

Lesson 1.8

Example 1

Give the dimensions of matrix A .

$$A = \begin{bmatrix} 5 & 8 & 14 & 17 \\ 9 & 11 & 9 & 6 \\ 0 & 2 & 1 & 4 \end{bmatrix}$$

Solution

The matrix has 3 rows and 4 columns, so its dimensions are 3×4 .

Example 2

Use matrixes A and B .

$$A = \begin{bmatrix} 19 & 12 \\ 10 & 15 \\ 25 & 14 \end{bmatrix}$$

$$B = \begin{bmatrix} 12 & 8 \\ 3 & 7 \\ 5 & 0 \end{bmatrix}$$

a. Find $A + B$

b. Find $A - B$

Solution

$$\text{a. } A + B = \begin{bmatrix} 19+12 & 12+8 \\ 10+3 & 15+7 \\ 25+5 & 14+0 \end{bmatrix} = \begin{bmatrix} 31 & 20 \\ 13 & 22 \\ 30 & 14 \end{bmatrix}$$

$$\text{b. } A - B = \begin{bmatrix} 19-12 & 12-8 \\ 10-3 & 15-7 \\ 25-5 & 14-0 \end{bmatrix} = \begin{bmatrix} 7 & 4 \\ 7 & 8 \\ 20 & 14 \end{bmatrix}$$

Example 3

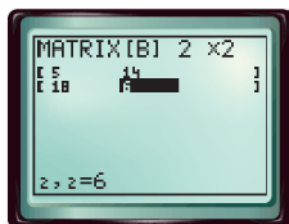
Use a graphing utility to find the sum and the difference of matrices A and B .

$$A = \begin{bmatrix} 7 & 7 \\ 24 & 33 \end{bmatrix}$$

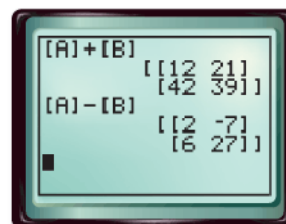
$$B = \begin{bmatrix} 5 & 14 \\ 18 & 6 \end{bmatrix}$$

Solution

Use the matrix feature to enter matrix A .



Use the matrix feature to enter matrix B .



At the home screen, calculate the sum and difference.

Example 4

ENTERTAINMENT An electronics retailer had the items shown in the table in stock at the beginning of June. During the month of June, the retailer received the following shipment.

	Silver	Black
TV stand	15	24
Bookshelf speakers	42	38
Tower speakers	56	74

TV stand (12, 7)

Bookshelf speakers (14, 16)

Tower speakers (18, 6)

Also during the month of June, customers made the following purchases.

TV stand (23, 19)

Bookshelf speakers (32, 28)

Tower speakers (34, 52)

- Write inventory matrix A .
- Write shipment matrix B .
- Write purchase matrix C .
- Calculate $A + B - C$. What does this matrix represent?

Solution

$$\mathbf{a.} \quad A = \begin{bmatrix} 15 & 24 \\ 42 & 38 \\ 56 & 74 \end{bmatrix}$$

$$\mathbf{b.} \quad B = \begin{bmatrix} 12 & 7 \\ 14 & 16 \\ 18 & 6 \end{bmatrix}$$

$$\mathbf{c.} \quad C = \begin{bmatrix} 23 & 19 \\ 32 & 28 \\ 34 & 52 \end{bmatrix}$$

$$\mathbf{d.} \quad A + B - C = \begin{bmatrix} 15 + 12 - 23 & 24 + 7 - 19 \\ 42 + 14 - 32 & 38 + 16 - 28 \\ 56 + 18 - 34 & 74 + 6 - 52 \end{bmatrix} = \begin{bmatrix} 4 & 12 \\ 24 & 26 \\ 40 & 28 \end{bmatrix}$$

This matrix represents the inventory levels for each item at the end of June.