

Test-Taking Tip

For questions containing the word NOT, begin by jotting down items that do fit the characteristic in question. Then, compare your notes with the answer choices and eliminate those that correspond to your list. Finally, check to see that your answer is correct by confirming that it does not fit the characteristic in question.

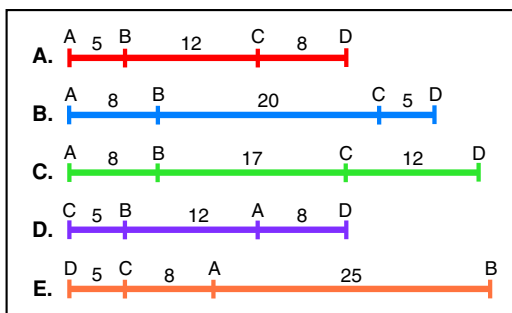
Directions: Choose the letter that best answers the question or completes the statement.

- What happens to the chromosome number during meiosis?
 - It doubles.
 - It stays the same.
 - It halves.
 - It becomes diploid.
 - It quadruples.
- Which ratio did Mendel find in his F_2 generation?
 - 3 : 1
 - 1 : 3 : 1
 - 1 : 2
 - 1 : 9
 - 3 : 4
- During which phase of meiosis is the chromosome number reduced?
 - anaphase I
 - metaphase I
 - telophase I
 - prophase II
 - telophase II
- Two pink-flowering plants are crossed. The offspring flower as follows: 25% red, 25% white, 50% pink. What pattern of inheritance does flower color in these flowers follow?
 - dominance
 - multiple alleles
 - incomplete dominance
 - recessiveness
 - polygenic traits
- Which of the following is used to construct a gene map?
 - chromosome number
 - litter count
 - rate of meiosis
 - recombination rate
 - number of generations
- Alleles for the same trait are separated from each other during the process of
 - mitosis.
 - meiosis I.
 - meiosis II.
 - interphase.
 - metaphase II.

Questions 7–8

Genes A, B, C, and D are located on the same chromosome. After calculating recombination frequencies, a student determines that these genes are separated by the following map units: C-D: 25 map units; A-B: 12 map units; B-D: 20 map units; and A-C: 17 map units.

- How many map units apart are genes A and D?
 - 5
 - 8
 - 10
 - 12.5
 - 15
- Which gene map best reflects the student's data?



- Which of the following is NOT one of Gregor Mendel's principles?
 - The alleles for different genes usually segregate independently.
 - Some forms of a gene may be dominant.
 - The inheritance of characteristics is determined by factors (genes).
 - Crossing-over occurs during meiosis.
 - Alleles are segregated when gametes are formed.

Questions 10–12 Each of the lettered choices below refers to the following numbered statements. Select the best lettered choice. A choice may be used once, more than once, or not at all.

- Phenotype
 - Hybrids
 - Genotype
 - Homozygous
 - Multiple alleles
- Offspring of crosses between parents with different traits
 - Appearance due to genetic makeup
 - Having two identical alleles for a given gene

Standardized Test Prep

- | | | |
|------|------|-------|
| 1. C | 5. D | 9. D |
| 2. A | 6. B | 10. B |
| 3. A | 7. B | 11. A |
| 4. C | 8. D | 12. D |

Writing in Science

Student explanations should be clear and concise and include at least two different examples. They should explain that a gene has at least two alleles. Some alleles are dominant and others are recessive. An organism with a dominant allele will always exhibit that form of the trait. Recessive alleles are expressed only in the absence of dominant alleles.

Performance-Based Assessment

Storyboards will vary but should describe Mendel's work, including his experimental design and results, his principles, and how his principles are relevant to modern genetics.

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