Matrix Operations: Guided Notes

# Definitions

**Matrix:** A rectangular arrangement of terms into rows and columns; plural = matrices.

**Element:** Each term (or number) in the matrix.

**Dimensions**: Describe the size and shape of a matrix; the number of rows () by the number of columns (); written as  and read as “ by .”



**dimensions**: 2 x 3 matrix

2 is an element of matrix A that is in the 2nd row,   
 3rd column, often written a23

name of  
the matrix

**Scalar multiplication**: Multiplying each element of the matrix by the scalar value (the number in front of the matrix).



\*You can multiply any matrix by a scalar.

multiply each element by 3

# Examples

Perform the indicated matrix operations.

*You can add or subtract matrices only if they share the same dimensions because you add or subtract corresponding elements.*

**1)** 

**2)** 

# Multiplying Matrices

*You can multiply matrices only when the number of columns of the first matrix equals the number of rows of the second matrix.*



**dimensions**: a 2 x 3 matrix multiplied by a 3 x 1 matrix will result in a 2 x 1 matrix



# Examples

Perform the indicated matrix operations.

**3)** 

**4)** To calculate a basketball player’s overall rating, a computer program multiplies the rating for each attribute by the weights of each attribute to yield an overall player rating (OVR).



Because we’re going to calculate the ratings by hand, we’ll look at a much smaller set of data and compare only two players, LeBron James and Michael Jordan. Let’s say that LeBron James has an 84 defense rating, a 66 rebounding rating, and an 89 scoring rating. Michael Jordan has an 86 defense rating, a 68 rebounding rating, and an 86 scoring rating. The weights for those categories are as follows: 50%, 30%, and 20%. Use matrix multiplication to determine which player has the higher OVR.