Example.

$$A = \begin{bmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \end{bmatrix} \qquad B = \begin{bmatrix} 0 & -1 & 2 & 1 \\ 4 & 5 & 1 & 0 \\ 1 & 2 & 3 & 1 \end{bmatrix}$$

Example.

- Acme Inc. makes two types of widgets: **WG1** and **WG2**.

- Each widget must go though two processes: **assembly** and **testing**.

- The number of hours required to complete each process is as follows:

	assembly	testing
WG1	3	1
WG2	7	3

- Acme Inc. has three plans in New York, Texas, and Minnesota.

- Hourly cost (in dollars) of each process in each plant is as follows:

	NY	TX	MN
assembly	10	15	12
testing	15	20	15

<u>Problem.</u> What is the cost of producing each type of widgets in each plant?

Other operations on matrices

1) Addition.

If $A = \begin{bmatrix} a_{11} & \ldots & a_{1n} \\ \vdots & & \vdots \\ a_{m1} & \ldots & a_{mn} \end{bmatrix}$, $B = \begin{bmatrix} b_{11} & \ldots & b_{1n} \\ \vdots & & \vdots \\ b_{m1} & \ldots & b_{mn} \end{bmatrix}$ are $m \times n$ matrices then

$$A + B = \begin{bmatrix} a_{11} + b_{11} & \ldots & a_{1n} + b_{1n} \\ \vdots & & \vdots \\ a_{m1} + b_{m1} & \ldots & a_{mn} + b_{mn} \end{bmatrix}$$

Note. The sum $A + B$ is defined only if A and B have the same dimensions.