# **10 Sexual Reproduction and Genetics**

### 2 Mendelian Genetics

123 2(B), 3(F), 6(A), 6(F)

### **REVIEW VOCABULARY**

segregation

### **New Vocabulary**

allele

genetics

hybrid

law of independent

assortment

law of segregation

dominant

genotype

heterozygous

homozygous

phenotype

recessive

### **MAINIDEA**

Write the Main Idea for this lesson.

#### Recall the definition of the Review Vocabulary term.

segregation

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

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

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

dominant trait	recessive trait
genotype	phenotype
homozygous	heterozygous

# 2 Mendelian Genetics (continued)

Student Edition, pp. 277-282 Reading Essentials, pp. 109-112

<b>Describe</b> how a plant self-pollinate	S.	
<b>GET IT? Infer</b> why it is important true-breeding plant.	t that Mendel's experi	ments used a
<b>Analyze</b> Mendel's experiment with plants by completing this summary	,	ow-seed pea
Mendel used only	lines, which consiste	ently produced
the same trait in the offspring. To se	e how these traits are	inherited,
Mendel	When he crossed	d 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> pla	nts to
to produce	plants. The F <sub>2</sub> plants	were
percent yellow and percen	t green. Mendel conc	luded that each
trait has two forms, called	Mendel called ye	ellow seed color
the form and green s	eed color the	form of
the trait.		
Compare genotypes and phenotyp	es for pea plants.	

Genotype	Homozygous or Heterozygous	Phenotype
	homozygous	
	heterozygous	
уу		

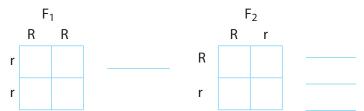
# 2 Mendelian Genetics (continued)

**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. \_\_\_\_

**GET IT? Evaluate** How can the random distribution of alleles result in a predictable ratio?

**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	уR	Yr	yr
YR	YYRR	YyRR	YYRr	YyRr
yR				
Yr				
yr				

Phenotypic ratio:

# 2 Mendelian Genetics (continued)

## REVIEW IT!

MAINIDEA Diagram Use a Punnett square to explain how a dominant allele masks he presence of a recessive allele.
<b>Apply</b> the law of segregation and the law of independent assortment by giving an example of each.
<b>Use a Punnett square</b> In fruit flies, red eyes (R) are dominant to pink eyes (r). What is the phenotypic ratio of a cross between a heterozygous male and a pink-eyed female?
<b>Evaluate</b> the significance of Mendel's work to the field of genetics.
What is the probability of rolling a 2 on a six-sided die? What is the probability of rolling two 2s on two six-sided die? How is probability used in the study of genetics?