

Answersto Select Chapter 3 Problems.

3-12. a. $1/4$ b. $1/4$

3-15. These are typical characteristics of X-linked inheritance. Affected males transmit the mutant X chromosome only to their daughters. A carrier female will have both affected and unaffected sons as well as both carrier and noncarrier daughters. The carrier daughters (sisters of the affected sons) will transmit the mutant gene, but the unaffected sons (brothers of the affected sons) will not.

3-20. DNA from males exhibits one band and that from females two bands, which suggests X-linked inheritance. This can be verified further by examining the pattern of inheritance. Sons exhibit a band present in the mother, and daughters exhibit one band present in the mother and one in the father (which may be identical if the daughter is homozygous). The genotypes are: I-1, A_2A_2 ; I-2, A_1Y ; II-1, A_2Y ; II-2, A_1A_2 ; II-3, A_2Y ; II-4, A_2Y ; II-5, A_1A_2 ; II-6, A_1Y ; III-1, A_1Y ; III-2, A_1A_2 ; III-3, A_1A_2 ; III-4, A_2Y .