LESSON MAKER PRO

Matrix Move Lab

Add, subtract, scale, and multiply matrices with purpose.

HIGH SCHOOL · MA.912.NSO.4

MA.912.NSO.4 "Represent and perform operations with matrices."

NAME _____ DATE _____

MATRIX OPERATION RULES

You can add or subtract matrices only when they have the same number of rows and columns. To multiply AB, the number of columns in A must equal the number of rows in B, then multiply matching row and column entries and add the products.

WORKED EXAMPLE

Find A + B if A = [[31, 32], [33, 34]] and B = [[35, 36], [37, 38]].

1. Add entries in matching positions: [[31 + 35, 32 + 36], [33 + 37, 34 + 38]].
2. Compute each sum: [[66, 68], [70, 72]].

Answer: A + B = [[66, 68], [70, 72]].

PRACTICE 6 problems

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

ANSWER _____

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

ANSWER _____

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

ANSWER _____

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

ANSWER _____

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

ANSWER _____

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

ANSWER _____

APPLY IT Show your work

1 A media club tracks its social media posts. Rows represent Week 1 and Week 2, and columns represent video posts and photo posts. Matrix A = [[4, 2], [3, 5]] shows posts made before a campaign. Matrix B = [[1, 3], [2, 1]] shows posts made during the campaign. Find A + B to show the total posts.

WORK SPACE

ANSWER _____

2 A music club sells sticker packs, keychains, and snack vouchers at two concert booths. Q = [[2, 1, 2], [1, 4, 0]] gives quantities sold, with rows for Booth 1 and Booth 2 in that order. p = [[2], [3], [4]] gives the price of each item in dollars. Find Qp to determine the revenue at each booth.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

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

_____

_____

ANSWER KEY

Matrix Move Lab

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find [[1, -3], [4, 0]] + [[-2, 5], [3, -1]].	**[[-1, 2], [7, -1]]**
2	Find [[6, 2], [-4, 7]] - [[1, -5], [3, 2]].	**[[5, 7], [-7, 5]]**
3	Find -2[[3, -1], [0, 4]].	**[[-6, 2], [0, -8]]**
4	Find [[1, 2], [3, 1]][[2, -1], [0, 4]].	**[[2, 7], [6, 1]]**
5	Find [[1, 0, -1], [2, 3, 1]][[2, 1], [1, -1], [0, 2]].	**[[2, -1], [7, 1]]**
6	Let A = [[2, -1], [3, 0]] and B = [[-3, 5], [1, -2]]. Find 3A - B.	**[[9, -8], [8, 2]]**

PART 2 · APPLY IT

1. **[[5, 5], [5, 6]]** Add the entries in matching week and post-type positions. The sum matrix is [[5, 5], [5, 6]].
2. **[[15], [14]]** Multiply each booth row in Q by the price column p. Booth 1 earned 15 dollars, and Booth 2 earned 14 dollars.

CHALLENGE

AB = [[2, -1], [2, -2]] and BA = [[1, 7, 1], [1, -3, -1], [2, 14, 2]].

Accept any clear matrix notation that preserves the correct row and column order. For multiplication, accept correct intermediate work even if students use dot products or expanded products.