

Test-Taking Tip

When interpreting a pedigree, first read through all the generations given. Then, go back and assign (either mentally or on scratch paper) a possible genotype to each person represented in the pedigree. Use Punnett squares to test your assigned genotypes to ensure that they could produce each successive generation's phenotypes.

Directions: Choose the letter that best answers the question or completes the statement.

- Which of the following can be observed in a person's karyotype?
 - Colorblindness
 - Trisomy 21
 - Turner's syndrome

(A) I only (D) II and III only
(B) III only (E) I, II, and III
(C) I and II only
- Which of the following conditions is caused by a sex-linked gene?
 - Klinefelter's syndrome
 - Down syndrome
 - Muscular dystrophy

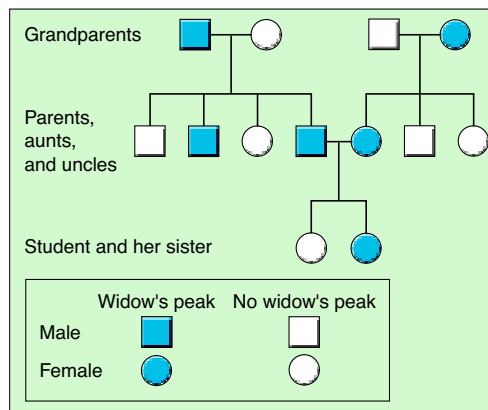
(A) I only (D) II and III only
(B) III only (E) I, II, and III
(C) I and II only
- A child has colorblindness. Which genotype-phenotype combination is NOT possible in the child's parents?

(A) The father does not carry the allele and does not have colorblindness.
(B) The mother carries one allele but does not have colorblindness.
(C) The father carries one allele but does not have colorblindness.
(D) The father carries one allele and has colorblindness.
(E) The mother carries two alleles and has colorblindness.
- A woman is homozygous for A-negative blood type. A man has AB-negative blood type. What is the probability that the couple's child will be type B-negative?

(A) 0% (D) 75%
(B) 25% (E) 100%
(C) 50%

Questions 5–7

A student traced a widow's peak hairline in her family. Based on her interviews and observations, she drew the following pedigree:



- Which pattern(s) of inheritance are consistent with the pedigree?
 - Sex-linked
 - Complete dominance
 - Codominance

(A) I only (D) II and III only
(B) II only (E) I, II, and III
(C) I and II only
- What are the probable genotypes of the student's parents?

(A) Mother— Ww ; Father— ww
(B) Mother— ww ; Father— ww
(C) Mother— WW ; Father— Ww
(D) Mother— WW ; Father— WW
(E) Mother— Ww ; Father— Ww
- The student does not have a widow's peak hairline, but her sister does. What are the girls' probable genotypes?

(A) Student— Ww ; her sister— ww
(B) Student— WW ; her sister— Ww
(C) Student— ww ; her sister— Ww
(D) Student— ww ; her sister— ww
(E) Student— Ww ; her sister— Ww

Standardized Test Prep

- D
- B
- C
- A
- B
- E
- C

Performance-Based Assessment

Some questions that students might wish to pose include the following: What are the most commonly occurring genetic disorders? How are they inherited? What effects do they have on the body? Can they be detected by genetic screening methods? Can they be treated? If so, how?

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