

Understand Key Concepts

1. The process shown below was used by Mendel during his experiments.



What is the process called?

- A. cross-pollination
- B. segregation
- C. asexual reproduction
- D. blending inheritance

2. Which statement best describes Mendel's experiments?

- A. He began with hybrid plants.
- B. He controlled pollination.
- C. He observed only one generation.
- D. He used plants that reproduce slowly.

3. Before Mendel's discoveries, which statement describes how people believed traits were inherited?

- A. Parental traits blend like colors of paint to produce offspring.
- B. Parental traits have no effect on their offspring.
- C. Traits from only the female parent are inherited by offspring.
- D. Traits from only the male parent are inherited by offspring.

4. Which term describes the offspring of a first-generation cross between parents with different forms of a trait?

- A. genotype
- B. hybrid
- C. phenotype
- D. true-breeding

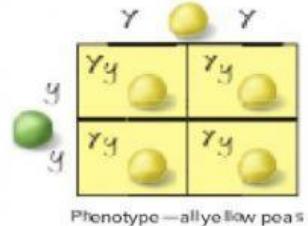
5. Which process makes a copy of a DNA molecule?

- A. mutation
- B. replication
- C. transcription
- D. translation

6. Which process uses the code on an RNA molecule to make a protein?

- A. mutation
- B. replication
- C. transcription
- D. translation

7. The Punnett square below shows a cross between a pea plant with yellow seeds and a pea plant with green seeds.



If mating produces 100 offspring, about how many will have yellow seeds?

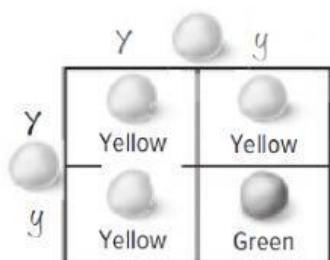
- A. 25
- B. 50
- C. 75
- D. 100

8. Which term describes multiple genes affecting the phenotype of one trait?

- A. codominance
- B. blending inheritance
- C. incomplete dominance
- D. polygenic inheritance

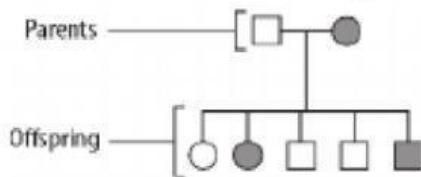
Multiple Choice

Use the diagram below to answer questions 1 and 2.



- Which genotype belongs in the lower right square?
A YY
B Yy
C yY
D yy
- What percentage of plants from this cross will produce yellow seeds?
A 25 percent
B 50 percent
C 75 percent
D 100 percent
- When Mendel crossed a true-breeding plant with purple flowers and a true-breeding plant with white flowers, ALL offspring had purple flowers. This is because white flowers are
A dominant.
B heterozygous.
C polygenic.
D recessive.
- Which process copies an organism's DNA?
A mutation
B replication
C transcription
D translation

Use the chart below to answer question 5.



Phenotypes

○ Female, dominant ● Female, recessive
□ Male, dominant ■ Male, recessive

- Based on the pedigree above, how many offspring from this cross had the recessive phenotype?
A 1
B 2
C 3
D 5
- Which is NOT true of a hybrid?
A It has one recessive allele.
B It has pairs of chromosomes.
C Its genotype is homozygous.
D Its phenotype is dominant.
- Alleles are different forms of a
A chromosome.
B gene.
C nucleotide.
D protein.
- Which is true of an offspring with incomplete dominance?
A Both alleles can be observed in its phenotype.
B Every offspring shows the dominant phenotype.
C Multiple genes determine its phenotype.
D Offspring phenotype is a combination of the parents' phenotypes.

Use the figure below to answer questions 8 and 9.



9 The diagrams above show a segment of DNA before and after replication. Which occurred during replication?

- A deletion
- B insertion
- C substitution
- D translation

10 Which human characteristic is controlled by polygenic inheritance?

- A blood type
- B earlobe position
- C eye color
- D thumb shape

11 Mendel crossed a true-breeding plant with round seeds and a true-breeding plant with wrinkled seeds. Which was true of every offspring of this cross?

- A They had the recessive phenotype.
- B They showed a combination of traits.
- C They were homozygous
- D They were hybrid plants.