LESSON MAKER PRO

Matrix Move Set

Add, subtract, and multiply matrices with confidence.

HIGH SCHOOL · HSN-VM.C.8

CCSS.Math.Content.HSN-VM.C.8 "(+) Add, subtract, and multiply matrices of appropriate dimensions."

NAME _____ DATE _____

MATRIX OPERATION RULES

You can add or subtract matrices only when they have the same number of rows and columns. Add or subtract entries in matching positions. To multiply matrices, the number of columns in the first matrix must equal the number of rows in the second matrix, then multiply across each row and down each column.

WORKED EXAMPLE

Add [[21, 22], [23, 24]] + [[25, 26], [27, 28]].

1. Both matrices are 2 x 2, so addition is defined.
2. Add matching entries: [[21 + 25, 22 + 26], [23 + 27, 24 + 28]].
3. Simplify each entry: [[46, 48], [50, 52]].

Answer: [[46, 48], [50, 52]]

PRACTICE 6 problems

1 Find [[2, -3], [4, 5]] + [[-1, 6], [7, -2]].

ANSWER _____

2 Find [[3, 0, -2], [5, 4, 1]] - [[-4, 2, 6], [1, -3, 7]].

ANSWER _____

3 Find [[1, 2], [3, -1]] * [[4, 0], [2, 5]].

ANSWER _____

4 Find [[2, -3, 4]] * [[-1], [5], [2]].

ANSWER _____

5 Find [[1, 0], [-2, 3], [4, -1]] * [[3], [-2]].

ANSWER _____

6 Find [[1, 2, 0], [-1, 3, 2]] * [[4, -2], [0, 5], [3, 1]].

ANSWER _____

APPLY IT Show your work

1 A student council tracks spirit-week sales. Rows represent lunch and after-school sales, and columns represent hoodies and stickers. Week 1 is [[6, 3], [4, 5]], and Week 2 is [[2, 7], [3, 1]]. Find the matrix for total sales over both weeks.

WORK SPACE

ANSWER _____

2 Two friend groups buy student tickets, guest tickets, and snack vouchers for a school music festival. Their quantities are [[2, 1, 3], [1, 2, 2]], and the price column is [[8], [12], [3]] in dollars. Find the total cost for each group.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Let A = [[2, -1], [3, 0]], B = [[4, 2], [-2, 5]], and C = [[1, -3], [4, 2]]. Find AB - C.

WORK SPACE AND ANSWER

ANSWER KEY # Matrix Move Set

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find [[2, -3], [4, 5]] + [[-1, 6], [7, -2]].	**[[1, 3], [11, 3]]**
2	Find [[3, 0, -2], [5, 4, 1]] - [[-4, 2, 6], [1, -3, 7]].	**[[7, -2, -8], [4, 7, -6]]**
3	Find [[1, 2], [3, -1]] * [[4, 0], [2, 5]].	**[[8, 10], [10, -5]]**
4	Find [[2, -3, 4]] * [[-1], [5], [2]].	**[[-9]]**
5	Find [[1, 0], [-2, 3], [4, -1]] * [[3], [-2]].	**[[3], [-12], [14]]**
6	Find [[1, 2, 0], [-1, 3, 2]] * [[4, -2], [0, 5], [3, 1]].	**[[4, 8], [2, 19]]**

PART 2 · APPLY IT

1. **[[8, 10], [7, 6]]** Add the two matrices entry by entry because both matrices have the same dimensions. The rows still represent lunch and after-school sales, and the columns still represent hoodies and stickers.
2. **[[37], [38]] dollars** Multiply each row of quantities by the price column. The first entry is the first group's cost, and the second entry is the second group's cost.

CHALLENGE

[[9, 2], [8, 4]]

Accept equivalent matrix formatting, as long as entries remain in the correct rows and columns. For the music festival problem, accept stated totals of $37 and $38 in the correct group order.