

**Test Bank for Genetics Analysis and Principles 5th Edition by Brooker**

**ISBN 0073525340 9780073525341**

Full link download:

Test Bank:

<https://testbankpack.com/p/test-bank-for-genetics-analysis-and-principles-5th-edition-by-brooker-isbn-0073525340-9780073525341/>

Solution Manual:

<https://testbankpack.com/p/solution-manual-for-genetics-analysis-and-principles-5th-edition-by-brooker-isbn-0073525340-9780073525341/>

**Multiple Choice Questions**

1. The theory of pangenesis was first proposed by \_\_\_\_\_.
- A. Aristotle
  - B. Galen
  - C. Mendel
  - D. Hippocrates**
  - E. None of these

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Objective: Understand the historical significance and relationships of the theories of genetics*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

2. Which of the following is correct regarding the blending hypothesis of inheritance?
- A. It suggested that hereditary traits blended from one generation to the next
  - B. It was possible for the blending to change the trait from one generation to the next
  - C. It was supported by early research by Joseph Kölreuter
  - D. It was the prevailing hypothesis of inheritance prior to Mendel
  - E. All of the answers are correct**

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Section: 02.01*

*Gradable: automatic*

*Topic: Mendel's Study of Pea Plants*

## Chapter 02 - Mendelian Inheritance

*Learning Objective: Understand the historical significance and relationships of the theories of genetics*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

3. Mendel's work was rediscovered in 1900 by which of the following individual(s)?

- A. Carl Correns
- B. Erich von Tschermak
- C. Hugh de Vries
- D.** All of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Objective: Understand the historical significance and relationships of the theories of genetics*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

### **True / False Questions**

4. Mendel's work on inheritance had an immediate influence on the scientific community and theories of inheritance.

**FALSE**

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Objective: Understand the historical significance and relationships of the theories of genetics*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

### **Multiple Choice Questions**

5. Which of the following characteristics made the pea plant *Pisum sativum* an ideal organism for Mendel's studies?

- A. It has the ability to self-fertilize
- B. It was easy to cross-fertilize one plant with another
- C. It has easily identifiable traits
- D.** All of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: 2.01.01*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

6. The anther represents the \_\_\_\_\_ portion of the plant, while the ovules represent the \_\_\_\_\_ portion of the plant.
- A. Female ; male
  - B. Male ; female**
  - C. Female ; female
  - D. Male ; male

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: 2.01.02*  
*Section: 02.01*  
*Topic: Mendel's Study of Pea Plants*

### **True / False Questions**

7. Differences in plant flower color or plant height are called a variant of a trait.  
**TRUE**

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.01*  
*Topic: Mendel's Study of Pea Plants*

### **Multiple Choice Questions**

8. Which of the following traits was not studied by Mendel?
- A. Flower color
  - B. Seed color
  - C. Pod color
  - D. Pollen color**
  - E. Plant height

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: 2.01.03*  
*Section: 02.01*  
*Topic: Mendel's Study of Pea Plants*

9. When studying a genetic cross, the second generation following the initial cross is identified by which of the following?

- A. P generation
- B. F<sub>1</sub> generation
- C. F<sub>2</sub> generation**
- D. F<sub>3</sub> generation
- E. P<sub>3</sub> generation

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

10. A true breeding line of green pod pea plants is crossed with a true-breeding line of yellow pod plants. All of their offspring have green pods. From this information, it can be stated that the green color is \_\_\_\_\_ to the yellow color.

- A. Recessive
- B. Dominant**
- C. Subservient
- D. Blended
- E. None of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

Chapter 02 - Mendelian Inheritance

11. Mendel's work with monohybrid crosses provided proof of which of the following?

- A. Blending theory of inheritance
- B. Particulate theory of inheritance**
- C. Chromosomal theory of inheritance
- D. Pangenesis
- E. None of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Objective: Understand the historical significance and relationships of the theories of genetics*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

12. Mendel's work with single-factor crosses resulted in the development of which of the following?

- A. Law of segregation**
- B. Law of independent assortment
- C. Theory of natural selection
- D. Law of biological evolution
- E. All of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

13. When Mendel crossed two plants that were heterozygous for a single trait, what was the phenotypic ratio of their offspring?

- A. 1:2:1
- B. 9:3:3:1
- C. 3:1**
- D. 7:4
- E. Varied depending on the trait

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

*Section: 02.02*

*Topic: Law of Segregation*

Chapter 02 - Mendelian Inheritance

14. When Mendel crossed two plants that were heterozygous for a single trait, what was the genotypic ratio of their offspring?

- A.** 1:2:1
- B. 9:3:3:1
- C. 3:1
- D. 1:1
- E. Varied depending on the trait

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

*Section: 02.02*

*Topic: Law of Segregation*

15. An individual who has two identical alleles for a trait is said to be \_\_\_\_\_.

- A.** Homozygous
- B. Heterozygous
- C. Isozygous
- D. A variant

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

16. The genetic composition of an individual is called its \_\_\_\_\_.

- A. Phenotype
- B.** Genotype
- C. Hybrid
- D. Dominance
- E. None of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.01*

*Topic: Mendel's Study of Pea Plants*

17. The observable characteristics of an organism are called its \_\_\_\_\_.

- A.** Phenotype
- B. Genotype
- C. Dominance
- D. Genes
- E. None of the answers are correct

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.02*  
*Topic: Law of Segregation*

18. An individual who has two different alleles for a trait is called \_\_\_\_\_.

- A. Haploid
- B. Homozygous
- C.** Heterozygous
- D. Isozygous
- E. True-breeding

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.01*  
*Topic: Mendel's Study of Pea Plants*

19. In a Punnett square diagram, the outside of the box represents the \_\_\_\_\_.

- A. Diploid offspring
- B. Haploid offspring
- C. Diploid gametes
- D.** Haploid gametes

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.01*  
*Topic: Mendel's Study of Pea Plants*



20. Mendel's work with two-factor (dihybrid) crosses led directly to which of the following?

- A. Chromosomal theory of inheritance
- B. Particulate theory of inheritance
- C. Law of segregation
- D. Law of independent assortment**
- E. Theory of biological evolution

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: 2.03.01*

*Section: 02.01*

*Section: 02.03*

*Topic: Law of Independent Assortment*

*Topic: Mendel's Study of Pea Plants*

21. In a dihybrid cross using Mendelian inheritance, if both parents are heterozygous for both traits, what will be the phenotypic ratio of their offspring?

- A. 3:1
- B. 1:2:1
- C. 1:1
- D. 9:3:3:1**

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

*Section: 02.03*

*Topic: Law of Independent Assortment*

22. In a dihybrid testcross, the individual being examined is crossed to which of the following?

- A. An individual who is homozygous dominant for one trait but not the other
- B. Self-fertilized
- C. An individual who is homozygous recessive for both traits**
- D. An individual who is heterozygous for both traits

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.03*

*Topic: Law of Independent Assortment*

23. In humans, patterns of inheritance are often studied using which of the following?

- A. Dihybrid testcrosses
- B. Production of true-breeding lines
- C. Pedigree analysis**
- D. Self-fertilization
- E. None of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

*Section: 02.04*

*Topic: Studying Inheritance Patterns in Humans*

24. The chance that a future event will occur is called \_\_\_\_\_.

- A. Probability**
- B. Goodness of fit
- C. Degrees of freedom
- D. Random selection
- E. All of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: 2.05.01*

*Section: 02.05*

*Topic: Probability and Statistics*

25. A coin is flipped 100 times, with a result of 53 heads and 47 tails. The deviation between the observed numbers and the expected 50-50 results is called \_\_\_\_\_.

- A. Probability
- B. Degrees of freedom
- C. Goodness of fit
- D. Random sampling error**
- E. Standard error

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.05*

*Topic: Probability and Statistics*

26. Which of the following would be used to determine the probability of three independent events in order?

- A. Sum rule
- B. Product rule**
- C. Chi-square test
- D. Binomial expansion
- E. Random sampling error

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

27. A couple would like to know what the probability is that out of five children, three will be girls. This is solved using which of the following?

- A. Sum rule
- B. Product rule
- C. Chi-square test
- D. Binomial expansion**
- E. Random sampling error

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.05*

*Topic: Probability and Statistics*

28. The probability that one event or another will occur is based on which of the following?

- A. Sum rule**
- B. Product rule
- C. Chi-square test
- D. Binomial expansion
- E. Random sampling error

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.05*

*Topic: Probability and Statistics*

29. Using Mendel's flower color (purple is dominant, white is recessive), if two heterozygous plants are crossed, what is the probability that the first two offspring will have purple flowers?

- A. 1/2
- B. 1/4
- C. 6/4
- D. 9/16**
- E. 1/16

*Accessibility: Keyboard Navigation*  
*Blooms Level: 3. Apply*  
*Gradable: automatic*  
*Learning Outcome: 2.05.02*  
*Section: 02.05*  
*Topic: Probability and Statistics*

### **True / False Questions**

30. The Chi-square test is used to prove that a hypothesis is correct.

**FALSE**

*Accessibility: Keyboard Navigation*  
*Blooms Level: 2. Understand*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.05*  
*Topic: Probability and Statistics*

### **Multiple Choice Questions**

31. In a genetic cross, there are  $n$  classes of data. What would the degrees of freedom be for a chi-square test on this data?

- A.  $n$
- B.  $n + 1$
- C.  $n - 1$**
- D.  $2n + 1$
- E.  $x(n)$  where  $x$  equals the number of individuals in the cross

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.05*

*Topic: Probability and Statistics*

32. The \_\_\_\_\_ value indicates the probability that differences between the observed values and the expected values are due to random chance alone.

- A. P value**
- B. Goodness of fit
- C. Degrees of freedom
- D. Empirical approach
- E. None of the answers are correct

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.05*

*Topic: Probability and Statistics*

33. In the biological sciences, the null hypothesis is usually rejected if the P value is \_\_\_\_\_.

- A. Greater than 1
- B. Less than 0.30
- C. Less than 0.95
- D. Less than 0.05**
- E. Less than 1

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.05*

*Topic: Probability and Statistics*

34. \_\_\_\_\_ is the belief that seeds are produced by all parts of the body and transmitted to the next generation.

- A. Hippocrates
- B. Pangenesis**
- C. Blending
- D. Particulate theory
- E. Homunculus

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.05*  
*Topic: Probability and Statistics*

35. Mendel had experience in the fields of \_\_\_\_\_ and \_\_\_\_\_.

- A. Physics, mathematics**
- B. English
- C. Psychology
- D. Biology
- E. None of these

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Objective: Understand the historical significance and relationships of the theories of genetics*  
*Section: 02.01*  
*Topic: Mendel's Study of Pea Plants*

36. If two individuals with different distinct characteristics are mated, their offspring is called a \_\_\_\_\_.

- A. strain
- B. true-breeding line
- C. gamete
- D. cross
- E. hybrid**

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.02*  
*Topic: Law of Segregation*

37. If over several generations a trait does not vary in a group of organisms, that group can be called a \_\_\_\_\_.

- A. dihybrid
- B. hybrid
- C. true-breeding line**
- D. variant
- E. cross-fertilized line

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

38. A cross in which a researcher investigates the patterns of inheritance of a single trait is called a \_\_\_\_\_.

- A. monohybrid cross**
- B. dihybrid cross
- C. two-factor cross
- D. cross-fertilization
- E. self-fertilization

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

39. A(an) \_\_\_\_\_ is a variation of a gene.

- A. trait
- B. character
- C. gamete
- D. allele**
- E. variant

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Topic: Law of Segregation*

Chapter 02 - Mendelian Inheritance

40. The \_\_\_\_\_ refers to the genetic composition of an individual.

- A. character
- B. genotype**
- C. phenotype
- D. dominant trait
- E. recessive trait

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Blooms Level: 2. Understand*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.02*  
*Topic: Law of Segregation*

41. The \_\_\_\_\_ is the observable characteristics of an individual.

- A. character
- B. genotype
- C. phenotype**
- D. dominant trait
- E. recessive trait

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.02*  
*Topic: Law of Segregation*

42. In a genetic cross, the \_\_\_\_\_ represent offspring with genetic combinations that were not found in the parental lines.

- A. P generation
- B. non-recombinates
- C. parentals
- D. non-parentals**
- E. none of these

*Accessibility: Keyboard Navigation*  
*Blooms Level: 1. Remember*  
*Gradable: automatic*  
*Learning Outcome: General: Definition of terms*  
*Section: 02.02*  
*Topic: Law of Segregation*



43. The study of family trees in humans is called a \_\_\_\_\_ analysis.

- A. pedigree
- B. monohybrid
- C. dihybrid
- D. statistical
- E. probability

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.04*

*Topic: Studying Inheritance Patterns in Humans*

44. Statistical analysis determines the \_\_\_\_\_ between observed data and what was expected from the original hypothesis.

- A. testcross
- B. degrees of freedom
- C. P values
- D. complete hypothesis
- E. goodness of fit

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: General: Definition of terms*

*Section: 02.02*

*Section: 02.05*

*Topic: Law of Segregation*

*Topic: Probability and Statistics*

45. If a Punnett square is used to visualize a three-factor cross (trihybrid cross) how many boxes would be inside of the square?

- A. 3
- B. 8
- C. 48
- D. 64**
- E. Can't be determined

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

*Section: 02.03*

*Topic: Law of Independent Assortment*

46. The results that demonstrated that traits were not blended were the ones where

- A. The F<sub>2</sub> plants were selfed
- B. The true-breeding parents were crossed
- C. The F<sub>1</sub> generation plants were selfed**
- D. None of these experiments refuted the blending hypothesis

*Accessibility: Keyboard Navigation*

*Blooms Level: 2. Understand*

*Gradable: automatic*

*Learning Outcome: 2.02.01*

*Section: 02.02*

*Topic: Law of Segregation*

47. According to the Law of Segregation allele segregation into gametes is

- A. based on whether the allele is dominant or recessive
- B. random**
- C. based on whether the individual is homozygotic or heterozygotic
- D. based on whether the individual is male or female

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Section: 02.02*

*Topic: Law of Segregation*

48. The following question refers to the Punnett square below. Which letter represents a homozygotic dominant progeny?

		Male gametes	
		S	s
Female gametes	S	A	B
	s	C	D

- A.** A
- B. B
- C. C
- D. D

*Blooms Level: 2. Understand*  
*Gradable: automatic*  
*Learning Outcome: 2.02.03*  
*Section: 02.02*  
*Topic: Law of Segregation*

49. What was the conclusion from Mendel's two factor crosses?

- A.** Genes randomly assort into the gametes
- B. Alleles for one gene randomly assort into the gametes
- C. The ratio of the phenotypes of the progeny depends on the phenotype of the male parent
- D. The ratio of the phenotypes of the progeny depends on the phenotype of the female parent

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: 2.03.01*

*Section: 02.03*

*Topic: Law of Independent Assortment*

50. The Law of Independent Assortment states that

- A.** Two different genes will randomly assort their alleles during the formation of haploid cells
- B. Two different alleles will randomly assort during the formation of haploid cells
- C. Two different genes will NOT randomly assort their alleles during the formation of haploid cells
- D. Two different genes will randomly assort their alleles during the formation of diploid cells

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: 2.03.02*

*Section: 02.03*

*Topic: Law of Independent Assortment*

51. An allele that produces an inactive enzyme would be classified as what kind of allele?

- A.** Loss of function
- B. Gain of function
- C. Dominant
- D. These do not occur and therefore there is no classification for them.

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: 2.03.04*

*Section: 02.03*

*Topic: Law of Independent Assortment*

52. What is a feature of a pedigree?

- A. It represents the relationship between individuals in successive generations
- B. They can be used to deduce if a gene may be sex-linked
- C. They are not useful for human genetic disease studies
- D.** Answers it represents the relationship between individuals in successive generations, and they can be used to deduce if a gene may be sex-linked, are correct.

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Gradable: automatic*

*Learning Outcome: 2.04.01*

*Section: 02.04*

*Topic: Studying Inheritance Patterns in Humans*

53. Which definition below is the best definition for probability?

- A. The number of times a coin is flipped
- B. The number of times homozygotic recessives appear through successive generations of a family as compared to heterozygotes
- C.** The chance that an outcome will occur in the future
- D. The frequency at which homozygous recessive traits are seen in an individual mating

*Accessibility: Keyboard Navigation*

*Blooms Level: 1. Remember*

*Learning Outcome: 2.05.01*

*Section: 02.05*

*Topic: Probability and Statistics*

54. What is the probability that an offspring will have an ss/RR genotype from a cross of two Ss/Rr individuals?

- A. 25%
- B.** 6.25%
- C. 3.12%
- D. 12.5%

*Accessibility: Keyboard Navigation*

*Blooms Level: 3. Apply*

*Gradable: automatic*

*Learning Outcome: 2.05.02*

*Section: 02.05*

*Topic: Probability and Statistics*

55. If an individual that phenotypically has dominant traits is mated to another individual that also has dominant traits and the progeny have both dominant and recessive traits it indicates that

- A. Both parents are homozygotic
- B. Both parents are heterozygotic**
- C. No conclusions can be made about the genotypes of the parents
- D. One parent is heterozygotic and one is homozygotic

*Accessibility: Keyboard Navigation*

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

56. The results of a study of a population is presented in the following table. The "-" indicates that the other allele is unknown

Parent1 phenotype	Parent 2 phenotype	Ratio and phenotype of offspring
S -	S -	989 S - 53 ss
ss	S -	560 S- 200 ss
ss	ss	700 ss

Which of the conclusions listed below is correct?

- A. All of the S - offspring from the S - X S - matings are homozygotic
- B. If the S- offspring of the S - X S - matings were mated to the S - offspring from the S - X ss matings there would be no ss offspring all would be S -
- C. The ratios of the offspring in the S- X S - matings conform to the expected ratio for a monybrid cross
- D. The ratios of the offspring in the S - X S - matings are due to some S - parents being homozygotic and some being heterozygotic**

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

57. The results of a dihybrid cross of plants is given in the table below. What conclusions would you make?

Phenotype	Number of progeny
Tall/purple flowers	850
Short/purple flowers	350
Short/white flowers	87
Tall/white flowers	313

- A. More progeny should be counted since the number of progeny is too low to make this type of analysis
- B. The chi square value is so close to the p value at 0.05 a conclusion should not be drawn and another mating should be performed
- C. The results are statistically the same as the expected results
- D.** The results are statistically significantly different than the expected results

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

58. Select which of the following results would most closely conform to a test cross of a dihybrid plant

Result	Number of progeny with the different phenotypes			
	Tall/purple flowers	Tall/white flowers	Short/white flowers	Short/purple flowers
A	100	300	300	900
B	250	500	400	300
C	900	100	300	300
D	360	375	340	350



Chapter 02 - Mendelian Inheritance

- A. A
- B. B
- C. C
- D.** D

59. Cystic fibrosis is caused by mutations in the CF gene, and there are several different mutations that are known to result in CF disease. The CF mutations behave as recessive alleles to the WT CF allele. If two carriers that have different mutations in their CF genes have children what is the probability that one of their children will have CF disease?

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

*Accessibility: Keyboard Navigation*

*Blooms Level: 4. Analyze*

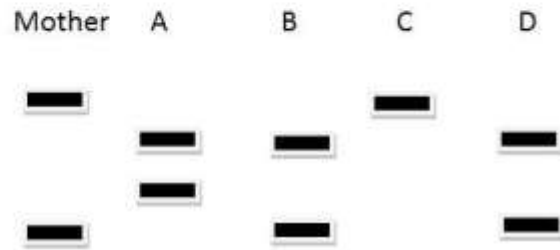
*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

Chapter 02 - Mendelian Inheritance

60.

Polymerase chain reaction (PCR) can be used for many different purposes, including determining paternity. PCR amplifies specific DNA sequences from complex mixtures and can be used to amplify sequences that although they may not have any known function may have several unique sizes and these different forms are inherited according to the Law of Segregation. Below is a diagram of an agarose gel of PCR samples from a mother, and several children. Which letters represent children that could be biologically related to the mother?



Chapter 02 - Mendelian Inheritance

- A.** A, B, and C
- B. All of the children could be related to the mother
- C. B, C, and D
- D.** A, B, and C

*Blooms Level: 4. Analyze*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

61. Huntington's Disease is a fatal syndrome caused by a mutation in the HD gene. The disease has an average age of onset of 35 and the majority of individuals that are affected are heterozygotes. What is the probability that a 25 year old woman with no symptoms and who is the daughter of a man that has HD and a mother who does not will have a child that will have the mutant HD allele?

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

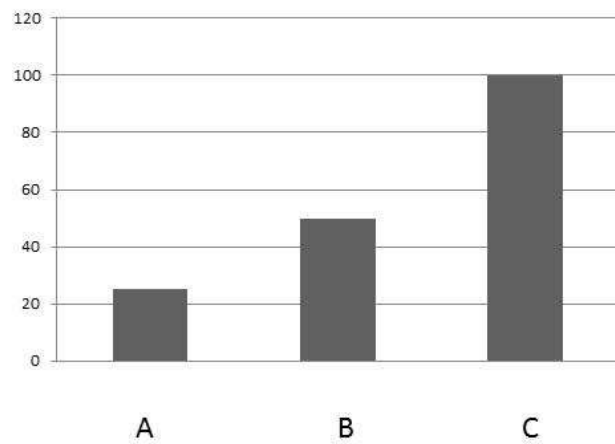
*Accessibility: Keyboard Navigation*

*Blooms Level: 3. Apply*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

62. Two purebred plants are bred. The enzyme that controls the phenotype that is being studied is measured in the progeny and represented in the graph below. What are the expected ratios of the different progeny based on their enzyme levels?



## Chapter 02 - Mendelian Inheritance

A.

A: 33.3%

B: 33.3%

C: 33.3%

B.

A: 50%

B: 25%

C :25%

**C.**

A: 25%

B:50%

C: 25%

D.

A: 25%

B: 25%

C: 50%

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

Chapter 02 - Mendelian Inheritance

63. Two dihybrid pea plants (both tall and with purple flowers) are mated. The cross resulted in 9866 progeny, of which 5550 were tall with purple flowers. What are the expected ratios of the other phenotypic classes?

- A. 1850 Short/white flower 616 Tall/white flower 1850 Short/purple flower
- B. 1850 Short/white flower 1850 Tall/white flower 1850 Short/purple flower
- C.** 616 Short/white flower 1850 Tall/white flower 1850 Short/purple flower
- D. 5550 Short/white flower 5550 Tall/white flower 5550 Short/purple flower

*Accessibility: Keyboard Navigation*

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

64. If the progeny of a mating of pea plants have the following ratios 1342 smooth seed/green pod, 447 wrinkled seed/yellow pod, 429 smooth seed/ yellow pod, 1361 wrinkled seed/green pod what are the genotypes of the parents?

A.

Parent 1: Homozygous for seed shape and pod color

Parent 2: Heterozygous for seed shape and homozygous for pod color

B. Both parents are heterozygous for seed shape and pod color

**C.**

Parent 1: Heterozygous for seed shape and pod color

Parent 2: Homozygous seed shape and heterozygous for pod color

D.

Parent 1: Heterozygous for both seed shape and pod color

Parent 2: Homozygous for both seed shape and pod color

*Accessibility: Keyboard Navigation*

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*

65. If a plant is test-crossed which of the following genes are linked?

Phenotype	Progeny number
Tall/purple/axial	3709
Tall/white/axial	44
Short/purple/axial	70
Short/white/axial	2034
Short/white/terminal	2507
Short/purple/terminal	39
Tall/white/terminal	72
Tall/purple/terminal	3507

- A. Flower color and height
- B. Flower color and flower placement
- C. Flower placement and height
- D. None of these genes appear to be linked

*Blooms Level: 4. Analyze*

*Gradable: automatic*

*Learning Objective: General: Analyze patterns of inheritance at the individual and population level*