MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

MATRICES

Example

1. Write the order of matrix $\begin{bmatrix} -3 & 2 \\ 4 & -1 \\ 0 & 2 \end{bmatrix}$

2. Write a matrix of order 3×3 in which every element is equal to 3.

3. Write all the possible orders of the matrix containing 6 elements.

4. Find the order of following matrix

$$X = \begin{pmatrix} 1 & 0 & 2 & 1 \\ 2 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 \\ 1 & 0 & 3 & 2 \end{pmatrix}$$

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Very Short Answer Type Questions

1. Matrices are used to store information,

(True/False)

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2. A rectangular arrangement of number in rows and columns is called _____

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3. Write the matix of the order 2×1.

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4. The order of the matrix $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 4 & 3 & 2 & 1 \\ 2 & 4 & 3 & 1 \end{bmatrix}$ is

_____

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5. If a matrix contians 3 columns and 5 rows, find the order of the matrix.

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6. The orders of the matrices $A = \begin{bmatrix} 1 & 4 \\ -1 & 0 \\ 5 & 2 \end{bmatrix}$

and $B = \begin{bmatrix} 1 & 2 & 3 \\ -5 & -2 & 1 \end{bmatrix}$ are _____ (equal/ not

equal)

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7. In the matrix $\begin{bmatrix} 2 & -1 & 4 \\ -3 & 0 & 5 \end{bmatrix}$, the element in

the second row, third column is _____

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8. The order of the matrix formed with , the information given in the following tables is

_____

Subject	Marks Obtained in		
	Test 1	Test 2	Test 3
English	15	20	18
Maths	24	22	23
Science	20	21	22

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9. If the order of a matrix is 3×4, then the number of elements in the matrix is _____

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10. A matrix contains 2 rows and 4 columns and every element in the matrix is 1, then find the matrix.

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Short Answer Type Questions

1. If $X = \begin{bmatrix} 3 & 2 \\ -1 & 4 \end{bmatrix}$, then find $IXI^{-1} =$ _____.

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2. Write all possible orders of the matrices that contain 4 elements.

3. Find the order of the matrix

$$\begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 5 & 6 & 7 & 8 & 4 & 5 & 6 \\ 9 & 10 & 11 & 0 & 10 & 9 & 11 \end{bmatrix}$$

4. There are 4 routes from city A to city B, 5 routes from city B to city C and 3 routes from city C to city A. Convert the above information into matrix form.

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5. The order of a matrix is 4×1 and every element in the matrix is 5. Find the matrix.

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6. Write a matrix which contains 1 row and 3 columns.

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7. If a matrix has 15 elements, then find the possible order of the matrix.

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8. Find the order of the matrix.

$$\begin{bmatrix} 1 & 3 & 6 \\ 7 & 8 & 9 \\ 6 & 9 & 10 \\ 9 & 3 & 1 \\ 10 & 4 & 2 \end{bmatrix}$$

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9. Three students Anil, Nikhil and Sunil went to

a stationary shop and purchased some items.

Anil purchased 3 books, 2 erasers and 5 scales.

Sunil purchased 5 books, 6 scales and 3

erasers whereas Nikhil purchased 2 books, 3

scales and 4 erasers. Represent the given data in the matrix form.

10. The distance from Hydrabad to Mumbai, Delhi and Bangalore are 750 km, 800 km and 600 km respectively. Similarly, the distance from Vizag to Mumbai, Delhi and Banglore are 1350 km, 1250 km and 1450 km respectively. Represent the above information as a 3×2 matrix.

Concept Application Level 1

1. If a matrix contain 5 rows and 3 columns, then the number of elements of the matrix is _____

A. 6

B. 8

C. 10

D. 15

Answer: D

2. If a matrix contain 6 elements then the order of the matrix can be _____

    A. 3×2

    B. 2×3

    C. 1×6

    D. All the above.

Answer: D

3. The number of rows of the matrix $\begin{bmatrix} 3 & 4 \\ 5 & 6 \end{bmatrix}$ is

_____

A. 3

B. 4

C. 2

D. 1

Answer: C

4. If a matrix contain 5 elements, then how many different orders of matrices are possible ?

A. 1

B. 2

C. 3

D. 4

Answer: B

5. The number of column of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ is _____

A. 2

B. 6

C. 3

D. 5

Answer: C

6. If a matrix has 7 elements, then the order of the matrix can be

    A. 4×3

    B. 3×4

    C. 4×1

    D. None of these

Answer: D

7. Which of the following is a 1×3 matrix ?

A. $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$

B. $[1, 2, 3, 4]$

C. [4,5,6]

D. All the above.

Answer: C

8. The order of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ is

A. 2×3

B. 3×2

C. 4×1

D. 3×3

Answer: A

$$\begin{array}{c} \quad\quad A \quad B \quad C \\ \textbf{9. } \begin{array}{c} A \\ B \\ C \end{array} \begin{bmatrix} 0 & 3 & 4 \\ 3 & 0 & 5 \\ 4 & 5 & 0 \end{bmatrix} \end{array}$$

The above matrix represent the number of routes by which we can travel from one place to another.

How many ways can a person travel from B to C?

A. 3

B. 5

C. 0

D. 4

Answer: B

10. $\begin{array}{c} \\ A \\ B \\ C \end{array} \begin{array}{ccc} A & B & C \\ \begin{bmatrix} 0 & 3 & 4 \\ 3 & 0 & 5 \\ 4 & 5 & 0 \end{bmatrix} \end{array}$

The above matrix represent the number of routes by which we can travel from one place to another.

How many ways can a person travel from C to A or B ?

A. 3

B. 7

C. 8

D. 9

Answer: D

11. Which of the following is a 2×1 matrix ?

A. [a,b]

B. $\begin{bmatrix} a \\ b \end{bmatrix}$

C. $\begin{bmatrix} a & b \\ c & a \end{bmatrix}$

D. None of these

Answer: B

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12. In the matrix $\begin{bmatrix} 2 & -1 & 4 \\ -3 & 0 & 5 \end{bmatrix}$, the element in the second row and third column is

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A. 5

B. 0

C. 3

D. 4

Answer: A

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13. The order of the matrix formed with the information given in the following table is _____.

Subject	Marks Obtained in		
	Test 1	Test 2	Test 3
English	15	20	18
Maths	24	22	23
Science	20	21	22

A. 1 × 9

B. 9 × 1

C. 3 × 3

D. None of these

Answer: C

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14. A matrix of order $m \times n$ contains 7 elements, then how many different order pairs (m,n) can take ?

A. 2

B. 1

C. 3

D. 7

Answer: A

15. If a matrix contains 8 elements, then the order of the matrix can be _____

A. 2×4

B. 4×2

C. 1×8

D. All of these

Answer: D

Concept Application Level 2

1. If the number of rows and that of columns of a matrix are equal and the matrix contains 16 elements, then the order of the matrix is _____

A. 3×3

B. 4×4

C. 8×8

D. 6×6

Answer: B

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2. The order of the matrix $\begin{bmatrix} a \\ b \\ c \\ d \end{bmatrix}$ is _____

A. 5×1

B. 2×3

C. 1×4

D. 4×1

Answer: D

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3. The element in the second row and third column of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ is _____

A. 7

B. 6

C. 8

D. 9

Answer: A

4. The element in the third column of matrix

$$\begin{bmatrix} 1 & 5 & 10 \\ 3 & 6 & 11 \\ 4 & 7 & 12 \end{bmatrix}$$ are _____

A. 1,3,4

B. 10,11,12

C. 5,6,7

D. 4,7,12

Answer: B

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5. Which of the following is a 2×3 matrix such that every element in the matrix is zero ?

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

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

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

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

Answer: A

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6. The element in the first row and second

column of the matrix $\begin{bmatrix} 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ is _____

A. 7

B. 8

C. 5

D. 6

Answer: C

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7. The element in the second row of the matrix

$$\begin{bmatrix} a & b & c \\ 1 & 2 & 3 \\ 5 & 6 & d \end{bmatrix}$$ are _____

A. 1,2,3

B. a,1,5

C. b,2,6

D. 5,6,d

Answer: A

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8. Anitha, Nikita and Ankitha have purchased some books, pencils and pens, This can be respresented in the following matrix.

$$\begin{array}{c c} & \begin{array}{c c c} \text{Books} & \text{Pens} & \text{Pencils} \end{array} \\ \begin{array}{c} \text{Anitha} \\ \text{Nikitha} \\ \text{Ankitha} \end{array} & \left[\begin{array}{c c c} 5 & 7 & 8 \\ 4 & 3 & 2 \\ 7 & 6 & 0 \end{array}\right] \end{array}$$

The total number of items purchased by

Ankitha is

A. 9

B. 7

C. 13

D. 10

Answer: C

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9. Anitha, Nikita and Ankitha have purchased some books, pencils and pens, This can be respresented in the following matrix.

$$
\begin{array}{c}
\text{Anitha} \\
\text{Nikitha} \\
\text{Ankitha}
\end{array}
\begin{bmatrix}
\text{Books} & \text{Pens} & \text{Pencils} \\
5 & 7 & 8 \\
4 & 3 & 2 \\
7 & 6 & 0
\end{bmatrix}
$$

The total number of books purchased by Anitha, Nikitha and Ankitha is

A. 18

B. 10

C. 15

D. 16

Answer: D

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10. Anitha, Nikita and Ankitha have purchased some books, pencils and pens, This can be respresented in the following matrix.

$$\begin{array}{c} \text{Anitha} \\ \text{Nikitha} \\ \text{Ankitha} \end{array} \begin{bmatrix} \text{Books} & \text{Pens} & \text{Pencils} \\ 5 & 7 & 8 \\ 4 & 3 & 2 \\ 7 & 6 & 0 \end{bmatrix}$$

The number of pencils purchased by Anitha is

A. 8

B. 2

C. 7

D. 15

Answer: A

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11. If a matrix has 11 elements, then the order

of the matrix can be _____

A. 5×6

B. 6×5

C. 10×1

D. None of these

Answer: D

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12. If the number of rows and the number of columns of a matrix are equal and the matrix

contains 25 elements, then the order of the

matrix is _____

A. 4×4

B. 6×6

C. 5×5

D. 1×25

Answer: C

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13. The element in the second row and third columns of the matrix $\begin{bmatrix} x & y & z & p \\ a & b & c & d \end{bmatrix}$ is _____

A. x

B. p

C. d

D. c

Answer: D

14. The order of the matrix [c y x -x -y z] is _____

A. 1×4

B. 6×1

C. 1×6

D. 4×1

Answer: C

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15. The elements in the second column of the

matrix $\begin{bmatrix} 0 & 5 & 3 \\ -5 & 0 & 2 \\ -3 & -2 & 0 \end{bmatrix}$ are _____

A. 0,0,0

B. 5,0,-2

C. 3,2,0

D. None of these

Answer: B

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