophase I, Telophase II, Anaphase I, Anaphase II, Prophase I, Prophase II.

6. _____ 7. _____ 8. _____ 9. _____ 10. _____



11. _____ 12. _____ 13. _____ 14. _____

Look at the karyotype in Figure 1 below. Notice the two sex chromosomes, pair number 23, do not look alike. They are different because this karyotype is of a male, and a male has an X and a Y chromosome.

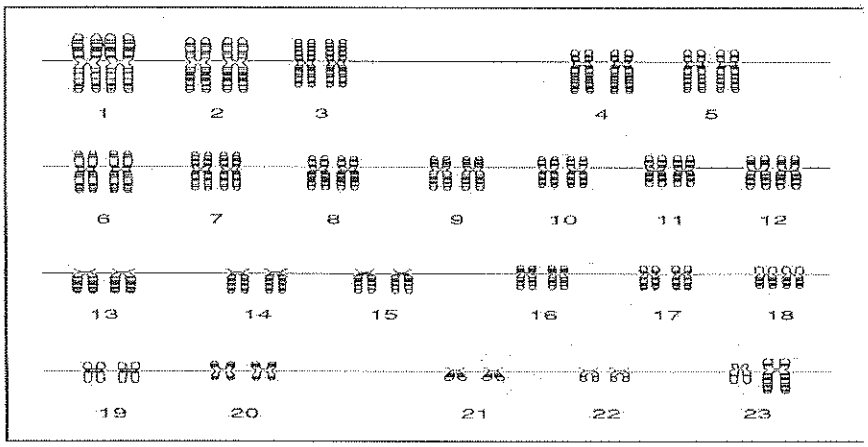


Figure 1

31. Circle the Y chromosome in the karyotype below.

Look at the karyotype labeled figure 4 below.

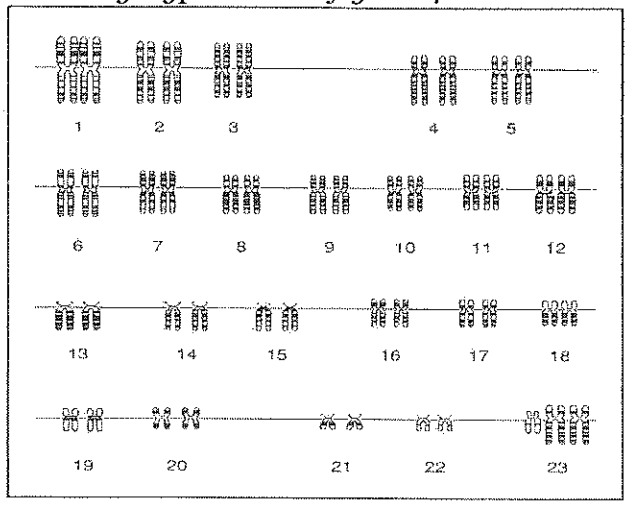


Figure 4

32. How is it different than the one from above?

33. During which cell process would this occur?

34. Use the terms and phrases out and then paste them in the appropriate column, classifying each one as either asexual or sexual reproduction.

Sexual Reproduction	Asexual Reproduction

Budding	Two parents	One parent	Unique Offspring	Identical Offspring	Disadvantage: less chance of survival	Example: Plants
Mitosis	Regeneration	Benefit: Convenience	Benefit: allows for variation	Meiosis	Disadvantage: slower reproduction rate	Example: Hydra

35. Fill in the table below:

	Sexual reproduction	Asexual reproduction
Advantages		
Disadvantages		

36. Match each asexual reproduction type with the corresponding picture:

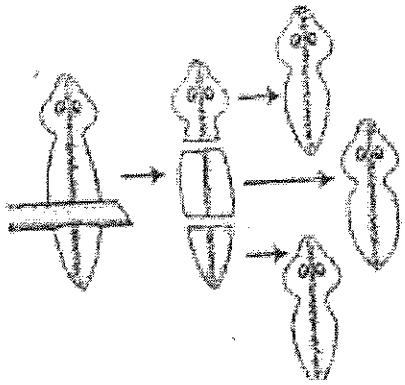
Fission _____

Budding _____

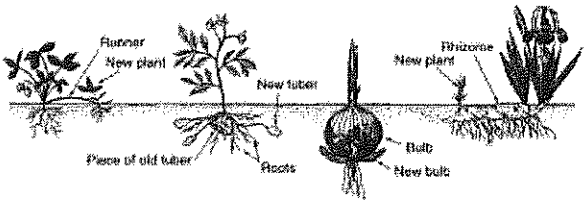
Regeneration _____

Vegetable propagation _____

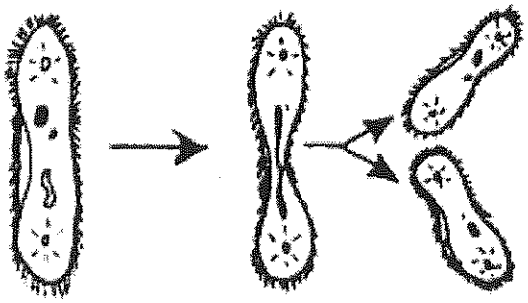
a.



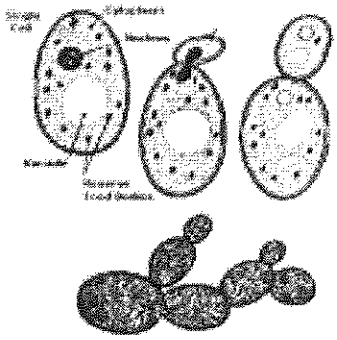
b.



c.



d.



37. Explain how plant cloning is useful for farmers and scientists.