3.5 Use Matrix Operations TEKS *a.1, a.5, a.6*

QUESTION How can you use a graphing calculator to perform matrix operations?
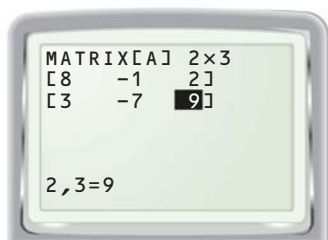
EXAMPLE Perform operations with matrices

Using matrices *A* and *B* below, find *A* + *B* and 3*A* − 2*B*.

$$A = \begin{bmatrix} 8 & -1 & 2 \\ 3 & -7 & 9 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 0 & -5 \\ -4 & 6 & 10 \end{bmatrix}$$
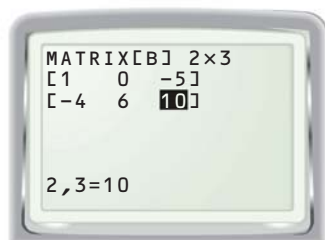
STEP 1 *Enter matrix A*
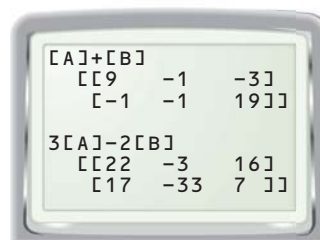Enter the dimensions and elements of matrix *A*.

STEP 2 *Enter matrix B*
Enter the dimensions and elements of matrix *B*.

STEP 3 *Perform calculations*
From the home screen, calculate *A* + *B* and 3*A* − 2*B*.

```
MATRIX[A] 2×3
[8    -1    2]
[3    -7    9]


2,3=9
```

```
MATRIX[B] 2×3
[1    0    -5]
[-4   6    10]


2,3=10
```

```
[A]+[B]
  [[9   -1   -3]
   [-1  -1   19]]
3[A]-2[B]
  [[22  -3   16]
   [17  -33  7 ]]
```

PRACTICE

Use a graphing calculator to perform the indicated operation(s).

1. $\begin{bmatrix} 7 & 3 \\ 5 & -2 \end{bmatrix} + \begin{bmatrix} 12 & -8 \\ 3 & -6 \end{bmatrix}$

2. $2.6 \begin{bmatrix} 12.4 & 6.8 & -1.2 \\ -0.8 & 5.6 & -3.2 \end{bmatrix}$

3. $\begin{bmatrix} 3 & 1 & -2 \\ -1 & 5 & 6 \\ 4 & 13 & 0 \end{bmatrix} + \begin{bmatrix} -9 & 10 & -3 \\ 0 & 6 & 1 \\ 14 & 7 & -8 \end{bmatrix}$

4. $3 \begin{bmatrix} 4 & -3 \\ 8 & -7 \\ -1 & 2 \end{bmatrix} - 2 \begin{bmatrix} -5 & 8 \\ -7 & 9 \\ 4 & -3 \end{bmatrix}$

5. BOOK SALES The matrices below show book sales (in thousands of dollars) at a chain of bookstores for July and August. The book formats are hardcover and paperback. The categories of books are romance (R), mystery (M), science fiction (S), and children's (C). Find the total sales of each format and category for July and August.

| | **July** | | | | **August** | | | |
	R	M	S	C	R	M	S	C
Hardcover	18	16	21	13	26	20	17	8
Paperback	36	20	14	30	40	24	8	20