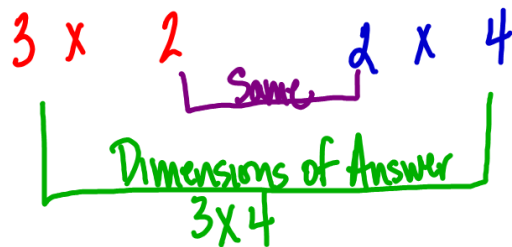
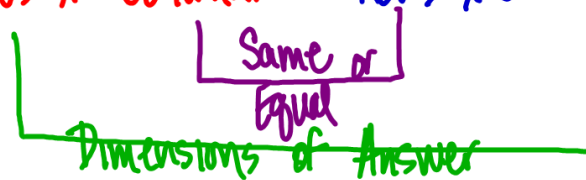
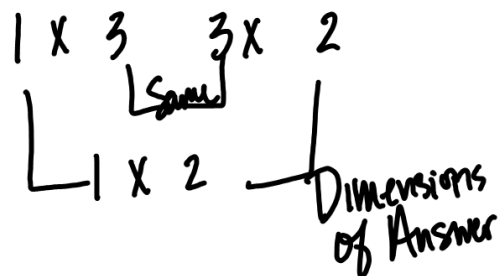


## 4.2 Matrix Multiplication

Rows x Columns      Rows x Columns



Product does not exist



$$2 \times 2 \quad \quad \quad 2 \times 3 \quad \quad \quad (2 \times 3)$$

$$A = \begin{bmatrix} 1 & 5 \\ 2 & -3 \end{bmatrix} \quad B = \begin{bmatrix} 4 & -2 & 6 \\ -1 & 0 & 7 \end{bmatrix} \quad \begin{array}{l} \text{Rows 1st Matrix} \\ \text{Columns 2nd Matrix} \end{array}$$

$$R_1 \begin{bmatrix} \text{Column 1} & \text{Column 2} & \text{Column 3} \\ 1(4) + 5(-1) & 1(-2) + 5(0) & 1(6) + 5(7) \end{bmatrix}$$

$$R_2 \begin{bmatrix} 2(4) + 3(-1) & 2(-2) + 3(0) & 2(6) + 3(7) \end{bmatrix}$$

$$AB = \begin{bmatrix} -1 & -2 & 41 \\ 11 & -4 & -9 \end{bmatrix} \quad C = \begin{bmatrix} 4 & 0 \\ 1 & 2 \\ -2 & -1 \end{bmatrix}$$

$$\text{Row 1} \begin{bmatrix} \text{Column 1} & \text{Column 2} \\ -1(4) + 2(1) + 41(-2) & -1(0) + 2(2) + 41(-1) \end{bmatrix}$$

$$\text{Row 2} \begin{bmatrix} 11(4) + 4(1) + 9(-2) & 11(0) + 4(2) + 9(-1) \end{bmatrix}$$

$$\begin{bmatrix} -4 + 2 + -82 & 0 + -4 - 41 \\ 44 - 4 + 18 & 0 - 8 + 9 \end{bmatrix}$$

$$(AB)C = \begin{bmatrix} -88 & -45 \\ 58 & 1 \end{bmatrix}$$

$$A(BC)$$

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8-20 Even

Rows x Columns