

Each entry in the result matrix is the vector product of the row to the left of it, and the column above it.

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \times \begin{bmatrix} 5 & 10 \\ 15 & 20 \\ 20 & 30 \end{bmatrix} = \begin{bmatrix} 95 & 140 \\ 215 & 320 \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \begin{bmatrix} 55 & 140 \\ 215 & 320 \end{bmatrix}$$

$(1 \times 5) + (2 \times 15) + (3 \times 20)$
 $5 \quad 30 \quad 60$
 95

$(1 \times 10) + (2 \times 20) + (3 \times 30)$
 $10 + 40 + 90$
 140

$(4 \times 5) + (5 \times 15) + (6 \times 20)$
 $20 + 75 + 120$
 215

$(4 \times 10) + (5 \times 20) + (6 \times 30)$
 $40 + 100 + 180$
 320