

Mitosis and the Cell Cycle Test

Directions – Please complete the following questions to the best of your ability. Follow the instructions for each specific portion of the test. Failure to do so will result in point deductions.

Answer the following multiple-choice questions. (1 pt each)

- How many chromosomes can be found inside a human cell?
 - 23
 - 64
 - 32
 - 46
- Which of the following does not occur during Interphase?
 - The cell grows
 - The cell creates chromosomes
 - The cell does its job
 - The cell duplicates DNA
- In which phase of the cell cycle does the cell make DNA?
 - Mitotic
 - S
 - G2
 - Cytokinesis
- What phase of the cell cycle immediately follows cytokinesis?
 - Telophase
 - Prophase
 - G1
 - Mitosis
- Which of the following stages does not occur during Interphase?
 - S
 - G2
 - P
 - G1
- Which of the following stages is the 3rd stage of Interphase?
 - Metaphase
 - G2
 - S
 - Anaphase
- Which of the following most accurately describes the 2nd stage of Interphase?
 - DNA forms into chromatin.
 - DNA doubles.
 - Chromosomes split into chromatids.
 - DNA lines up in the middle of the cell.
- Which of the following stages is the opposite of Telophase in terms of what is happening inside the cell?
 - Metaphase
 - Prophase
 - Anaphase
 - Cytokinesis
- Which of the following does not describe the cell cycle?
 - The main phase of the cell cycle is called Interphase.
 - It is a specific sequence of events.
 - It repeats.
 - It covers the time the cell splits off from another one to the time it dies.
- What percent of a cell's life is spent in the mitotic phase?
 - 70%
 - 90%
 - 10%
 - 40%
- At the most basic level, what is a chromosome made of?
 - Chromatin
 - Chromatids
 - DNA
 - Centrioles
- Which of the following does NOT apply to sister chromatids?
 - Sister chromatids are clones of each other
 - Sister chromatids are not genetically identical
 - Sister chromatids are connected at the centromere
 - Sister chromatids are separated during mitosis
- How many daughter cells are made by the end of the mitotic phase?
 - 1
 - 2
 - 3
 - 4

14. Which of the following best describes the difference between mitosis and cytokinesis?
- Mitosis is the division of the cytoplasm. Cytokinesis is the division of the cell.
 - Mitosis is the division of the cell. Cytokinesis is the division of the cytoplasm.
 - Mitosis is the division of the nucleus. Cytokinesis is the division of the cytoplasm.
 - Mitosis is the division of the nucleus. Cytokinesis is the division of the cell.
15. What is the role of the microtubules and spindle during mitosis?
- It helps separate the chromosomes
 - It breaks the nuclear membrane
 - It duplicates the DNA
 - It divides the cell in half
16. During normal mitotic division, a parent cell with 8 chromosomes will produce daughter cells that each contain
- 2 chromosomes
 - 4 chromosomes
 - 8 chromosomes
 - 16 chromosomes
17. The process of cancerous cells spreading throughout the body via the bloodstream is called
- Tumor
 - Metastasis
 - Chemotherapy
 - Diffusion
18. Which of the following represents the proper order of the Mitotic Phase?
- P, M, T, A, C
 - P, A, M, T, C
 - P, M, A, T, C
 - C, P, M, A, T

Answer the following True/False questions. If the question is false, change the underlined word in the statement so that it makes the statement true. (1 pt each)

19. In prophase, the chromosomes condense to form chromatin.
20. The offspring of sexual reproduction are clones of the parent cell.
21. All organisms have the same number of chromosomes.
22. In plant cells, cytokinesis pinches the cell from the outside to the inside.

Identify which part of the mitotic phase each of the following statements applies to. Draw a lizard next to your name for an extra point. Write a C for cytokinesis, an M for metaphase, a T for telophase, a P for prophase, and an A for anaphase. (1 pt each)

23. The centrioles and spindles are on opposite ends of the cell and are fully grown for the first time.
24. The nucleus reappears.
25. The cell starts to elongate.
26. Chromosomes split into chromatids.
27. The cytoplasm divides in half.
28. The centrioles start to separate from each other.
29. The chromosomes line up across the middle of the cell.
30. The microtubules first attach to the chromosomes.
31. The chromosomes decondense (they unwind).
32. The microtubules simultaneously lengthen and shorten.

Use the labels in the picture to the right to describe the following: (1 pt each)

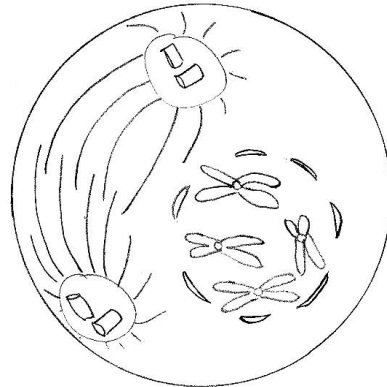
- 33. A represents _____
- 34. B represents _____
- 35. C represents _____

In the following questions, fill in the blank with the appropriate word. (1 pt per blank)

- 36. _____, _____, and _____ are the functions of cell division.
- 37. _____ and _____ are the main phases of the cell cycle.
- 38. _____ is an example of a disease that can occur when the cell cycle is disrupted.

Label the following picture with the appropriate vocabulary terms. (1 pt each)

- 39. A represents _____
- 40. B represents _____
- 41. C represents _____
- 42. D represents _____



Answer the following short answer questions using complete sentences.

- 43. Explain why cells will condense their DNA into chromosomes before division. (1 pt)

- 44. How do you know that not all of your cells are dividing at the same time? Give 2 reasons. (2 pts)

- 45. According to the article we read in class, what is the relationship between exercising and telomere length? Why does this only become apparent in older people? (2 pts)