



- **A marriage between first cousins would be a marriage to which one of the following?**
 - A. A first-degree relative.
 - B. A second-degree relative.
 - C. **A third-degree relative.**
 - D. A fourth-degree relative.

- **Consanguinity increases the risk for which one of the following?**
 - A. **Autosomal recessive disorders.**
 - B. Autosomal dominant disorders.
 - C. Mitochondrial disorders.
 - D. X-linked dominant disorders.

- **The mating of first cousins does what to the incidence of birth defects compared to the general population?**
 - A. Nothing.
 - B. **Doubles the risk.**
 - C. Triples the risk.
 - D. Quadruples the risk.

- **In an autosomal recessive disease, the people represented by the “ $2pq$ ” figure in the equation “ $p^2 + 2pq + q^2$ ” are:**
 - A. **Carriers of the disease.**
 - B. Affected by the disease.
 - C. Those who have a new mutation.
 - D. Those without the mutant gene.

- **Duchenne muscular dystrophy is a lethal X-linked recessive disease, which affects 1 in 3,500 boys. What is the carrier frequency of this gene mutation in females?**
 - A. 1/3,500
 - B. **1/1,750**
 - C. 1/59
 - D. 3/50
 - E. 1/25

- **In South Africa, variegate porphyria is found in white South Africans at a higher frequency than would be expected if the population was in Hardy-Weinberg equilibrium. This population originated from a small group of Dutch settlers. The most likely explanation for the high frequency of variegate porphyria in this population is:**
 - A. Selection for heterozygotes.
 - B. **The founder effect.**
 - C. Immigration into the population.
 - D. Selection against heterozygotes.

- **It is believed that the cystic fibrosis (CF) gene conferred protection to carriers during the cholera epidemics of the Middle Ages. The CF gene frequency would be expected to do what in those populations?**
 - A. **Increase.**
 - B. Decrease.
 - C. Stay the same.
 - D. Become sex-linked recessive.