Mitosis and Meiosis Quiz
Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

1. As a cell becomes larger, its
a. volume increases faster than its surface area.
b. surface area increases faster than its volume.
c. volume increases, but its surface area stays the same.
d. Husband loses interest

2. As a cell grows, it
a. places more demands on its DNA.
b. uses up food and oxygen more quickly.
c. has more trouble moving enough materials across its cell membrane.
d. all of the above

3. If the surface area of a cell increases 100 times, its volume increases about
a. 5 times. 
b. Dude cells can’t do math
c. 100 times. 
d. 1000 times.

4. The rate at which wastes are produced by a cell depends on the cell’s
a. ratio of surface area to volume. 
b. environment. 
c. volume. 
d. surface area.

5. All of the following are problems that growth causes for cells EXCEPT
a. DNA overload. 
b. excess oxygen. 
c. obtaining enough food. 
d. expelling wastes.

6. Compared to small cells, large cells have more trouble
a. dividing. 
b. producing daughter cells. 
c. moving needed materials in and waste products out. 
d. Making friends

7. The process by which a cell divides into two daughter cells is called
a. cell division. 
b. metaphase. 
c. interphase. 
d. mitosis.

8. Which of the following is NOT a way that cell division solves the problems of cell growth?
 a. Cell division provides each daughter cell with its own copy of DNA.
b. Cell division increases the mass of the original cell.
c. Cell division increases the surface area of the original cell.
d. Cell division reduces the original cell’s volume.

9. If a normal cell divides, you can assume that
a. its surface area has become larger than its volume.
b. its volume has become larger than its surface area.
c. it has grown to its full size.
d. it has grown too large to meet its needs.
10. If a cell’s DNA were not copied before cell division, the cell could
   a. have a DNA overload.          c. fail to exchange materials.
   b. become cancerous.             d. divide.

11. Which of the following happens when a cell divides?
   a. The cell’s volume increases.
   b. It becomes more difficult for the cell to get enough oxygen and nutrients.
   c. The cell has DNA overload.
   d. Each daughter cell receives its own copy of the parent cell’s DNA.

12. When during the cell cycle are chromosomes visible?
   a. only during interphase
   b. only when they are being replicated
   c. only during cell division
   d. only during the G1 phase

13. Which of the following is a phase in the cell cycle?
   a. G1 phase
   b. G2 phase
   c. M phase
   d. all of the above

14. Which pair is correct?
   a. G1 phase, DNA replication
   b. G2 phase, preparation for mitosis
   c. S phase, cell division
   d. M phase, cell growth

15. When during the cell cycle is a cell’s DNA replicated?
   a. G1 phase
   b. G2 phase
   c. S phase
   d. M phase

16. Which event occurs during interphase?
   a. The cell grows and performs its regular functions
   c. Spindle fibers begin to form.
   d. Centromeres divide.

17. Which of the following is a correct statement about the events of the cell cycle?
   a. Little happens during the G1 and G2 phases.
   b. DNA replicates during cytokinesis.
   c. The M phase is usually the longest phase.
   d. Interphase consists of the G1, S, and G2 phases.

18. Which of the following is NOT a correct statement about the events of the cell cycle?
   a. Interphase is usually the longest phase.
   b. DNA replicates during the S phase.
   c. Cell division ends with cytokinesis.
   d. The cell grows during the G2 phase.
19. Cell division is represented in Figure 10–1 by the letter
   a. A. 
   b. B. 
   c. C. 
   d. D.

20. The cell cycle is the
   a. series of events that cells go through as they grow and divide. 
   b. period of time between the birth and the death of a cell. 
   c. time from prophase until cytokinesis. 
   d. time it takes for one cell to undergo mitosis.

21. The structure labeled A in Figure 10–2 is called the
   a. centromere. 
   b. centriole. 
   c. sister chromatid. 
   d. spindle.

22. The structures labeled B in Figure 10–2 are called
   a. centromeres. 
   b. centrioles. 
   c. sister chromatids. 
   d. spindles.
23. During which phase(s) of mitosis are structures like the one shown in Figure 10–2 visible?
   a. anaphase and prophase
   b. prophase and metaphase
   c. metaphase only
   d. anaphase and interphase

24. Which of the following is a phase of mitosis?
   a. cytokinesis
   b. interphase
   c. prophase
   d. S phase

25. The first phase of mitosis is called
   a. prophase.
   b. anaphase.
   c. metaphase.
   d. interphase.

26. During which phase of mitosis do the chromosomes line up along the middle of the dividing cell?
   a. prophase
   b. telophase
   c. metaphase
   d. anaphase

27. Which of the following represents the phases of mitosis in their proper sequence?
   a. prophase, metaphase, anaphase, telophase
   b. interphase, prophase, metaphase, anaphase, telophase
   c. interphase, prophase, metaphase, telophase
   d. prophase, metaphase, anaphase, telophase, cytokinesis

28. 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.

29. The two main stages of cell division are called
   a. mitosis and interphase.
   b. synthesis and cytokinesis.
   c. the M phase and the S phase.
   d. cytokinesis and mitosis.

30. 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.

31. 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.

32. Cells grown in a petri dish tend to divide until they form a thin layer covering the bottom of the dish. If cells are removed from the middle of the dish, the cells bordering the open space will begin dividing until they have filled the empty space. What does this experiment show?
   a. When cells come into contact with other cells, they stop growing.
   b. The controls on cell growth and division can be turned on and off.
   c. Cell division can be regulated by factors outside the cell.
   d. all of the above
33. Which of the following explains why normal cells grown in a petri dish tend to stop growing once they have covered the bottom of the dish?
   a. The cells lack cyclin.
   b. The petri dish inhibits cell growth.
   c. Contact with other cells stops cell growth.
   d. Most cells grown in petri dishes have a defective p53.

34. When cytoplasm from a cell that is undergoing mitosis is injected into a cell that is in interphase, the second cell
   a. stays in interphase.
   b. enters mitosis.
   c. stops making cyclin.
   d. loses its p53.

35. In eukaryotic cells, the timing of the cell cycle is regulated by
   a. the centrioles.
   b. cyclins.
   c. the spindle.
   d. all of the above

36. Cyclins are a family of closely related proteins that
   a. regulate the cell cycle.
   b. produce p53.
   c. cause cancer.
   d. work to heal wounds.

37. Which of the following regulate(s) the cell cycle?
   a. growth factors
   b. cyclins
   c. p53
   d. all of the above

38. Which of the following is an internal regulator of the cell cycle?
   a. cyclins
   b. growth factors
   c. the mitotic spindle
   d. cancer cells

39. Cancer is a disorder in which some cells have lost the ability to control their
   a. size.
   b. spindle fibers.
   c. mitosis.
   d. surface area.

40. Cancer cells form masses of cells called
   a. tumors.
   b. cyclins.
   c. growth factors.
   d. p53.

41. A cell with a defective p53 gene is likely to
   a. divide regularly.
   b. stop dividing.
   c. accumulate chromosomal damage.
   d. combat tumors.

42. Cancer affects
   a. humans only.
   b. most unicellular organisms.
   c. multicellular organisms.
   d. unicellular organisms.

43. What is a tumor?
   a. an accumulation of cyclins
   b. a mass of cancer cells
   c. the rapidly dividing cells found at the site of a wound
   d. a defective p53 gene
44. If an organism’s diploid number is 12, its haploid number is
   b. 6.   d. 3.

45. Gametes have
   a. homologous chromosomes.
   b. twice the number of chromosomes found in body cells.
   c. two sets of chromosomes.
   d. one allele for each gene.

46. Gametes are produced by the process of
   a. mitosis.
   b. meiosis.
   c. crossing-over.
   d. replication.

47. What is shown in Figure 11–3?
   a. independent assortment
   b. anaphase I of meiosis
   c. crossing-over
   d. replication

48. Chromosomes form tetrads during
   a. prophase I of meiosis.
   b. metaphase I of meiosis.
   c. interphase.
   d. anaphase II of meiosis.

49. Unlike mitosis, meiosis results in the formation of
   a. two genetically identical cells.
   b. four genetically different cells.
   c. four genetically identical cells.
   d. two genetically different cells.

50. Crossing-over rarely occurs in mitosis, unlike meiosis. Which of the following is the likely reason?
   a. Chromatids are not involved in mitosis.
   b. Tetrads rarely form during mitosis.
   c. A cell undergoing mitosis does not have homologous chromosomes.
   d. There is no prophase during mitosis.
Mitosis and Meiosis Quiz

Answer Section

MULTIPLE CHOICE

1. ANS: A DIF: A REF: p. 242 OBJ: 10.1.1
2. ANS: D DIF: B REF: p. 241 OBJ: 10.1.1
STO: Bio TEKS 4B.4
OBJ: 10.1.1
4. ANS: C DIF: E REF: p. 241 OBJ: 10.1.1
5. ANS: B DIF: A REF: p. 241 OBJ: 10.1.1
STO: Bio TEKS 4B.5
6. ANS: C DIF: B REF: p. 243 OBJ: 10.1.1
STO: Bio TEKS 4B.4
7. ANS: A DIF: B REF: p. 243 OBJ: 10.1.2
8. ANS: B DIF: A REF: p. 243 OBJ: 10.1.2
OBJ: 10.1.2
11. ANS: D DIF: B REF: p. 243 OBJ: 10.1.2
12. ANS: C DIF: A REF: p. 244 OBJ: 10.2.1
13. ANS: D DIF: B REF: p. 245 OBJ: 10.2.1
14. ANS: B DIF: A REF: p. 245 OBJ: 10.2.1
15. ANS: C DIF: A REF: p. 245 OBJ: 10.2.1
16. ANS: A DIF: A REF: p. 245 OBJ: 10.2.1
STO: Bio TEKS 6E.1
17. ANS: D DIF: E REF: p. 245 OBJ: 10.2.1
18. ANS: A DIF: B REF: p. 245 OBJ: 10.2.1
19. ANS: C DIF: E REF: p. 245 OBJ: 10.2.1
20. ANS: B DIF: A REF: p. 245 OBJ: 10.2.1
21. ANS: A DIF: B REF: p. 244 OBJ: 10.2.2
22. ANS: C DIF: B REF: p. 244 OBJ: 10.2.2
OBJ: 10.2.2
STO: Bio TEKS 6E.1
24. ANS: C DIF: B REF: p. 246 OBJ: 10.2.2
STO: Bio TEKS 6E.1
25. ANS: A DIF: B REF: p. 246 OBJ: 10.2.2
STO: Bio TEKS 6E.1
26. ANS: C DIF: A REF: p. 248 OBJ: 10.2.2
STO: Bio TEKS 6E.1
27. ANS: A DIF: A REF: p. 246 OBJ: 10.2.2
STO: Bio TEKS 6E.1
28. ANS: A DIF: A REF: p. 247 OBJ: 10.2.2
STO: Bio TEKS 4B.6
29. ANS: D DIF: A REF: p. 244 OBJ: 10.2.2
30. ANS: C DIF: E REF: p. 248 OBJ: 10.2.2
31. ANS: B DIF: E REF: p. 248 OBJ: 10.2.2
STO: Bio TEKS 6E.1
32. ANS: D DIF: E REF: p. 250 OBJ: 10.3.1
STO: IPC and Bio TEKS 2C.1
33. ANS: C DIF: A REF: p. 250 OBJ: 10.3.1
34. ANS: B DIF: E REF: p. 251 OBJ: 10.3.2
35. ANS: B DIF: B REF: p. 251 OBJ: 10.3.2
STO: Bio TEKS 9A.2
36. ANS: A DIF: A REF: p. 251 OBJ: 10.3.2
STO: Bio TEKS 9A.2
37. ANS: D DIF: E REF: p. 251, p. 252
OBJ: 10.3.2 STO: Bio TEKS 9A.2
38. ANS: A DIF: E REF: p. 251 OBJ: 10.3.2
STO: Bio TEKS 9A.2
39. ANS: C DIF: A REF: p. 252 OBJ: 10.3.3
40. ANS: A DIF: B REF: p. 252 OBJ: 10.3.3
41. ANS: C DIF: E REF: p. 252 OBJ: 10.3.3
42. ANS: C DIF: E REF: p. 252 OBJ: 10.3.3
43. ANS: B DIF: B REF: p. 252 OBJ: 10.3.3
44. ANS: B DIF: A REF: p. 275 OBJ: 11.4.1
45. ANS: D DIF: E REF: p. 275 OBJ: 11.4.1
46. ANS: B DIF: B REF: p. 276 OBJ: 11.4.2
STO: Bio TEKS 6E.1
47. ANS: C DIF: A REF: p. 276, p. 277
OBJ: 11.4.2 STO: Bio TEKS 6E.1
48. ANS: A DIF: A REF: p. 276 OBJ: 11.4.2
STO: Bio TEKS 6E.1
49. ANS: B DIF: A REF: p. 278 OBJ: 11.4.3
STO: Bio TEKS 6E.1
50. ANS: B DIF: E REF: p. 276 OBJ: 11.4.3
STO: Bio TEKS 6E.1