

To multiply two matrices, the first matrix must have the same number of rows ( $p$ ) as the second matrix has columns ( $q$ ). In other words,  $p$  of the first matrix must equal  $q$  of the second matrix. In general terms, a matrix  $C$  which is a product of two matrices,  $A$  and  $B$ , will have elements given by the following

$$c_{ij} = \sum_{k=1}^p a_{ik}b_{kj}$$

where  $i$  =  $i$ th row and  $j$  =  $j$ th column

