Module 08: Meiosis — Study Questions

1. What is the main purpose of meiosis?
2. What type of cells are produced by meiosis, and what are they called?
3. Why is it necessary for gametes to be haploid rather than diploid?
4. What would happen to the chromosome number in offspring if gametes were diploid?
5. How does meiosis contribute to genetic diversity in sexually reproducing organisms?
6. What are the main differences between mitosis and meiosis?
7. How many cell divisions occur in meiosis, and how does this compare to mitosis?
8. Why does meiosis result in four cells while mitosis results in two?
9. What are the stages of meiosis I, and what happens during each?
10. What is the key event that distinguishes meiosis I from meiosis II?
11. During which phase of meiosis do homologous chromosomes pair up?
12. What is a tetrad, and when is it formed?
13. In meiosis I, homologous chromosomes separate. What separates during meiosis II?
14. What is crossing over, and when does it occur?
15. How does crossing over increase genetic variation?
16. What is independent assortment?
17. How does random fertilization add to the genetic variation produced by meiosis?
18. What is nondisjunction, and when can it occur?
19. What is trisomy? Give an example of a condition caused by trisomy.

20. How might maternal age affect the likelihood of nondisjunction?