

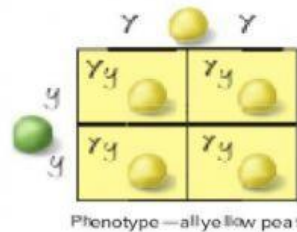
**Understand Key Concepts**

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.

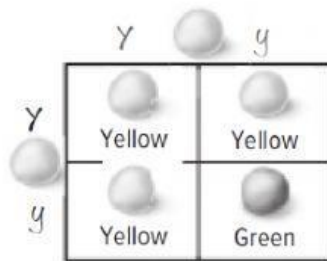


If mating produces 100 offspring, about how many will have yellow seeds?

- 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

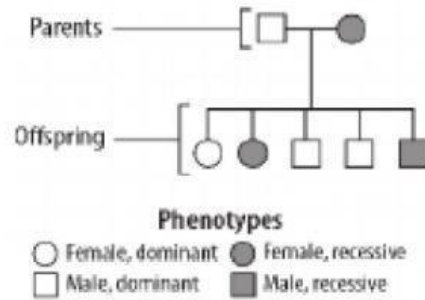
## Multiple Choice

Use the diagram below to answer questions 1 and 2.



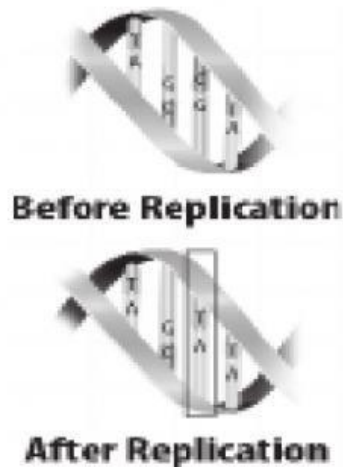
- Which genotype belongs in the lower right square?
  - YY
  - Yy
  - yY
  - yy
- What percentage of plants from this cross will produce yellow seeds?
  - 25 percent
  - 50 percent
  - 75 percent
  - 100 percent
- When Mendel crossed a true-breeding plant with purple flowers and a true-breeding plant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

Use the chart below to answer question 5.



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