HWP EXPLAINED CO.UK

Let us consider a pipe gene with **ge** and a, in a random mating population. There would be three genotypes, AA, Aa and aa, for this gene in the population. Suppose the population has N individuals of which D individuals are AA, H individuals are Aa and R individuals are aa so that D + H + R = N. The total number of alleles at this locus in the population would be 2N since each individual has two alleles at a single locus. The total umber of A alleles would be 2D+H because AA individuals have two A alleles each, while each Aa individual has only one A allele. The ration (2D+H)/2N is, therefore, the frequency of A allele in the population, and is represented by p. Similarly, the ratio (2R + H) / 2N is the frequency of allele a, and is written as q.

Therefore, p = (2D + H) / 2N

or $p = (D + \frac{1}{2} H) / N$ and q = (2R + H) / 2N or $= (R + \frac{1}{2} H) / N$

Therefore, p + q = 1 and p = 1 - q, or q = 1 - p