Chapter 13 Exercises

Review Questions

1. X-linked recessive traits in humans (or in *Drosophila*) are observed _____.
- **a.** in more males than females
- **b.** in more females than males
- **c.** in males and females equally
- **d.** in different distributions depending on the trait

2. The first suggestion that chromosomes may physically exchange segments came from the microscopic identification of _____.
- **a.** synapsis
- **b.** sister chromatids
- **c.** chiasmata
- **d.** alleles

3. Which recombination frequency corresponds to independent assortment and the absence of linkage?
- **a.** 0
- **b.** 0.25
- **c.** 0.50
- **d.** 0.75

4. Which recombination frequency corresponds to perfect linkage and violates the law of independent assortment?
- **a.** 0
- **b.** 0.25
- **c.** 0.50
- **d.** 0.75

5. Which of the following codes describes position 12 on the long arm of chromosome 13?
- **a.** 13p12
- **b.** 13q12
- **c.** 12p13
- **d.** 12q13

6. In agriculture, polyploid crops (like coffee, strawberries, or bananas) tend to produce _____.
- **a.** more uniformity
- **b.** more variety
- **c.** larger yields
- **d.** smaller yields

7. Assume a pericentric inversion occurred in one of two homologs prior to meiosis. The other homolog remains normal. During meiosis, what structure, if any, would these homologs assume in order to pair accurately along their lengths?
- **a.** V formation
- **b.** cruciform
- **c.** loop
- **d.** Pairing would not be possible.

8. The genotype XXY corresponds to _____.
- **a.** Klinefelter syndrome
- **b.** Turner syndrome
- **c.** Triplo-X
- **d.** Jacobsen syndrome

9. Abnormalities in the number of X chromosomes tends to have milder phenotypic effects than the same abnormalities in autosomes because of _____.
- **a.** deletions
- **b.** nonhomologous recombination
- **c.** synapsis
- **d.** X inactivation

10. By definition, a pericentric inversion includes the _____.
- **a.** centromere
- **b.** chiasma
- **c.** telomere
- **d.** synapse

Critical Thinking Questions

11. Explain how the Chromosomal Theory of Inheritance helped to advance our understanding of genetics.

12. Using diagrams, illustrate how nondisjunction can result in an aneuploid zygote.