



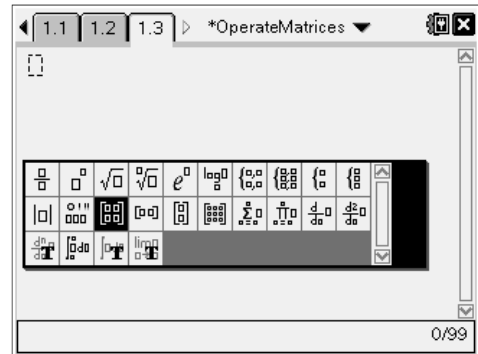
Open up a new TI-Nspire document. Insert a new *Calculator* page to start this activity.

Part 1 – Adding and Subtracting Matrices

Matrices are located in the Math Template, which can be accessed through the catalog (Ⓜ) or by pressing (Ⓜ). The template is pictured at the right.

The highlighted template is for a 2×2 matrix. Select this template by pressing (enter).

Fill in the values by typing the number and using either (tab) or the NavPad to move between the entries in each row or column.



1. Enter the following examples. Record the results for each exercise.

a. $\begin{bmatrix} 2 & 5 \\ 8 & -11 \end{bmatrix} + \begin{bmatrix} 1 & 0 \\ -3 & 7 \end{bmatrix}$

b. $\begin{bmatrix} 2 & 3 \\ 10 & -1 \end{bmatrix} - \begin{bmatrix} 4 & 9 \\ -5 & 2 \end{bmatrix}$

c. $\begin{bmatrix} 4 \\ 9 \end{bmatrix} + \begin{bmatrix} 1 & -6 \\ -2 & 8 \end{bmatrix}$

d. $\begin{bmatrix} 7 & -9 \\ -3 & 4 \end{bmatrix} + \begin{bmatrix} 6 & -5 & 0 \\ -1 & 0 & 3 \end{bmatrix}$

2. When can matrices be added or subtracted?

3. How does the error message help figure out the rule to add and subtract matrices?

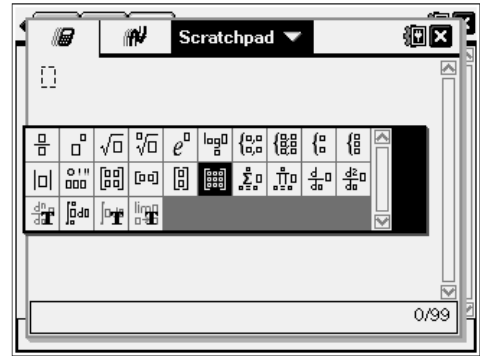
4. What is the rule to add and subtract matrices?

Operating on Matrices

Part 2 – Multiplying Matrices

Insert a new *Calculator* page by pressing $\text{ctrl} + \text{I}$ and selecting **Calculator**.

In this problem, you will use the 3×3 matrix template (shown at the right). When you select this template, a dialogue box will appear and ask you to enter the number of rows and columns of the matrix you want to create.



Multiply two matrices in the same manner as adding or subtracting. As you complete the examples, you should think about the dimensions of the two matrices multiplied together and the answer.

5. Calculate the following examples. Record the results for each exercise.

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

b. $\begin{bmatrix} 1 & 9 \end{bmatrix} \cdot \begin{bmatrix} -1 \\ -4 \end{bmatrix}$

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

d. $\begin{bmatrix} 2 & 5 & 7 \\ -4 & 11 & -8 \\ -6 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 3 & 6 & 10 \\ 0 & -1 & 1 \\ 7 & 1 & 5 \end{bmatrix}$

e. $\begin{bmatrix} -2 & 0 \\ 8 & 4 \end{bmatrix} \cdot \begin{bmatrix} 3 \\ 5 \\ 9 \end{bmatrix}$

6. What dimension matrices could be multiplied?

7. If the matrices could be multiplied, what is the dimension of the result?

8. If an $a \times b$ matrix is multiplied by a $c \times d$ matrix, what must be true in order to get an answer?