

# 13-2 Skills Practice

## Introduction to Matrices

State the dimensions of each matrix. Then, identify the position of the circled element in each matrix.

1.  $\begin{bmatrix} 2 \\ \textcircled{7} \\ -1 \\ 3 \end{bmatrix}$   $4 \times 1$   
 2 row  
 1 col.

2.  $\begin{bmatrix} -7 & \textcircled{3} \\ 0 & 9 \\ 11 & 8 \end{bmatrix}$   $3 \times 2$   
 2 row  
 2 col.

3.  $\begin{bmatrix} 6 & \textcircled{3} & 1 & 0 & 7 \\ 0 & 0 & 1 & 4 & 3 \end{bmatrix}$   
 $2 \times 5$   
 1 row  
 2 col.

4.  $\begin{bmatrix} 12 & 19 \\ 37 & -18 \\ \textcircled{15} & 38 \\ -7 & 96 \end{bmatrix}$   
 $4 \times 2$   
 3 row, 1 col.

5.  $\begin{bmatrix} 2 & 3 & -4 \\ 1 & 1 & \textcircled{3} \\ 0 & -1 & 2 \end{bmatrix}$   
 $3 \times 3$   
 3 row  
 3 col.

6.  $\begin{bmatrix} 3 & -7 \\ \textcircled{6} & 2 \end{bmatrix}$   
 $2 \times 2$   
 2 row  
 1 col.

7.  $[-28 \textcircled{42}]$   
 $1 \times 2$   
 1 row  
 2 col.

8.  $\begin{bmatrix} 1 & 0 & 2 & 1 \\ 0 & 1 & \textcircled{0} & 2 \\ 0 & 0 & 1 & 5 \end{bmatrix}$   
 $3 \times 4$   
 2 row  
 3 col.

If  $A = \begin{bmatrix} 5 & 2 & -7 \\ -1 & 0 & 13 \\ 3 & 8 & 6 \end{bmatrix}$ ,  $B = \begin{bmatrix} 2 & 9 & -3 \\ 12 & 4 & 7 \\ -6 & -2 & 5 \end{bmatrix}$ ,  $C = \begin{bmatrix} -4 & 2 \\ 9 & 7 \\ 15 & 33 \end{bmatrix}$ , and  $D = \begin{bmatrix} 37 & 22 \\ -5 & 12 \\ 11 & 0 \end{bmatrix}$ ,

find each sum, difference, or product. If the sum or difference does not exist, write *impossible*.

9.  $A + B$

$$\begin{bmatrix} 7 & 11 & -10 \\ 11 & 4 & 20 \\ -3 & 6 & 11 \end{bmatrix}$$

10.  $B + C$

impossible

11.  $C + D$

$$\begin{bmatrix} 33 & 24 \\ 4 & 19 \\ 26 & 33 \end{bmatrix}$$

12.  $D - B$

impossible

13.  $A - B$

$$\begin{bmatrix} 3 & -7 & -4 \\ -13 & -4 & 6 \\ 9 & 10 & 1 \end{bmatrix}$$

14.  $D - C$

$$\begin{bmatrix} 41 & 20 \\ -14 & 5 \\ -4 & -33 \end{bmatrix}$$

15.  $2D$

$$\begin{bmatrix} 74 & 44 \\ -10 & 24 \\ 22 & 0 \end{bmatrix}$$

16.  $4B$

$$\begin{bmatrix} 8 & 36 & -12 \\ 48 & 16 & 28 \\ -24 & -8 & 20 \end{bmatrix}$$

17.  $-3A$

$$\begin{bmatrix} -15 & -6 & 21 \\ 3 & 0 & -39 \\ -9 & -24 & -18 \end{bmatrix}$$

18.  $3C$

$$\begin{bmatrix} -12 & 6 \\ 27 & 21 \\ 45 & 99 \end{bmatrix}$$

19.  $2C + B$

impossible

20.  $2B + A$

$$\begin{bmatrix} 9 & 20 & -13 \\ 23 & 8 & 27 \\ -9 & 4 & 16 \end{bmatrix}$$