

How are genetic crosses represented?

Genetic crosses can be represented using a Punnett square, with shorthand letters used to represent the different alleles. In an exam, a genetic cross should be written out as follows:

Phenotype	Green pod	Yellow Pod				
Genotype	G g	g g				
Gametes	<table><tr><td>G</td><td>g</td></tr></table>	G	g	<table><tr><td>g</td><td>g</td></tr></table>	g	g
G	g					
g	g					

Punnett square

		Maternal Gametes	
Paternal Gametes		G	g
	g	Gg	gg
	g	Gg	gg

50% Gg (green pods)

50% gg (yellow pods)

1:1 ratio of green to yellow

How is a single gene inherited?

Monohybrid inheritance is the inheritance of a single gene.

If an organism is pure-bred for an allele then the homologous chromosomes it possesses will be homozygous for the desired chromosome. If a pure bred organism is reproduced with a different pure bred the resulting genotype of the offspring (F₁ generation) will be:

XX, Xx, Xx, Xx

If two of these F₁ offspring go on to breed together, their subsequent offspring (F₂ generation) will possess the genotype:

XX, Xx, Xx, xx

If the characteristic coded for by the large X is present in the 3 heterozygous F₂ offspring then the large X represents the dominant allele and the smaller x represents the recessive allele.