

## Picture This

- 2. Identify** In the second figure to the right, shade the squares that represent offspring with yellow seeds.

		True-Breeding Yellow Seed	
		Y	Y
True-Breeding Green Seed	y	Yy	Yy
	y	Yy	Yy

		Heterozygous Seed	
		Y	y
Heterozygous Seed	Y	YY	Yy
	y	Yy	yy

**Hybrid-Cross Model** What if two of these hybrid offspring were crossed? What would a Punnett square then look like? Examine the second figure, above. The second Punnett square is the cross between two of these heterozygous genotypes—Yy and Yy. The offspring from this cross may include three different genotypes but only two phenotypes, or two traits. Three-fourths, or 75 percent, of the offspring will have yellow seeds (either YY or Yy) and one-fourth, or 25 percent, will have green seeds (yy). In other words, for every four seeds, three should be yellow, and one should be green. Another way to state this is through a ratio. The ratio in this case would be 3:1. This does not mean that every group of four seeds will have three yellow seeds and one green. When studying genetics, you have to count a large number of offspring in order to get accurate results. Mendel determined this fact during his experiments. The more individuals that are counted, the closer the actual numbers will be to the predictions. ✓

### ✓ Reading Check

- 3. Explain** Why do a large number of offspring have to be counted in order to get accurate results?

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## What are pedigrees?

Have you ever looked at your family tree? All genetically related members of a family are part of a family tree. A **pedigree** shows the genetic traits that were inherited by members of a family tree. A pedigree usually only indicates the phenotype of individuals. The genotypes of the individuals might not be known but often can be determined.

When looking at a pedigree, you will see circles and squares. Circles represent females, and squares represent males. Connecting lines indicate relationships among members of the family tree. For example, a line connects a set of parents. Branching lines below the parents show their offspring. Pedigrees track common inherited traits. Pedigrees are also important tools in tracking complex patterns of inheritance and genetic disorders in families.