

**Honors Biology Test – Chapter 8**  
**Mitosis and Meiosis**

1. In mitosis, if a parent cell has 16 chromosomes, each daughter cell will have how many chromosomes?  
a. 64      b. 32      c. 16      d. 8      e. 4
2. Chromatids that are attached at the centromere are called what kind of chromatids?  
a. mother  
b. daughter  
c. sister  
d. programmed  
e. either a or b, but not c or d
3. Chromosomes are duplicated during which period?  
a. M      b. D      c. G1      d. G2      e. S
4. The chromosomes are moving to opposite poles during  
a. anaphase.                      d. metaphase.  
b. interphase.                      e. prophase.  
c. telophase.
5. The nuclear membrane reforms during  
a. anaphase.                      d. metaphase.  
b. interphase.                      e. prophase.  
c. telophase.
6. The chromosomes are aligned at the spindle equator during  
a. anaphase.                      d. metaphase.  
b. interphase.                      e. prophase.  
c. telophase.
7. One difference between a cancer cell and a normal cell is that  
a. the cancer cell is unable to synthesize DNA  
b. the cell cycle of the cancer cell is arrested at the S phase.  
c. cancer cells continue to divide even when they are tightly packed together.  
d. cancer cells cannot function properly because they suffer from density-dependent inhibition.  
e. cancer cells are always in the M phase of the cell cycle.
8. Which of the following are primarily responsible for cytokinesis in plant cells?  
a. kinetochores                      d. centrioles and basal bodies  
b. vesicles with cellulose                      e. cyclin-dependent proteins  
c. actin and myosin

9. Which of the following is the proper sequence for mitosis?  
I. metaphase II. Telophase III. prophase IV. anaphase
- I, III, IV, II
  - I, II, III, IV
  - III, I, IV, II
  - IV, I, III, II
  - III, IV, I, II
10. Four of the five answers listed below are related by a common phase of mitosis. Select the exception.
- microtubules start to assemble outside the nucleus
  - division of centromere
  - disappearance of nucleolus
  - disappearance of nuclear membrane
  - condensation of visible chromosomes
11. Four of the five answers listed below are events occurring during mitosis. Select the exception.
- chromosome replication
  - division of centromere
  - lining chromosomes up at the cellular equator
  - spindle microtubules attach to centromeres
  - chromosomes migrate to opposite ends of the cell
12. During what phase(s) of the cell cycle is cyclin degraded
- G2 and M
  - G1 and G2
  - G1 and S
  - S and G2
  - G2 only
13. Sexual reproduction
- leads to uniform characteristics in a population.
  - results in new combinations of genetic traits.
  - produces genetic clones.
  - requires less tissue differentiation than asexual reproduction.
  - c and d
14. If a parent cell has 16 chromosomes and undergoes meiosis, the resulting cells will have how many chromosomes?
- 64
  - 32
  - 16
  - 8
  - 4
15. Chromatids are
- attached at the centriole.
  - a pair of chromosomes, one from the mother and one from the father.
  - attached at their centromeres.
  - identical until crossing over occurs.
  - both c and d, but not a or b

16. Chromosomes of a pair of homologous chromosomes may differ from other chromosomes in terms of
- a. size.
  - b. alleles they carry.
  - c. position of the centromere
  - d. shape.
  - e. all of the above.
17. Pairing of homologues and crossing over occurs during
- a. anaphase I.
  - b. prophase I.
  - c. telophase II.
  - d. metaphase II.
  - e. prophase II.
18. Meiosis typically results in the production of
- a. 2 diploid cells.
  - b. 4 haploid cells.
  - c. 1 triploid cell.
  - d. 4 diploid cells.
  - e. 2 haploid cells.
19. Under favorable conditions, during which phase of meiosis will the chromosomes appear as packets of four chromatids (tetrads)?
- a. anaphase I
  - b. anaphase II
  - c. metaphase II
  - d. telophase II
  - e. prophase I
20. During meiosis II
- a. cytokinesis results in the formation of a total of two cells.
  - b. sister chromatids are separated from each other.
  - c. homologous chromosomes pair up.
  - d. homologous chromosomes separate.
  - e. sister chromatids exchange parts.
21. Which is NOT true of human chromosomes?
- a. The haploid number is 23.
  - b. The diploid number is 46.
  - c. There are 23 pairs of chromosomes.
  - d. Human gametes end up with two of each type of 23 chromosomes.
  - e. Human gametes end up one of each type of 23 chromosomes.
22. Gamete formation is
- a. the result of the process of mitosis.
  - b. the pairing of homologous chromosomes.
  - c. the formation of sex cells.
  - d. the fusion of gametes.
  - e. a process that occurs only in asexually reproducing forms.

23. Four of the five answers listed below are characteristic of meiosis. Select the exception.
- a. involves two divisions
  - b. reduces the number of chromosomes
  - c. results in producing genetically identical cells
  - d. produces haploid cells
  - c. occurs in the gonads
24. The chromosome number is reduced from diploid to haploid during
- a. mitosis
  - b. meiosis I
  - c. meiosis II
  - d. interphase
  - e. S phase of mitosis
25. The two cells at the end of meiosis I
- a. rarely continue into meiosis II
  - b. function as gametes
  - c. can continue as body cells
  - d. are haploid
  - e. are diploid
26. Each sperm cell of a horse contains 32 chromosomes. How many chromosomes are there in each of the horse's body cells?
- a. 16
  - b. 32
  - c. 16 pairs
  - d. 16 or 64, depending on the cell type
  - e. 64
27. Which is NOT a source of variety in sexually reproducing species?
- a. crossing over
  - b. DNA replication
  - c. distribution of chromosomes in gametes
  - d. fertilization
  - e. independent assortment of chromosomes during meiosis I
28. An organism has a diploid chromosome number of 10. A cell, from this organism, in metaphase I of meiosis has
- a. 10 pairs of chromosomes
  - b. 10 chromatids
  - c. 10 chromosomes
  - d. 20 chromosomes
  - e. 5 chromosomes
29. All of the following types of animal cells are diploid EXCEPT
- a. gametes
  - b. skin
  - c. zygotes
  - d. nerves
  - e. hair
30. For a species with a diploid number of 10 chromosomes, how many different combinations of maternal and paternal chromosomes are possible for a gamete (ignoring crossing over)?
- a. 5
  - b. 25
  - c. 32
  - d. 100
  - e. 1024

31. The cell produced by the fusion of an egg and a sperm has
  - a. 1 copy of each type of chromosome
  - b. A random mixture of chromosome types, twice as many as the egg
  - c. A random mixture of chromosome types, the same number as the egg
  - d. Two copies of each type of chromosome
32. Compare benign and malignant tumors. (How are they the same and how are they different from each other?) List two potential causes of cancer. (4 points)
33. Compare the features (similarities and differences) of mitotic metaphase, meiotic metaphase I, and meiotic metaphase II. (4 points)
34. Identify the three ways in which genetic variation is introduced in organisms through sexual reproduction. (3 points)