

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{pmatrix} = \begin{pmatrix} a_{11}b_{11} + a_{12}b_{21} & a_{11}b_{12} + a_{12}b_{22} \\ a_{21}b_{11} + a_{22}b_{21} & a_{21}b_{12} + a_{22}b_{22} \end{pmatrix}$$

The diagram illustrates the matrix multiplication process. Four curved arrows originate from the first matrix and point to the corresponding elements in the resulting matrix: one from a_{11} to the top-left element, one from a_{12} to the top-right element, one from a_{21} to the bottom-left element, and one from a_{22} to the bottom-right element. Additionally, four straight arrows originate from the second matrix and point to the same four elements in the resulting matrix, showing the dot product of each row of the first matrix with each column of the second matrix.