

## 5 Minute Check

Name the Matrix using dimensions:

1.  $M = \begin{bmatrix} 8 & 0 & 2 \\ 6 & 3 & -1 \end{bmatrix}$

2.  $N = \begin{bmatrix} 6 & -3 & 4 \end{bmatrix}$

Solve for the variables:

3.  $\begin{bmatrix} 1 & 3a \end{bmatrix} = \begin{bmatrix} 4b & 21 \end{bmatrix}$

4.  $\begin{bmatrix} 5a - 2b \\ a + 6b \end{bmatrix} = \begin{bmatrix} 18 \\ 10 \end{bmatrix}$

Perform the indicated operation:

5.  $3 \begin{bmatrix} 2 & 7 & -2 \\ 1 & -3 & 5 \end{bmatrix}$

## 5 Minute Check

Name the Matrix using dimensions (row x column)

1.  $M = \begin{bmatrix} 8 & 0 & 2 \\ 6 & 3 & -1 \end{bmatrix}$   $M_{2 \times 3}$

2.  $N = \begin{bmatrix} 6 & -3 & 4 \end{bmatrix}$   $N_{1 \times 3}$

Solve for the variables:

3.  $\begin{bmatrix} 1 & 3a \end{bmatrix} = \begin{bmatrix} 4b & 21 \end{bmatrix}$   $\frac{1}{4} = b$   $3a = 21$   
 $a = 7$

4.  $\begin{bmatrix} 5a - 2b \\ a + 6b \end{bmatrix} = \begin{bmatrix} 18 \\ 10 \end{bmatrix}$   $5a - 2b = 18 \leftarrow 3$   $15a - 6b = 54$   
 $a + 6b = 10$   $+ a + 6b = 10$   
 $16a = 64$   $a = 4$   
 $4 + 6b = 10$   $6b = 6$   $b = 1$

Perform the indicated operation:

5.  $3 \begin{bmatrix} 2 & 7 & -2 \\ 1 & -3 & 5 \end{bmatrix} = \begin{bmatrix} 6 & 21 & -6 \\ 3 & -9 & 15 \end{bmatrix}$

## 4-2 Adding and Subtracting Matrices

**Objective:** Be able to Add and Subtract matrices

### Addition of Matrices

If A and B are two matrices of the same size, then  $A+B$  will be of that same size where each element is the sum of the corresponding elements

Example: Simplify

$$\begin{bmatrix} -3 & 8 \\ 6 & 5 \\ 2 & 0 \end{bmatrix} - \begin{bmatrix} 4 & 6 \\ 8 & -1 \\ -2 & -3 \end{bmatrix} + 2 \begin{bmatrix} 0 & -2 \\ -1 & 3 \\ 1 & -2 \end{bmatrix}$$

$$\begin{bmatrix} -3 & 8 \\ 6 & 5 \\ 2 & 0 \end{bmatrix} + \begin{bmatrix} -4 & -6 \\ -8 & 1 \\ 2 & 3 \end{bmatrix} + \begin{bmatrix} 0 & -4 \\ -2 & 6 \\ 2 & -4 \end{bmatrix}$$

$$\begin{bmatrix} -7 & -2 \\ -4 & 12 \\ 6 & -1 \end{bmatrix}$$

Example:

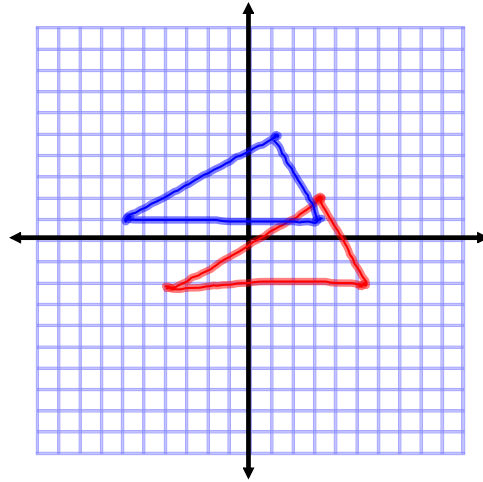
$\triangle ABC$  has endpoints A (3, 2) B (-4, -2) C (5, -2). Use a matrix to translate (move) this triangle up 3 units and left 2 units

$$\begin{array}{l} X \\ Y \end{array} \begin{bmatrix} 3 & -4 & 5 \\ 2 & -2 & -2 \end{bmatrix} + \begin{bmatrix} -2 & -2 & -2 \\ 3 & 3 & 3 \end{bmatrix}$$

A    B    C                      Translation  
Matrix

$$\begin{bmatrix} 1 & -6 & 3 \\ 5 & 1 & 1 \end{bmatrix}$$

A'    B'    C'



## Assignment:

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