

This is the **Foundation Combined** version — Higher Tier and Separate-only content removed.

Punnett squares allow prediction of offspring genotype and phenotype ratios in genetic crosses.

- Dominant allele: expressed with ONE copy. Recessive: needs TWO copies
- Homozygous (BB or bb), heterozygous (Bb)
- Punnett square: write parental gametes along top and side, fill four boxes with offspring genotypes
- Bb × Bb: ratio 1 BB : 2 Bb : 1 bb → 3 dominant : 1 recessive phenotype
- Polydactyly: dominant. Cystic fibrosis: recessive (both parents can be carriers Ff)

Key Terms

| | |
|------------------------|---|
| Polydactyly | Dominant inherited condition — extra digits |
| Cystic fibrosis | Recessive inherited condition — thick mucus |

■ **Exam Tip:** Always draw the FULL Punnett square. Write gametes of each parent along top and side first, then fill in. Show all four boxes — marks given for correct working even if final answer has an error.