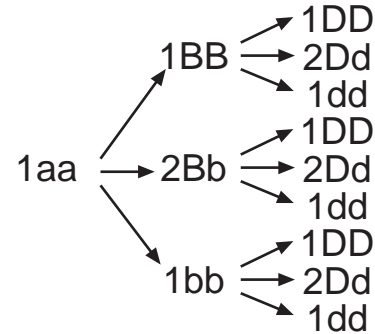
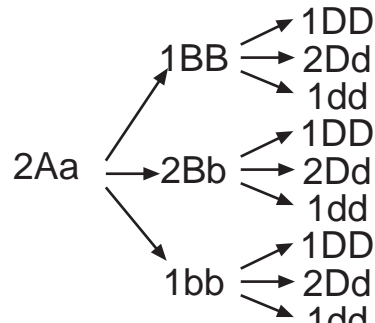
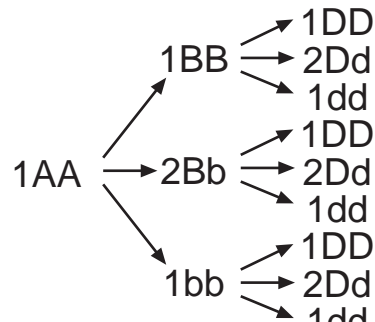
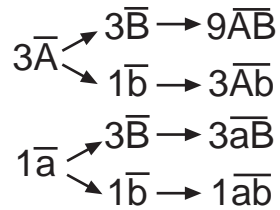
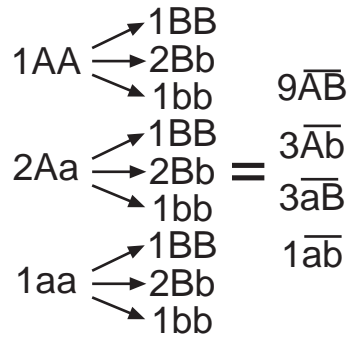
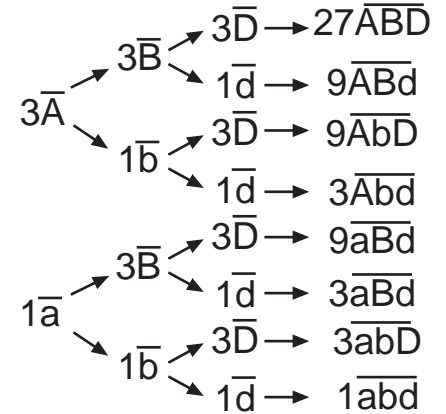


Branching to calculate a dihybrid cross using genotypic or phenotypic frequencies



$$= \begin{matrix} 27\overline{A\overline{B}\overline{D}} \\ 9\overline{A\overline{B}d} \\ 9\overline{A\overline{b}D} \\ 9\overline{a\overline{B}d} \\ 3\overline{A\overline{b}D} \\ 3\overline{a\overline{B}D} \\ 3\overline{abD} \\ 1\overline{abd} \end{matrix}$$



Branching to calculate a trihybrid cross using genotypic or phenotypic frequencies

Binomial expansion to calculate dihybrid and trihybrid crosses using genotypic or phenotypic frequencies

Dihybrid Cross: $(1AA+2Aa+1aa)(1BB+2Bb+2bb)=(3\overline{A}+1\overline{a})(3\overline{B}+1\overline{b})=9\overline{A\overline{B}}+3\overline{A\overline{b}}+3\overline{a\overline{B}}+1\overline{ab}$

Trihybrid Cross: $(1AA+2Aa+1aa)(1BB+2Bb+2bb)(1DD+2Dd+2dd)=(3\overline{A}+1\overline{a})(3\overline{B}+1\overline{b})(3\overline{D}+1\overline{d})=$

$$27\overline{A\overline{B}\overline{D}}+9\overline{A\overline{B}d}+9\overline{A\overline{b}D}+9\overline{a\overline{B}d}+3\overline{A\overline{b}D}+3\overline{a\overline{B}D}+3\overline{abD}+1\overline{abd}$$

General: $(R+r)^n$ where R is the dominant phenotype (=3), r is the recessive phenotype (=1), n = number of genes

For a trihybrid cross; $(R+r)^3 = R^3 + 3R^2r + 3Rr^2 + r^3 =$
 freq of (all three R), (2R and 1r; 3 dif. combs), (1R and 2r; 3 dif. combs), and (all three r)