

Punnett squares show the probability of offspring inheriting specific traits

- ▶ Genetic cross is a deliberate mating between a genetic male and a genetic female.
- ▶ *Monohybrid cross* considers one trait.
- ▶ *Hybrid* is an offspring that has different traits from its parents.

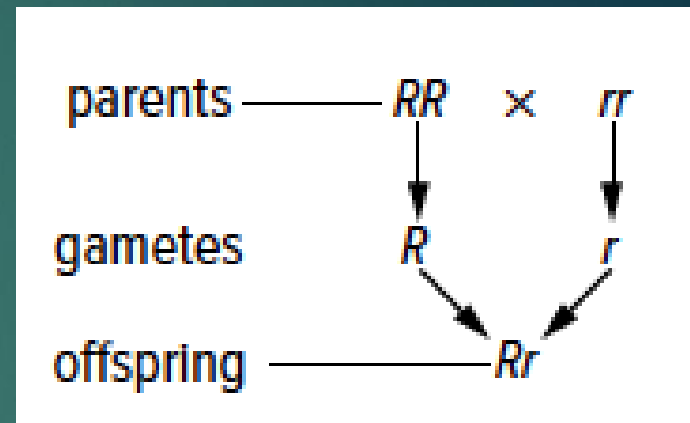
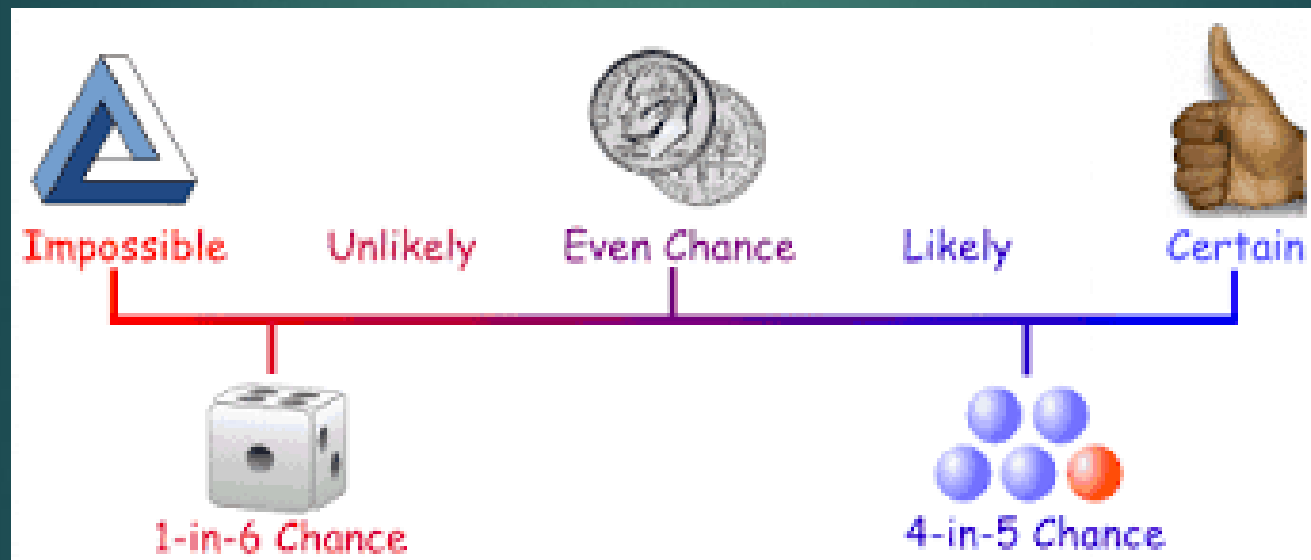


Figure 1.13: A monohybrid cross between a homozygous dominant individual and a homozygous recessive individual. Each parent contributes one type of allele to the offspring. The symbol “ \times ” represents the word *cross*.

Probability



Punnett Squares

- ▶ A **Punnett square** is a tool used to help determine the *probability* of inheriting traits in a monohybrid cross.
- ▶ It shows the genotypes of the parents and the offspring.

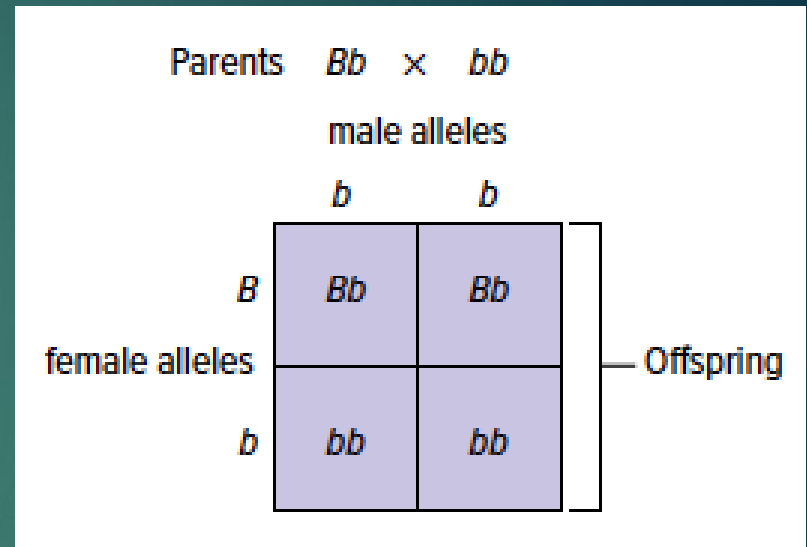


Figure 1.14: In this cross, the female horse can contribute either a B allele or a b allele to offspring. The male horse can contribute only the b allele. The genotypes of the offspring are all possible combinations of alleles that can occur when the gametes combine at fertilization.

Punnett Squares (cont'd)

- ▶ *Phenotypic ratio* shows the frequency of the phenotypes in offspring.
 - ▶ Example: 3 purple flowers:1 white flower
- ▶ *Genotypic ratio* shows the frequency of the genotypes in offspring.
 - ▶ Example: $1BB:2Bb:1bb$

Discussion Questions

1. A monohybrid cross produces half the offspring with one genotype and half the offspring with another genotype. Express this in the form of a ratio.
2. What do the alleles that are written along the top and beside a Punnett square represent?

Practice 😊