

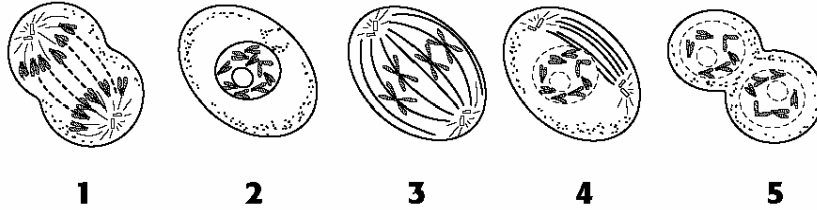
Mitosis and Meiosis Take Home Test (35 Points)

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. The first phase of mitosis is called
- a. prophase.
 - b. anaphase.
 - c. metaphase.
 - d. interphase.
- _____ 2. What is the role of the spindle during mitosis?
- a. It helps separate the chromosomes.
 - b. It breaks down the nuclear membrane.
 - c. It duplicates the DNA.
 - d. It divides the cell in half.
- _____ 3. One difference between cell division in plant cells and in animal cells is that plant cells have
- a. centrioles.
 - b. centromeres.
 - c. a cell plate.
 - d. chromatin.
- _____ 4. During normal mitotic cell division, a parent cell having four chromosomes will produce two daughter cells, each containing
- a. two chromosomes.
 - b. four chromosomes.
 - c. eight chromosomes.
 - d. sixteen chromosomes.
- _____ 5. Cancer is a disorder in which some cells have lost the ability to control their
- a. size.
 - b. spindle fibers.
 - c. growth rate.
 - d. surface area.
- _____ 6. Chromatids are
- a. dense patches within the nucleus.
 - b. bacterial chromosomes.
 - c. duplicate halves of a chromosome.
 - d. prokaryotic nuclei.
- _____ 7. A protein disk that attaches two chromatids to each other in a chromosome is called a
- a. chloroplast.
 - b. centromere.
 - c. gamete.
 - d. centriole.

- _____ 8. diploid : body cell :: haploid :
- a. sex chromosome
 - b. chromosome
 - c. reproductive cell
 - d. zygote
- _____ 9. How many chromosomes are in the body cells of an organism that has a haploid number of 8?
- a. 4
 - b. 8
 - c. 12
 - d. 16
- _____ 10. Binary fission
- a. occurs when two cells collide with each other.
 - b. produces excess energy.
 - c. creates new species.
 - d. is the process by which bacteria reproduce.
- _____ 11. The stage of the cell cycle that occupies most of the cell's life is
- a. G_1 .
 - b. M.
 - c. G_2 .
 - d. interphase.
- _____ 12. Which of the following shows the correct sequence of the cell cycle?
- a. $C \rightarrow M \rightarrow G_1 \rightarrow S \rightarrow G_2$
 - b. $S \rightarrow G_1 \rightarrow G_2 \rightarrow M \rightarrow C$
 - c. $G_1 \rightarrow S \rightarrow G_2 \rightarrow M \rightarrow C$
 - d. None of the above
- _____ 13. growth : G_1 ::
- a. mitosis : meiosis
 - b. mitochondria replication : S
 - c. cytokinesis : M
 - d. DNA copying : S
- _____ 14. metaphase : prophase ::
- a. anaphase : cytokinesis
 - b. G_2 : S
 - c. telokinesis : anaphase
 - d. S : M
- _____ 15. The phase of mitosis that is characterized by the arrangement of all chromosomes along the equator of the cell is called
- a. telophase.
 - b. metaphase.
 - c. anaphase.
 - d. prophase.
- _____ 16. A spindle fiber is a specialized form of
- a. microtubule.
 - b. flagellum.
 - c. cilium.
 - d. chromosome.



- _____ 17. Refer to the illustration above. The cell in diagram 1 is in
- metaphase.
 - telophase.
 - anaphase.
 - prophase.
- _____ 18. Refer to the illustration above. The cell shown in diagram 5 is in
- metaphase.
 - telophase.
 - anaphase.
 - prophase.
- _____ 19. As a result of mitosis, each of the two new cells produced from the original cell during cytokinesis
- receives a few chromosomes from the original cell.
 - receives an exact copy of all the chromosomes present in the original cell.
 - donates a chromosome to the original cell.
 - receives exactly half the chromosomes from the original cell.
- _____ 20. In plant cells, cytokinesis occurs when
- the chromosomes make exact copies of themselves.
 - spindle fibers are formed.
 - a new cell wall forms.
 - osmotic pressure is too low.
- _____ 21. Mitosis is a process by which
- DNA is replicated.
 - cytokinesis occurs.
 - cells grow in size.
 - a cell's nucleus divides.
- _____ 22. When crossing-over takes place, chromosomes
- mutate in the first division.
 - produce new genes.
 - decrease in number.
 - exchange corresponding segments of DNA.
- _____ 23. The exchange of segments of DNA between the members of a pair of chromosomes
- ensures that variation within a species never occurs.
 - acts as a source of variations within a species.
 - always produces genetic disorders.
 - is called *crossing*.

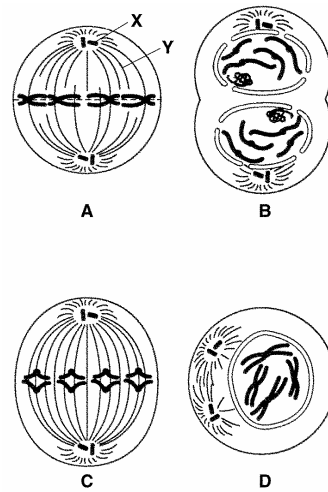


Figure 1

24. What does Figure 1 represent? How do you know if this is an animal cell or a plant cell?
25. List the correct order for the diagrams in Figure 1.
26. After the steps shown in Figure 1 are arranged in the correct order, what would a diagram of the next step show?
27. List and describe what happens during the three parts of the cell cycle.
28. Why is the process of meiosis important to the process of sexual reproduction?
29. Compare the cells produced by mitosis with the cells produced by meiosis.