

## **DOMINANT-RECESSIVE INHERITANCE** **(OR COMPLETE DOMINANCE)**

- ◆ Of the pair of genes/alleles for a characteristic, one may be dominant (or more strongly inherited in the offspring), and the other may be \_\_\_\_\_ (or less strongly inherited in the offspring).
- ◆ Dominant genes/alleles are shown by \_\_\_\_\_ letters (e.g. B, T).
- ◆ Recessive genes/alleles are shown by \_\_\_\_\_ letters (e.g. b, t).

### ◆ **Example 1 – Eye Colour**

Dad has purebred \_\_\_\_\_ eyes (BB) and Mum has purebred blue eyes (bb). The **Punnet Square** below shows the \_\_\_\_\_ eye colours inherited by the children.

	B	B
b	Bb	Bb
b	Bb	Bb

Possible genotypes of children – all Bb

Possible phenotypes of children – all brown-eyed children

### ◆ **Example 2 – Eye Colour**

Dad has \_\_\_\_\_ brown eyes (Bb) and Mum has blue eyes (\_\_\_\_\_).

The possible eye colours of the children will be ...

	B	b
b	Bb	bb
b	Bb	bb

Possible genotypes = 2Bb : 2bb  
= 1Bb : 1bb

Possible phenotypes = 2 brown : 2 blue  
= 1 brown : 1 blue

This means that about \_\_\_\_\_ of the children will be brown-eyed and the other ½ will be blue-eyed.

## **TEST-CROSS**

If an individual has a dominant phenotype, it is not known what the exact genotype is. For example with the phenotype of brown eye colour, the genotype could be \_\_\_\_\_ or \_\_\_\_\_. To find out the genotype of a dominant phenotype, one must cross the individual with the dominant phenotype (e.g. BB or Bb) with an individual with the recessive phenotype (e.g. \_\_\_\_\_). If the offspring all have the dominant phenotype (e.g. brown eyes), then the parent was \_\_\_\_\_ (e.g. BB). If the offspring have any with the recessive phenotype, then the parent was hybrid (e.g. Bb).

## MONOHYBRID CROSS

- ◆ If both parents are \_\_\_\_\_ or \_\_\_\_\_ for brown eye colour (both are Bb), the possible eye colours of the children are ...

	B	b
B	BB	Bb
b	Bb	bb

Possible genotypes = 1 BB : 2 Bb : 1 bb

Possible phenotypes = 3 brown : 1 blue

This means that \_\_\_\_\_ of the children will be brown-eyed, and \_\_\_\_\_ will be blue-eyed.

## DIHYBRID CROSS

- ◆ A dihybrid cross is a cross between parents who are both hybrid for 2 characteristics.
- ◆ The ratio of a dihybrid cross is 9:3:3:1.