

1) The centromere is a region in which

- A) chromatids remain attached to one another until anaphase.
- B) metaphase chromosomes become aligned at the metaphase plate.
- C) chromosomes are grouped during telophase.
- D) the nucleus is located prior to mitosis.
- E) new spindle microtubules form at either end.

2) What is a chromatid?

- A) a chromosome in G1 of the cell cycle
- B) a replicate chromosome
- C) a chromosome found outside the nucleus
- D) a special region that holds two centromeres together
- E) another name for the chromosomes found in genetics

3) Starting with a fertilized egg (zygote), a series of five cell divisions would produce an early embryo with how many cells?

- A) 4
- B) 8
- C) 16
- D) 32
- E) 64

4) If there are 20 chromatids in a cell, how many centromeres are there?

- A) 10
- B) 20
- C) 30
- D) 40
- E) 80

5) For a newly evolving protist, what would be the advantage of using eukaryote-like cell division rather than binary fission?

- A) Binary fission would not allow for the formation of new organisms.
- B) Cell division would allow for the orderly and efficient segregation of multiple linear chromosomes.
- C) Cell division would be faster than binary fission.
- D) Cell division allows for lower rates of error per chromosome replication.
- E) Binary fission would not allow the organism to have complex cells.

- 6) How do the daughter cells at the end of mitosis and cytokinesis compare with their parent cell when it was in G₁ of the cell cycle?
- A) The daughter cells have half the amount of cytoplasm and half the amount of DNA.
 - B) The daughter cells have half the number of chromosomes and half the amount of DNA.
 - C) The daughter cells have the same number of chromosomes and half the amount of DNA.
 - D) The daughter cells have the same number of chromosomes and the same amount of DNA.
 - E) The daughter cells have the same number of chromosomes and twice the amount of DNA.

Use the following information to answer the questions below.

The lettered circle in Figure 12.1 shows a diploid nucleus with four chromosomes. There are two pairs of homologous chromosomes, one long and the other short. One haploid set is symbolized as black and the other haploid set is gray. The chromosomes in the unlettered circle have not yet replicated. Choose the correct chromosomal conditions for the following stages.

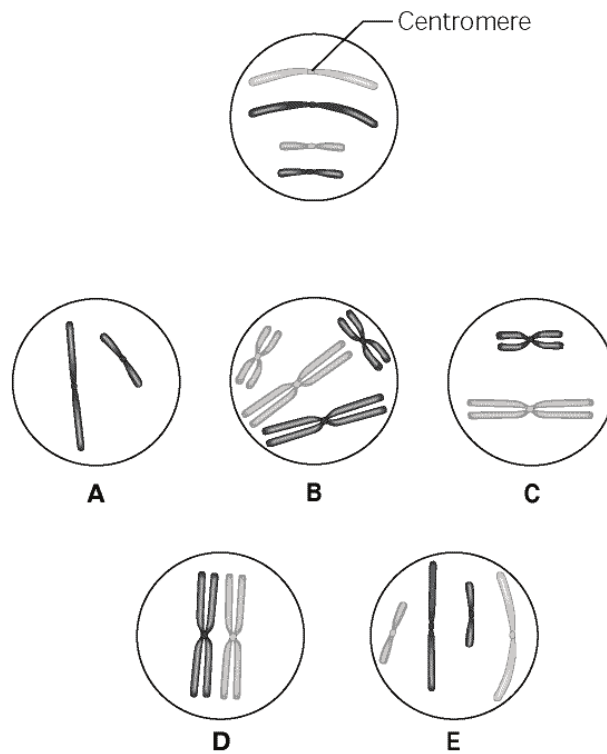


Figure 12.1

7) at prometaphase of mitosis

8) one daughter nucleus at telophase of mitosis

9) Which term describes two centrosomes arranged at opposite poles of the cell?

- A) telophase
- B) anaphase
- C) prometaphase
- D) metaphase
- E) prophase

10) Which term describes centrioles beginning to move apart in animal cells?

- A) telophase
- B) anaphase
- C) prometaphase
- D) metaphase
- E) prophase