

# Sexual Reproduction and Genetics

## Section 2 Mendelian Genetics

**Main Idea**

**Details**

**Skim** Section 2 of the chapter, and then write two questions that come to mind from reading the headings and illustration captions.

1. \_\_\_\_\_
2. \_\_\_\_\_

**Review Vocabulary**

Use your book or dictionary to define segregation.

*segregation*

**New Vocabulary**

Use terms in the left margin to complete the paragraph below.

- allele*
- genetics*
- hybrid*
- law of independent assortment*
- law of segregation*

\_\_\_\_\_ is the branch of biology that studies how traits are inherited. \_\_\_\_\_ offspring result from parents that have different forms of \_\_\_\_\_ for certain traits. Mendel's \_\_\_\_\_ states that every individual has two alleles of each gene and when gametes are produced, each gamete receives one of these alleles. Mendel's \_\_\_\_\_ states that genes for different traits are inherited independently of each other.

Compare and contrast each pair of terms by defining them and/or noting their differences.

- dominant*
- genotype*
- heterozygous*
- homozygous*
- phenotype*
- recessive*

<b>dominant trait</b>	<b>recessive trait</b>
<b>genotype</b>	<b>phenotype</b>
<b>homozygous</b>	<b>heterozygous</b>

**Section 2 Mendelian Genetics (continued)**

**Main Idea**

**Details**

**How Genetics Began**

*I found this information on page \_\_\_\_\_.*

**Describe** *how a plant self-pollinates.*

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**Infer** *why Mendel used cross-pollination to study inheritance.*

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**The Inheritance of Traits**

*I found this information on page \_\_\_\_\_.*

**Analyze** *Mendel's experiment with green-seed and yellow-seed pea plants by completing this summary paragraph.*

Mendel used only \_\_\_\_\_ lines, which consistently produced the same trait in the offspring. To see how these traits are inherited, Mendel \_\_\_\_\_. When he crossed a green-seed plant with a yellow-seed plant, the F<sub>1</sub> offspring were \_\_\_\_\_ percent yellow and \_\_\_\_\_ percent green. He allowed the F<sub>1</sub> plants to \_\_\_\_\_ to produce \_\_\_\_\_ plants. The F<sub>2</sub> plants were \_\_\_\_\_ percent yellow and \_\_\_\_\_ percent green. Mendel concluded that each trait has two forms, called \_\_\_\_\_. Mendel called yellow seed color the \_\_\_\_\_ form and green seed color the \_\_\_\_\_ form of the trait.

**Compare** *genotypes and phenotypes for pea plants.*

Genotype	Homozygous or Heterozygous	Phenotype
	homozygous	
	heterozygous	
yy		

**Section 2 Mendelian Genetics (continued)**

**Main Idea**

I found this information on page \_\_\_\_\_.

**Punnett Squares and Probability**

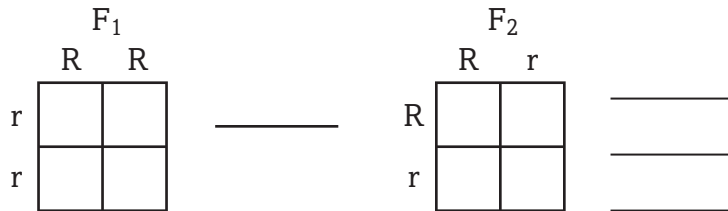
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**Details**

**Demonstrate** the law of independent assortment by listing the 4 alleles that are produced when a pea plant with the genotype  $YyRr$  produces gametes.

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

**Complete** the Punnett squares for seed texture in the  $F_1$  and  $F_2$  generations. Round seeds ( $R$ ) are dominant over wrinkled seeds ( $r$ ). Write the expected genotypes and the probability for each.



**Identify** the genotypes within the Punnett square showing the dihybrid cross of seed color and seed texture. The first row has been done for you. Write the expected phenotypic ratio.

	$YR$	$yR$	$Yr$	$yr$
$YR$	YYRR	YyRR	YYRr	YyRr
$yR$				
$Yr$				
$yr$				

Phenotypic ratio: \_\_\_\_\_

**SUMMARIZE**

Discuss the effects of Mendel's two laws (segregation and independent assortment). Give an example.

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