

Dihybrid Worksheet Answer Key PDF

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Part 1: Foundational Knowledge

Which of the following terms describes an organism with two identical alleles for a trait?

undefined. A) Heterozygous

undefined. B) Homozygous ✓

undefined. C) Dominant

undefined. D) Recessiv

The correct answer is B) Homozygous, which refers to having identical alleles.

Which of the following terms describes an organism with two identical alleles for a trait?

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The correct answer is the term that indicates identical alleles.

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The correct answer is the term that indicates identical alleles.

Which of the following statements are true about a dihybrid cross? (Select all that apply)

undefined. A) It involves one pair of contrasting traits.

undefined. B) It examines the inheritance of two different genes. ✓

undefined. C) It can predict phenotypic ratios. ✓

undefined. D) It only applies to plants.

The correct answers are B) It examines the inheritance of two different genes and C) It can predict phenotypic ratios.

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True statements will relate to the nature of dihybrid crosses.

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undefined. C) It can predict phenotypic ratios. ✓

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A dihybrid cross involves two genes and can predict phenotypic ratios.

Explain Mendel's Law of Independent Assortment in your own words.

The Law of Independent Assortment states that alleles for different traits are distributed to gametes independently of one another.

Explain Mendel's Law of Independent Assortment in your own words.

The law states that alleles for different traits segregate independently during gamete formation.

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The law states that alleles for different traits segregate independently during gamete formation.

Part 2: Understanding Genetic Concepts

What is the typical phenotypic ratio expected from a dihybrid cross when both parents are heterozygous for both traits?

undefined. A) 3:1

undefined. B) 9:3:3:1 ✓

undefined. C) 1:2:1

undefined. D) 1:1

The expected phenotypic ratio is B) 9:3:3:1.

What is the typical phenotypic ratio expected from a dihybrid cross when both parents are heterozygous for both traits?

undefined. A) 3:1

undefined. B) 9:3:3:1 ✓

undefined. C) 1:2:1

undefined. D) 1:1

The expected ratio is derived from the combination of alleles from both parents.

What is the typical phenotypic ratio expected from a dihybrid cross when both parents are heterozygous for both traits?

undefined. A) 3:1

undefined. B) 9:3:3:1 ✓

undefined. C) 1:2:1

undefined. D) 1:1

The expected ratio is 9:3:3:1 for a dihybrid cross with heterozygous parents.

Which of the following are examples of phenotypes? (Select all that apply)

undefined. A) Bb

undefined. B) Round seeds ✓

undefined. C) Green pods ✓

undefined. D) RrYy

The correct answers are B) Round seeds and C) Green pods, which are observable traits.

Which of the following are examples of phenotypes? (Select all that apply)

undefined. A) Bb

undefined. B) Round seeds ✓

undefined. C) Green pods ✓

undefined. D) RrYy

Phenotypes are the physical expressions of genotypes.

Which of the following are examples of phenotypes? (Select all that apply)

undefined. A) Bb

undefined. B) Round seeds ✓

undefined. C) Green pods ✓

undefined. D) RrYy

Phenotypes are the observable characteristics of an organism.

Describe the difference between genotype and phenotype with examples.

Genotype refers to the genetic makeup of an organism, while phenotype refers to the observable traits. For example, genotype Bb results in the phenotype of brown eyes.

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Part 3: Applying Knowledge and Analyzing Relationships

If a plant with genotype RrYy is crossed with a plant with genotype rryy, what is the expected phenotypic ratio?

undefined. **A) 1:1:1:1** ✓

undefined. B) 9:3:3:1

undefined. C) 3:1

undefined. D) 1:2:1

The expected phenotypic ratio is A) 1:1:1:1.

If a plant with genotype RrYy is crossed with a plant with genotype rryy, what is the expected phenotypic ratio?

undefined. A) 1:1:1:1

undefined. B) 9:3:3:1

undefined. C) 3:1

undefined. **D) 1:2:1** ✓

The expected ratio can be derived from the Punnett square of the cross.

If a plant with genotype RrYy is crossed with a plant with genotype rryy, what is the expected phenotypic ratio?

undefined. **A) 1:1:1:1** ✓

undefined. B) 9:3:3:1

undefined. C) 3:1

undefined. D) 1:2:1

The expected phenotypic ratio is 1:1:1:1 from this cross.

A farmer wants to predict the color and shape of peas in the next generation. If he crosses two heterozygous plants (RrYy), what should he expect in terms of phenotypic ratios?

The farmer should expect a 9:3:3:1 phenotypic ratio.

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The farmer should expect a phenotypic ratio of 9:3:3:1 for the traits being studied.

A farmer wants to predict the color and shape of peas in the next generation. If he crosses two heterozygous plants (RrYy), what should he expect in terms of phenotypic ratios?

He should expect a phenotypic ratio of 9:3:3:1.

Which of the following best explains why the phenotypic ratio in a dihybrid cross is 9:3:3:1?

undefined. A) It is due to the dominance of one allele over another.

undefined. **B) It results from the independent assortment of alleles. ✓**

undefined. C) It is a random occurrence.

undefined. D) It is because of the law of segregation.

The correct answer is B) It results from the independent assortment of alleles.

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The ratio results from the independent assortment of alleles during gamete formation.

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It results from the independent assortment of alleles.

Part 4: Synthesis and Reflection

Which scenario would most likely violate Mendel's Law of Independent Assortment?

undefined. A) Linked genes on the same chromosome ✓

undefined. B) Unlinked genes on different chromosomes

undefined. C) Random fertilization

undefined. D) Crossing over during meiosis

The correct answer is A) Linked genes on the same chromosome, which do not assort independently.

Which scenario would most likely violate Mendel's Law of Independent Assortment?

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Linked genes on the same chromosome would violate this law.

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Linked genes on the same chromosome would violate this law.

Design a genetic experiment using dihybrid crosses to determine if two traits are linked or assort independently. Describe your methodology and expected outcomes.

The experiment should involve crossing plants with known genotypes and analyzing the offspring's phenotypes to determine linkage.

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