

**CYU 1.5.1 Adding Subtracting and Scalar Multiplication with Matrices**

- Use when you get it right all by yourself
- S** Use when you did it all by yourself, but made a silly mistake
- H** Use when you could do it alone with a little help from teacher or peer
- G** Use when you completed the problem in a group
- X** Use when a question was attempted but wrong (get help)
- N** Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Adding Matrices	5	1, 15	9, 13
Subtracting Matrices	2	10, 15	11, 12, 14
Scalar Multiplication with Matrices	4, 6, 7	3, 16	8, 13, 14

Perform the indicated operation on the following matrix expressions. Show work for full credit.

$$1. \begin{bmatrix} 3 & 6 \\ -1 & -3 \\ -5 & -1 \end{bmatrix} + \begin{bmatrix} 0 & -1 \\ 6 & 0 \\ 2 & 3 \end{bmatrix} = \begin{bmatrix} 3 & 5 \\ 5 & -3 \\ -3 & 2 \end{bmatrix}$$

$$2. \begin{bmatrix} -5 & 2 & -2 \\ 4 & -2 & 0 \end{bmatrix} + \begin{bmatrix} 6 & +5 & +6 \\ -1 & -3 & +3 \end{bmatrix} = \begin{bmatrix} -11 & 7 & 4 \\ 3 & -5 & 3 \end{bmatrix}$$

$$3. -5 \begin{bmatrix} 5 & 6 & 4 \\ 4 & -2 & -1 \end{bmatrix} = \begin{bmatrix} -25 & -30 & -20 \\ -20 & 10 & 5 \end{bmatrix}$$

$$4. -5 \begin{bmatrix} -3 & 0 \\ 0 & 5 \end{bmatrix} = \begin{bmatrix} 15 & 0 \\ 0 & -25 \end{bmatrix}$$

$$5. [4 \ 2] + [-2 \ -6] = [2 \ -4]$$

$$6. 5 \begin{bmatrix} 4 \\ 3 \end{bmatrix} = \begin{bmatrix} 20 \\ 15 \end{bmatrix}$$

$$7. -5[1 \ -2 \ -1 \ 2] = [-5 \ 10 \ 5 \ -10]$$

$$8. -2u[7u \ 3w^2 \ 5u \ 5] = [-14u^2 \ -6uw^2 \ -10u^2 \ -10u]$$

$$9. \begin{bmatrix} -4n & n+m \\ -2n & -4n \end{bmatrix} + \begin{bmatrix} 4 & -5 \\ 3m & 0 \end{bmatrix}$$

$$= \begin{bmatrix} -4n+4 & n+m-5 \\ 3m-2n & -4n \end{bmatrix}$$

$$10. 5[6 \ 1 \ 2 \ -6] - [1 \ 6 \ -6 \ 6]$$

$$= [30 \ 5 \ 10 \ -30] + [-1 \ -6 \ 6 \ -6]$$

$$= [29 \ -1 \ 16 \ -36]$$

$$11. [(-x-1) \ -2x \ -5y] + [y \ +2 \ +3x]$$

$$= [-x-y-1 \ -2x+2 \ 3x-5y]$$

$$12. \begin{bmatrix} 5 & 3 \\ 5 & 1 \end{bmatrix} + \begin{bmatrix} +6 & -1 \\ 0 & +4 \end{bmatrix} + \begin{bmatrix} 5 & -4 \\ +2 & +6 \end{bmatrix} = \begin{bmatrix} 5+6-5 & 3-1-4 \\ 5+0+2 & 1+4+6 \end{bmatrix} = \begin{bmatrix} 6 & -2 \\ 7 & 11 \end{bmatrix}$$

$$13. -5([0 \ -2 \ 5] + [2 \ 0 \ 2])$$

$$= -5[2 \ -2 \ 7] = [-10 \ 10 \ -35]$$

$$14. -5[6 \ 1 \ 2 \ -6] + [1 \ -6 \ +6 \ -6]$$

$$= [-30 \ -5 \ -10 \ 30] + [-1 \ -6 \ 6 \ -6]$$

$$= [-31 \ -11 \ -4 \ 24]$$

15. Explain in your own words what MUST be true in order to add or subtract matrices.

matrices must have the same dimensions to add or subtract them.

16. Explain in your own words what it means to perform scalar multiplication on a matrix.

Distribute the scalar multiplier to each element inside the matrix it is touching.

CYU Reflection: How far can you go: basic, intermediate, or advanced?

#### Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

