

Incomplete Dominance

1. If the red colour in zinnias is incompletely dominant over white, how many pink flowers will be in the F1 generation if a red zinnia and a white zinnia are crossed? What are the phenotype and genotype ratios of the F2 generation if 2 pink flowers are crossed?
2. In snapdragons, the alleles for red and white flowers show incomplete dominance. What genotypes and phenotypes would result from a cross between a red snapdragon and a pink snapdragon?
3. In snapdragons, red is incompletely dominant over white flowers, producing a hybrid pink. Broad leaves are incompletely dominant over narrow leaves, producing an intermediate leaf. If two individuals which are hybrid for both traits are crossed, how many of the offspring will be pink with narrow leaves?

Co-dominant Questions

1. In cattle when a red bull ($R^R R^R$) is crossed with a white cow ($R^W R^W$), the heterozygous offspring ($R^R R^W$) are neither red nor white but roan (having intermingled red and white hairs). Determine the phenotypic and genotypic ratios of the offspring produced when:
a) a roan bull is crossed with a roan cow.
b) a roan bull is crossed with a red cow.
2. A farmer wants to establish a pure strain of roan cattle that breeds true. Why is this impossible?
3. A man who is homozygous for type A ($I^A I^A$) blood marries a woman who is heterozygous for type B ($I^B i$) blood. Give the genotype and the phenotype ratios of their possible offspring.
4. A man of type A marries a type B woman and their first child is a type O.
a) Is this possible?
b) If so, what other blood types might show up in the future children?
5. Mary (type B blood) claims her child (type A) was fathered by Frank. The judge has Frank's blood typed and he turns out to be type AB. Is he definitely the father? Could he be the father? Explain both.
6. A man, heterozygous for type A blood, marries a woman of type AB. List the possible genotypes and give the phenotype ratios of their offspring.
7. If a person has type B blood what are the possibilities as to his genotypes?