11/17/11

Example: Brown eyes Vs. Blue eyes

Brown = B

Blue = b

Three combinations can happen, BB, Bb, and bb

BB = Homozygous, dominantly brown eyed, cannot have a blue eyed child

bb = Homozygous, recessively blue eyed, cannot have a brown eyed child

Bb = Heterozygous, has one of each allele, but is brown eyed, can have either child

Dominant – a gene that will show physically if present

Recessive – a gene that will not show unless both alleles are the same

Homozygous – both alleles are the same, either of a dominant or recessive gene

Heterozygous – one of each allele with the dominant one manifesting physically

Steps for Punnitt’s Square

1. Write the Key
   1. In RI Red Chickens a single comb is dominant to a double comb
   2. D = single comb, d = double comb
2. Determine parents’ genotype
   1. Cross a female who is heterozygous for comb shape with a male who has a double comb
   2. Dd X dd
3. Determine possible gametes
   1. Female (D) or (d)
   2. Male (d) or (d)
4. Draw Punnitt’s Square

|  |  |  |
| --- | --- | --- |
| Male Female 🡪 | D | d |
| d |  |  |
| d |  |  |

1. Fill in the Square

|  |  |  |
| --- | --- | --- |
| Male Female 🡪 | D | d |
| d | Dd | dd |
| d | Dd | dd |

1. Count the Genotypes
   1. Genotypes: Dd – ll, dd – ll
   2. 2:2
2. Count the Phenotypes
   1. Phenotypes: Single Comb – 2, Double comb – 2
3. Answer the question
   1. In a dozen eggs, how many single combs are expected?
   2. About 6, not exact, but ‘tis what’s expected