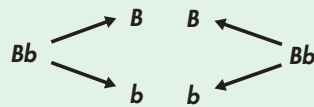


One-Factor Cross

Write the genotypes of the two organisms that will serve as parents in a cross. In this example we will cross a male and female osprey, or fish eagle, that are heterozygous for large beaks. They each have genotypes of Bb .

Bb and Bb

Determine what alleles would be found in all of the possible gametes that each parent could produce.



Draw a table with enough squares for each pair of gametes from each parent. In this case, each parent can make two different types of gametes, B and b . Enter the genotypes of the gametes produced by both parents on the top and left sides of the table.

	B	b
B		
b		

Fill in the table by combining the gametes' genotypes.

	B	b
B	BB	Bb
b	bB	bb

Determine the genotype and phenotype of each offspring. Calculate the percentage of each. In this example, $\frac{3}{4}$ of the chicks will have large beaks, but only $\frac{1}{2}$ will be heterozygous for this trait (Bb).

	B	b
B	BB	Bb
b	bB	bb

Two-Factor Cross

In this example we will cross two pea plants that are heterozygous for size (tall and short alleles) and pod color (green and yellow alleles). The genotypes of the two parents are $TtGg$ and $TtGg$.

$TtGg$ and $TtGg$

Determine what alleles would be found in all of the possible gametes that each parent could produce.



In this case, each parent can make 4 different types of gametes, so the table needs to be 4 rows by 4 columns, or 16 squares.

	TG	tG	Tg	tg
TG				
tG				
Tg				
tg				

Fill in the table by combining the gametes' genotypes.

	TG	tG	Tg	tg
TG				
tG				
Tg				
tg				

	TG	tG	Tg	tg
TG	$TTGG$	$TtGG$	$TTGg$	$TtGg$
tG	$TtGG$	$ttGG$	$TtGg$	$ttGg$
Tg	$TTGg$	$TtGg$	$TTgg$	$Ttgg$
tg	$TtGg$	$ttGg$	$Ttgg$	$ttgg$

In this example, the color of the squares represents pod color. Alleles written in black indicate short plants, while alleles written in red indicate tall plants.

	TG	tG	Tg	tg
TG	$TTGG$	$TtGG$	$TTGg$	$TtGg$
tG	$TtGG$	$ttGG$	$TtGg$	$ttGg$
Tg	$TTGg$	$TtGg$	$TTgg$	$Ttgg$
tg	$TtGg$	$ttGg$	$Ttgg$	$ttgg$

1 Start With the Parents

2 Figure Out the Gametes

3 Line Them Up

4 Write Out the New Genotypes

5 Figure Out the Results