

## Activity 27

## Matrix arithmetic

1.  $\begin{bmatrix} 4 & 6 \\ 1 & 5 \end{bmatrix}$

2.  $\begin{bmatrix} 2 & 10 \\ 4 & 6 \end{bmatrix}$

3.  $\begin{bmatrix} 9 & 3 \\ -3 & 6 \end{bmatrix}$

4.  $\begin{bmatrix} 11 & 13 \\ 1 & 12 \end{bmatrix}$

5. Not possible invalid dimension  
The matrices have different sizes, i.e. C has 3 rows and A has 2 rows.

6. Not possible invalid dimension The matrices have different sizes.

7.  $\begin{bmatrix} 5 & 18 \\ 3 & 1 \end{bmatrix}$

8.  $\begin{bmatrix} -2 & 11 \\ 3 & 8 \end{bmatrix}$

9. BC seen as a single variable.  $B \times C$  is not possible.

10.  $\begin{bmatrix} -7 & -3 \\ -5 & 7 \\ 5 & 13 \end{bmatrix}$

11. Not possible invalid dimension. The number of columns in the first matrix is not the same as the number of rows in the second matrix.

12.  $\begin{bmatrix} 8 & 5 \\ -5 & 3 \end{bmatrix}$

13. Not possible invalid dimension  $B \times A$  is a  $2 \times 2$  matrix whereas C is  $3 \times 2$ .

14.  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

ClassPad calculator interface showing matrix operations. Matrix A is  $\begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$  and matrix B is  $\begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ . The interface includes a toolbar with icons for matrix input, calculation, and editing.

ClassPad calculator interface showing matrix C as  $\begin{bmatrix} -1 & 3 \\ 2 & -2 \\ 5 & 1 \end{bmatrix}$ . It displays several operations:  $A+B$  resulting in  $\begin{bmatrix} 4 & 6 \\ 1 & 5 \end{bmatrix}$ ,  $2B$  resulting in  $\begin{bmatrix} 2 & 10 \\ 4 & 6 \end{bmatrix}$ ,  $3A$  resulting in  $\begin{bmatrix} 9 & 3 \\ -3 & 6 \end{bmatrix}$ ,  $2B+3A$  resulting in  $\begin{bmatrix} 11 & 13 \\ 1 & 12 \end{bmatrix}$ ,  $A \times B$  resulting in  $\begin{bmatrix} 5 & 18 \\ 3 & 1 \end{bmatrix}$ , and  $B \times A$  resulting in  $\begin{bmatrix} -2 & 11 \\ 3 & 8 \end{bmatrix}$ .

ClassPad calculator interface showing matrix BC as  $\begin{bmatrix} -7 & -3 \\ -5 & 7 \\ 5 & 13 \end{bmatrix}$ . It also displays  $A^2$  resulting in  $\begin{bmatrix} 8 & 5 \\ -5 & 3 \end{bmatrix}$  and  $B^{(-1)}B$  resulting in the identity matrix  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ .