Meiosis

1. Meiotic cell division in animals is directly responsible for the
   A. formation of gametes
   B. fertilization of an egg
   C. growth of a cell
   D. production of muscle cells

2. In a species of corn, the diploid number of chromosomes is 20. What is the number of chromosomes found in each of the normal egg cells produced by this species?
   A. 5
   B. 10
   C. 20
   D. 40

3. Which is the result of normal meiosis and fertilization in humans?
   A. multiple alleles
   B. new gene combinations
   C. a chromosome number of 92
   D. a polyploid condition

4. If there are 40 chromosomes in each body cell of an organism, what is the total number of chromosomes normally present in a gamete produced by that organism?
   A. 10
   B. 20
   C. 40
   D. 80

5. The egg cells of a species are most similar to the sperm cells of that species in their
   A. degree of motility
   B. amount of stored food
   C. chromosome number
   D. shape and size
Meiosis

6. During synapsis, chromatids in homologous pairs of chromosomes often twist around each other, break, exchange segments, and rejoin. This process usually contributes to

A. the formation of polyploid offspring  
B. nondisjunction of homologous chromosomes  
C. the production of identical twins  
D. increased variability in offspring

7. The two parts of a double-stranded chromosome are held together by a

A. nucleolus  
B. spindle fiber  
C. centromere  
D. centriole

8. What is the normal number of chromosomes in a human zygote?

A. 23  
B. 24  
C. 46  
D. 48

9. Which sequence represents the process of meiosis?

A. \( n \rightarrow n \)  
B. \( 2n \rightarrow n \)  
C. \( n \rightarrow 2n \)  
D. \( 2n \rightarrow 2n \)

10. The gamete produced in the ovary of an animal is the

A. egg cell  
B. sperm cell  
C. spore  
D. zygote

11. One primary sex cell undergoing the process of oogenesis typically results in the production of

A. three eggs and polar bodies  
B. one egg and polar bodies  
C. four sperm cells  
D. one diploid ovum
12. Each body cell of a chimpanzee contains 48 chromosomes. How many chromosomes would normally be present in a gamete produced by this chimpanzee?

A. 24  B. 36  C. 48  D. 96

13. A diploid cell of a normal human male contains

A. 22 autosomes and two Y-chromosomes
B. 22 pairs of autosomes and two Y-chromosomes
C. 22 pairs of autosomes, one X-chromosome, and one Y-chromosome
D. 22 autosomes and two X-chromosomes

14. The normal diploid chromosome number of the house mouse, *Mus musculus*, is 40. How many pairs of homologous chromosomes would a normal zygote of *Mus musculus* contain?

A. 10  B. 20  C. 40  D. 80

15. In the diagram shown, which type of change most likely caused the new combination of traits in gametes B and C?

A. an alteration in the chemical composition of a gene
B. a change in the chromosome number due to nondisjunction
C. a change in the chromosome composition due to crossing-over
D. an alteration in the number of sugars in DNA
16. The process of meiotic cell division in a human male usually forms

A. one diploid cell, only  
B. four diploid cells
C. one monoploid cell, only  
D. four monoploid cells

17. The distribution of chromosomes in one type of cell division is shown in the diagram below.

Which process is represented in the diagram?

A. asexual reproduction  
B. meiosis  
C. mitosis  
D. vegetative propagation
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