

The diagram illustrates the matrix multiplication $A \cdot B$ using dot products. Matrix A is $\begin{bmatrix} -1 & 3 \\ 4 & 2 \end{bmatrix}$ and matrix B is $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$. Red boxes highlight the elements of A and B used in each dot product. Red arrows show the flow of data from the matrices to the calculations.

$$A \cdot B = \begin{bmatrix} -1 & 3 \\ 4 & 2 \end{bmatrix} \cdot \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} (-1) \cdot 1 + 3 \cdot 3 & (-1) \cdot 2 + 3 \cdot 4 \\ 4 \cdot 1 + 2 \cdot 3 & 4 \cdot 2 + 2 \cdot 4 \end{bmatrix} = \begin{bmatrix} 8 & 10 \\ 10 & 16 \end{bmatrix}$$