

## Matrix Multiplication Assignment

1. Matrices are conformable for multiplication when:

- a. Number of rows of 1<sup>st</sup> = Number of columns of 2<sup>nd</sup>
- b. Number of Columns of 1<sup>st</sup> = Number of Row of 2<sup>nd</sup>
- c. Number of rows of 1<sup>st</sup> = Number of rows of 2<sup>nd</sup>
- d. Number of Column of 1<sup>st</sup> = Number of Column of 2<sup>nd</sup>

2. If order of a matrix A is  $3 \times 2$  and order of matrix B is  $2 \times 4$  then order of AB will be:

- a.  $2 \times 2$
- b.  $3 \times 2$
- c.  $3 \times 4$
- d.  $4 \times 3$

3. In general matrix multiplication is:

- a. Commutative
- b. Associative
- c. Both A & B
- d. Symmetric

4. Given  $A = \begin{bmatrix} -1 \\ 2 \end{bmatrix}$   $B = \begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$  and  $C = [1 \quad 3]$  find the following if exists:

- a. AB
- b. BA
- c. CA
- d. BC

5. From the matrices if the geometrical figures have following vertices.

- a. A(0,0)                      B(5,2)                      C(-4,2)
- b. A(4,8)                      B(-7,4)
- c. A(0,0)                      B(0,4)                      C(4,4)                      D(0,4)

**Matrix Multiplication** Assignment

6. If  $A = \begin{bmatrix} 3 & 5 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ , find  $AB = ?$

a.  $\begin{bmatrix} 3 & 15 \end{bmatrix}$

b.  $\begin{bmatrix} 18 \\ 26 \end{bmatrix}$

c.  $\begin{bmatrix} 18 & 26 \end{bmatrix}$

d.  $\begin{bmatrix} 44 \end{bmatrix}$

7.  $A \cdot I = ?$

a. 0

b. A

c. None

d. I

8.  $\begin{bmatrix} 30 & -40 \\ 60 & 90 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = ?$

a.  $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

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

c.  $\begin{bmatrix} 30 & -40 \\ 60 & 90 \end{bmatrix}$

d.  $\begin{bmatrix} 30 & 60 \\ 40 & 90 \end{bmatrix}$

9.  $\begin{bmatrix} 1 \\ 4 \end{bmatrix} \begin{bmatrix} -1 \\ 4 \end{bmatrix} = ?$

a.  $\begin{bmatrix} 1 & -1 \\ 4 & 4 \end{bmatrix}$

b.  $\begin{bmatrix} -1 \\ 16 \end{bmatrix}$

c.  $[-15]$

d. None

10.  $A \cdot 0 = \dots\dots\dots$ ,  $A \dots\dots\dots 0$

a.  $\neq, =$

b.  $=, \neq$

c.  $=, =$

d. None

## Matrix Multiplication Assignment

Q. Write True / False....

1. Matrix multiplication is commutative in general. (T/F)

2. In matrices  $(A + B)^2 = A^2 + 2AB + B^2$  (T/F)

3. In general, matrix multiplication is associative (T/F)

4.  $I = I^2 = I^3$  (T/F)

5.  $A(B+C) \neq AB+AC$  (T/F)

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# Matrix Multiplication Assignment

## 1. Matrices are conformable for multiplication when:

- a. Number of rows of 1<sup>st</sup> = Number of columns of 2<sup>nd</sup>
- b. Number of Columns of 1<sup>st</sup> = Number of Row of 2<sup>nd</sup>
- c. Number of rows of 1<sup>st</sup> = Number of rows of 2<sup>nd</sup>
- d. Number of Column of 1<sup>st</sup> = Number of Column of 2<sup>nd</sup>

## 2. If order of a matrix A is 3×2 and order of matrix B is 2×4 then order of AB will be:

- a. 2×2
- b. 3×2
- c. 3×4
- d. 4×3

## 3. In general matrix multiplication is:

- a. Commutative
- b. Associative
- c. Both A & B
- d. Symmetric

## 4. Given $A = \begin{bmatrix} -1 \\ 2 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$ and $C = [1 \quad 3]$ find the following if exists:

- a. AB
- b. BA
- c. CA
- d. BC

For (a) Order is

$$\begin{array}{cc} A & B \\ 2 \times 1 & 2 \times 2 \end{array}$$

└──────────┘

Not equal

For (b) Order is

$$\begin{array}{cc} B & A \\ 2 \times 2 & 2 \times 1 \end{array}$$

└──────────┘

Equal, BA exists and has order 2×1

**Matrix Multiplication** Assignment

$$\begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix} \begin{bmatrix} -1 \\ 2 \end{bmatrix}$$

$$\begin{bmatrix} 1 \times -1 & 0 \times 2 \\ 2 \times -1 & 4 \times 2 \end{bmatrix}$$

$$\begin{bmatrix} -1 & 0 \\ -2 & 8 \end{bmatrix}$$

For (c) Order is

C	A
$1 \times 2$	$2 \times 1$

equal, CA is possible and has the order  $1 \times 2$ 

$$C = [1 \quad 3] \quad A = \begin{bmatrix} -1 \\ 2 \end{bmatrix}$$

$$[1 \quad 3] \begin{bmatrix} -1 \\ 2 \end{bmatrix}$$

$$[1 \times -1 \quad -3 \times 2]$$

$$[-1 \quad -6]$$

For (d) Order is

B	C
$2 \times 1$	$2 \times 2$

Not equal BC doesn't exist.

**5. From the matrices if the geometrical figures have following vertices.**

- |           |         |         |
|-----------|---------|---------|
| a. A(0,0) | B(5,2)  | C(-4,2) |
| b. A(4,8) | B(-7,4) |         |
| c. A(0,0) | B(0,4)  | C(4,4)  |

a.  $\begin{bmatrix} 0 & 0 \\ 5 & 2 \\ -4 & 2 \end{bmatrix}$

b.  $\begin{bmatrix} 4 & 8 \\ -7 & 4 \end{bmatrix}$

c.  $\begin{bmatrix} 0 & 0 \\ 0 & 4 \\ 4 & 4 \end{bmatrix}$

**Matrix Multiplication** Assignment

11. If  $A = \begin{bmatrix} 3 & 5 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ , find  $AB = ?$

a.  $\begin{bmatrix} 3 & 15 \end{bmatrix}$

b.  $\begin{bmatrix} 18 \\ 26 \end{bmatrix}$

c.  $\begin{bmatrix} 18 & 26 \end{bmatrix}$

d.  $\begin{bmatrix} 44 \end{bmatrix}$

12.  $A \cdot I = ?$

a. 0

b. A

c. None

d. I

13.  $\begin{bmatrix} 30 & -40 \\ 60 & 90 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = ?$

a.  $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

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

c.  $\begin{bmatrix} 30 & -40 \\ 60 & 90 \end{bmatrix}$

d.  $\begin{bmatrix} 30 & 60 \\ 40 & 90 \end{bmatrix}$

14.  $\begin{bmatrix} 1 \\ 4 \end{bmatrix} \begin{bmatrix} -1 \\ 4 \end{bmatrix} = ?$

a.  $\begin{bmatrix} 1 & -1 \\ 4 & 4 \end{bmatrix}$

b.  $\begin{bmatrix} -1 \\ 16 \end{bmatrix}$

c.  $\begin{bmatrix} -15 \end{bmatrix}$

d. None

15.  $A \cdot 0 \dots \dots \dots 0$ ,  $A \dots \dots \dots 0$

a.  $\neq, =$

b.  $=, \neq$

c.  $=, =$

d. None

## Matrix Multiplication Assignment

Q. Write True / False....

1) Matrix multiplication is commutative in general. (T/F)

2) In matrices  $(A + B)^2 = A^2 + 2AB + B^2$  (T/F)

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