

# Exercise 1.1

**Q.1** Find the order of the following matrices.

$$A = \begin{bmatrix} 2 & 3 \\ -5 & 6 \end{bmatrix}$$

It has 2 rows & 2 columns that's why its order is 2 - by -2

$$B = \begin{bmatrix} 2 & 0 \\ 3 & 5 \end{bmatrix}$$

It has 2 rows & 2 columns. So, its order is 2- by -2

$$C = [2 \quad 4]$$

It has 1 row and 2 columns. So, its order is 1 – by -2

$$D = \begin{bmatrix} 4 \\ 0 \\ 6 \end{bmatrix}$$

It has 3 rows and 1 column. So, its order is 3 – by -1

$$E = \begin{bmatrix} a & d \\ b & e \\ c & f \end{bmatrix}$$

It has 3 rows and 2 columns. So, its order is 3 – by –2

$$F = [2]$$

It has 1 row & 1 column. So, its order is 1- by -1

$$G = \begin{bmatrix} 2 & 3 & 0 \\ 1 & 2 & 3 \\ 2 & 4 & 5 \end{bmatrix}$$

$$H = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 0 & 6 \end{bmatrix}$$

It has 2 rows & 3 columns. So, its order is 2- by -3

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**Q.2 Which one of the following matrices are equal?**

1)  $A = [3]$ ,                      2)  $B = [3 \ 5]$ ,

3)  $C = [5-2]$                       4)  $D = [5 \ 3]$

5)  $E = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$                       6)  $F = \begin{bmatrix} 2 \\ 6 \end{bmatrix}$

7)  $G = \begin{bmatrix} 3-1 \\ 3+3 \end{bmatrix}$                       8)  $H = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$

9)  $I = [3 \ 3+2]$                       10)  $J = \begin{bmatrix} 2+2 & 2-2 \\ 2+4 & 2+0 \end{bmatrix}$

**Solution:**

Order of  $A = [3]$  is equal to Order of  $C = [5-2]$

Order of  $B = [3 \ 5]$  is equal to Order of  $I = [3 \ 3+2]$

Order of  $C = [5-2]$  is equal to Order of  $A = [3]$

$D = [5 \ 3]$  has no equal matrix.

$E = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$  has equal matrices.

Order of  $\Rightarrow H = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$  is equal to Order of  $J = \begin{bmatrix} 2+2 & 2-2 \\ 2+4 & 2+0 \end{bmatrix}$

Order of  $F = \begin{bmatrix} 2 \\ 6 \end{bmatrix}$  is equal to Order of  $G = \begin{bmatrix} 3-1 \\ 3+3 \end{bmatrix}$

**Q.3 Find the values of a, b, c & d.**

$$\begin{bmatrix} a+c & a+2b \\ c-1 & 4d-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & +2d \end{bmatrix}$$

**Solution:**

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As Matrices are equal so their corresponding entries are same.

$$a+c=0 \rightarrow (1)$$

$$a+2b=-7 \rightarrow (2)$$

$$c-1=3 \rightarrow (3)$$

$$4d-6=+2d \rightarrow (4)$$

Solving 3<sup>rd</sup> equation

$$c-1=3$$

$$c=3+1$$

$$c=4$$

Solving 2<sup>nd</sup> equation

$$a+2b=-7$$

$$-4+2b=-7$$

$$2b=-7+4$$

$$2b=-3$$

$$b = \frac{-3}{2}$$

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Solving 1<sup>st</sup> equation

$$a+c=0$$

$$a+4=0$$

$$a=-4$$

Solving 4<sup>th</sup> equation

$$4d-6=2d$$

$$-6=2d-4d$$

$$-6=-2d$$

$$d = \frac{-6}{-2}$$

$$d=3$$