## **MISSING NUMBER**

## Directions

Before this chapter we should read chapter "Number Series". About Chapter:- In this chapter some specific patterns are made by some numbers.

The logic is set by "Addition", "Multiplication", "Subtraction", "Divide", "Square" and "Cube" of Numbers.

 These patterns are set in Different Figure like: Matrix, Circle, Triangle, Butterfly

The questions are of two types :

- I. When Pattern set in single figure
- II When Pattern set in two or more than two figures.

## TYPE - I

Here we are giving some examples for  $\ensuremath{\text{type-I}}$ 

\ In Matrix **b** 



In this type of Figure pattern is either set in Row or in Column

## Ex.

1. Find Missing number in following Matrix?

6	15	20
8	4	5
3	5	20
51	65	?

(a) 100 (b) 120 (c) 90 (d) 80

Sol. (b)In this matrix pattern is made by "Column Numbers" In 1st Column Þ (6×8)+3 = 51 In 2nd ColumnÞ (15 ×4) + 5 = 65

In 3rd Column Þ (20 × 5) + 20

= 120

Ex.2 Find Missing Number in following Matrix?

	18	11	19	
	12	13	16	
	36	4	?	
(	(a) 3	6		(b) 9
(	(c) 3	5		(d) 7

Sol. (b) In this Matrix Operation is made by "Column Number"
In 1st Column Þ (18–12)<sup>2</sup> Þ 36
In 2nd Column Þ (11–13)<sup>2</sup> Þ 4

In 3rd Column Þ (19–16)<sup>2</sup> Þ 9

Ex.3 Find Missing number?

	3	4	9	16	
	5	6	25	36	
	7	8	;	64	
1	(a) :	15			(b) 18
1	(c) 1	16			(d) 49

Sol. (d) In this chapter operation is made by Row Numbers In 1st Row Þ 3 + 4 + 9 = 16 In 2nd Row Þ 5 + 6 + 2 5 = 36

In 3rd Row p 7 + 8 + **49** = 64

Ex.4 Find the missing number?

	268	(29)	210	
	218	?	166	
(	(a) 42			(b) 25
(	(c) 26	,		(d) 29

Sol. (c) Row Pattern

In 1st Row 
$$\triangleright \frac{(268 - 210)}{2} = 29$$

In 2nd Row P  $\frac{(218-166)}{2}$ 

= **26** 

Ex.5 Find missing number?

13	9	24	
11	?	6	
16	20	10	
(a) 1	l 1		(b) 20
(c) 1	19		(d) 14

Sol. (a) Column pattern In 1st Column Þ 13+ 11+ 16 = 40In 3rd Column Þ 24 + 6 + 10 = 40Similarly In 2nd Column Þ 9 + 11 + 20 = 40Ex.6 Find the missing number? 85 20 5 126 24 6 175 ? (a) 22 (b) 24 (c) 26 (d) 28 Sol. (d) Row Pattern In 1st Row Þ (20×5) -(20-5) = 85In 2nd Row Þ (24 ×6) -(24 - 6) = 126In 3rd Row Þ (28 × 7) -(28 - 7) = 175Ex.75 4 1 2 5 7 6 6 9 6 6 4 92 ? 45 84 (a) 56 (b) 48 (c) 52 (d) 45 Sol. (b) Column Pattern In 1st Column  $\not = 6^2 + 5^2$  $-4^2 = 45$ In 2nd Column  $\not= 9^2 + 6^2$  $-5^2 = 92$ 84 In 4th Column  $\not= 4^2 + 6^2 - 6^2$ 2<sup>2</sup> Þ **48** Ex.8 4 6 10 2 1 3 5 8 ? (a) 14 (b) 15

(c) 17

(d) 16

Sol. (c) In First Row  $\not= 4^2 - 6 = 10$ In 2nd Row  $\not= 2^2 - 1 = 3$ In 3rd Row  $\not= 5^2 - 8 = 17$ Ex.9 14 8 5 9 216 7 2 ? (b) 15 (a) 14 (c) 13 (d) 16 Sol. (b) In First Row  $\triangleright$  (5 × 2) +  $\frac{\&8}{\&2}\frac{\ddot{o}}{\phi} = 14$ In 2nd Row  $\flat (9 \times 2) + \begin{cases} \frac{\alpha 6}{6} \frac{\ddot{\alpha}}{2} \\ \frac{\dot{\alpha}}{\alpha} \end{cases} = 21 \end{cases}$ In 3rd Row  $p(7\times 2) + \frac{a2\ddot{o}}{\xi^2 a^2} = 15$ Ex.10 5 9 15 16 29 ? 49 89 147 (a) 48 (b) 45 (c) 54 (d) 51 Sol. (a) In First column Þ  $(5 \times 3) + 1 = 16, (16 \times 3)$ +1 = 49In 2nd Column Þ  $(9 \times 3) + 2 = 29$ ,  $(29 \times 3)$ +2 = 89In 3rd ColumnÞ  $(15 \times 3) + 3 = 48, (48 \times 3) + 3$ = 147 Ex.11 Find Missing Number 13 10 9 10 15 (b) 12 (a)8 (c) 5 (d) 19 Sol. (b) In First Row ₱ 8 13<sup>+2</sup> 10 In 2nd Row Þ 10 In 3rd Row Þ Ex.12 5 6 8  $\overline{7}$ 18 21 10 24 g 10 (a) 11 (b) 15

(d) 20 (c) 13 Sol. (a) In 1st Column  $P \begin{cases} \frac{\alpha 10 \ddot{o}}{\xi} \\ \frac{1}{5} \\ \frac{1}{6} \\ \frac{1}{6} \end{cases} + 5$ = 7 = 9 In 3rd Column  $p \notin \frac{x^2 1 \ddot{o}}{7 \alpha}$ +7 = 10In 4th Column =  $\begin{cases} \frac{x^2}{9} \frac{\ddot{0}}{3} + 8 \\ \frac{\dot{0}}{3} \frac{\dot{1}}{9} + 8 \end{cases}$ = 11 Ex.13 Find Missing number. 18 6 36 ? 2 4 12 (a) 12 (b) 6 (d) 81 (c) 612 Sol. (b) middle no. is multiplication of diagonally opposite no.  $3 \times 12 = 36$  $18 \times 2 = 36$  $9 \times 4 = 36$ 6 × **6** = 36 Ex.14 Find Missing number? 116 8 1712 ? 34 25 19 19 28 11 (a) 16 (b) 15 (c) 13 (d) 9 Sol. (a) In 1st Column Þ 11 + 25 = 17 + 19 = 36In 2nd Column Þ 6 + 34 = 12 + 28 = 40In 3rd Column Þ 8 + 19 = **16** + 11 = 27 Ex.15 Find Missing number 4 20 9 15 8 5 7 ? 6 (a) 4 (b) 6 (c) 3 (d) 2 Sol. (b) In 1st Row  $(9 - 4) \times 4 = 20$ 

In 2nd Row (8 – 5) × 5 = 15 In 3rd (7 – 6) × 6 = **6** Ex.16 Find Missing Term?

	14 9	12	20	
	49	8	10	
	12 13	7	20	
	3 3	11	?	
	20 42	19	40	
	(a) 2		(b)	8
	(c) 12		(d)	4
Sol.	(b) In First - (12 × 3	Col 3) =	umi 20	n Þ (14 × 4)
	In 2nd C	, Colu	mn	Þ (9 × 9)
	- (13 × 3	3) =	42	- (1.2 - 2)
	$\ln 3rd C$	olui 1) =	mn 19	▶ (12 × 8)
	In 4th C	r) olui	mn	▶ (20 × 10)
	- (20 × 8	<b>B</b> ) =	40	, ,
Ex.1	7 Find Mi	ssir	ng T	`erm?
	0 -1	-2		
	1 0	-1		
	2 ?	0		
	(a) 0		(b)	-2
	(c) –1		(d)	1
Sol.	(d) In First	colu	ımn	P 0 + 1 = 1
				1 + 1 = 2
	In 2nd Colu	ımn	ιÞ	-1 + 1 = 0
	In 3rd Colu	mn	Б	0 + 1 = 1
	III SIU Colu	.11111	Р	-2 + 1 - 1 -1 + 1 = 0
Ex.1	8 Find Mi	ssir	ng T	`erm?
		0 1 0		
	23 52 21 44	9 10	)24 44	
	19 36	1	?	
	(a) 1441		 (b)	3520
	(a) 1441 (c) 9361		(U) (b)	8281
Sol.	(d) In 1st Re	ow	(u)	0201
	$(23)^2 = 529$	On	ch	anging
	places of 23	3		
	((23) <sup>2</sup> = 529	, 23	3 (3)	$(2)^2 = 1024$ It
	becomes 32	2, 1	Ther	1
	( 32 (32) <sup>2</sup> =	= 10	24)	
	In 2nd Row	Þ		
	$(21)^2 = 441$	f 0 1	Oı	n Changing
	$p_{12} = 144$	121	i+	hecomes
	(14) - 144		ıι	DUCUMES

12, Then In 3rd Row Þ (19)<sup>2</sup> = 361

 $(19)^2 = 361$  on Changing places of 19  $(91)^2 = 8281$  it becomes 91, then

Ex.19

 $\mathbf{Ans} = \mathbf{1}$ 

Ex.20	Find	l th	e M	issing Terr	n
	67	91	45		
	78	90	36		
	?	81	27		
(a)	95	-		(b) 98	
(c)	105			(d) 111	

= 9 × 4 = 36

$$3^{+}6 = 9 \times 3 = 27$$

In 2nd Column  $\nvdash 9^{+}1$ = 10 × 9 = 90  $9^{+}0 = 9 \times 9 = 81$ In 1st Column  $\nvdash 6^{+}7 = 13 \times 6 = 78$ 

$$7 + 8 = 15 \times 7 = 105$$

Ex.21 Find Missing Term.



3<sup>2</sup> = **94** Ex.22 Find Missing Term 8 2 ? 3 10 6 56 90 2 20 0 (a) 5 (b) 0 (d) 3 (c) 7 Sol. (a) In all Columns  $4 3^2 - 3 = 6$  $8^2 - 8 = 56$  $10^2 - 10$ = 90  $2^2 - 2 = 2$  $5^2 - 5 = 20$  $1^2 - 1 = 0$ 

**In Circle** In Circle Pattern can be of "Number Series", "Logic in opposite sector of circle"

Ex.23 Find missing term in circle?



Sol. (b) In this circle pattern is made by series of cube of even numbers 2<sup>3</sup> = 8, 4<sup>3</sup> = 64, 6<sup>3</sup> = 216, (8)<sup>3</sup>

= 512

Ex.24 Find Missing Term.





Sol. (c) In this circle the following series is set



Ex.25 Find missing term



Sol. (c) In this circle the series is set clock wise from 1.

1 + 2 = 3, 2 + 3 = 5, 3 + 5 = 8, 5



Sol. (d) In this circle the sum of four different sectors are in increasing order









Sol. (c) In this circle the pattern make by the opposite sectors.



Ex.28 Find Missing Term?



Sol. (b) In this figure following series is set?



Square of prime no. than Add one.

 $18 \times 3 + 6 = 60$  $\frac{(5+2)^3}{10} = 34.3$  $60 \times 3 + 6 = 186$  $2^2 + 1 = 5$  $7^2 + 1 = 50$  $186 \times 3 + 6 = 564$ same in other  $\frac{(6+4)^3}{10} = 100$  $3^2 + 1 = 10$  $11^2 + 1 = 122$  $564 \times 3 + 6 = 1698$ 5<sup>2</sup> + 1 = **26** 1698 × 3 + 6 = **5100** Ex.29  $\frac{(3+9)^3}{10} = 172.8$ Ex.34 5 0 64 3 3 **In Triangle**  $\rightarrow$  in this type of figure 8 36 2 pattern is made by series, opposite 8 sector etc. 11 2 (a)0 (b) 125 (a) 56 (b) 57 (c) 100 (d) 144 (c) 58 (d) 59 Sol. (d)  $\lfloor 7 \rfloor$ Sol. (b)  $(8 \times 3) + 1 = 25$ (5×6)+ 1 = 31  $3) \times 2]^2 =$  $(3 \times 4) + 1 = 13 (6 \times 7) +$ Ex.32 Find Missing Term Same in other  $[(11-8)\times 2]^2 = 36$ = 43  $[(5-5)\times 2]^2 = 0$  $(4 \times 5) + 1 = 21 (7 \times 8) + 1$ [(8-2)×2]<sup>2</sup> Þ 144 = 57 Ex.30 Find Missing Term? Ex.35 10 2 (a) 40 (b) 48 23 (c) 30 (d) 24 45 11 11 Sol. (c) In this figure following series is set 9 (a)46 (b) 34 (a) 13 (b) 14 (c) 91 (d) 21 (c) 20 (d) 21 Sol. (a) Sol. (b) 1 + 17 = 2 + 16 19 + 3 2 +2+12 = 18 + 4 9 + 3 = 1223 17 + 5 = 16 + 6 3 + 1512 + 6 = 18In this sector  $(7-2)^2 - 2 = 23$ = 4 + **14** Same in other sector =  $(9-5)^2$  – 18 + 12 = **30** 5 + 19 = 6 + 185 = 1130 + 24 = 54Ex.36  $(11-4)^2 - 4 = 45$ 54 + 48 = 10218  $(10 - 3)^2 - 3 = 46$ Ex.33 1 5 Ex.31 Find Missing term? 34.3 13 (a) 10 (b) 17 (c) 11 (d) 13 Sol. (b) (a) 5052 (b) 5100 18 (c) 5094 (d) 4860 (a) 8 (b) 9 <sup>×3+</sup>6 Sol (b) +3 (c) 36 (d) 11 34.3 In Sol. (b) this figure 8 + 5 = 134 + 13 = **17 17** + 1 = 18





	(c) 84,56 (d) 14,21
Sol.	(b) In First Row
	$\frac{J+R}{2}+2 = \frac{10+18}{2}+2 = 16$
	$\frac{C+K}{2}+2 = \frac{3+11}{2}+2 = 9$
	In 2nd Row
	$\frac{O+S}{2} + 2 = \frac{15+19}{2} + 2 = 19$
	$\frac{T+X}{2}+2 = \frac{20+24}{2}+2 = 24$
	In last Row
	$\frac{K+M}{2}+2 = \frac{11+13}{2}+2 = 14$
	$\frac{P+V}{2}+2 = \frac{16+22}{2}+2 = 21$
	Hence Answer = $(21, 14)$
	TYPE-2
When then Ex.1	n No. of Figure are two or more two.
211.1	$\vee \vee \vee$
	(a) 47 (b) 49
	(c) 50 (d) 57
Sol.	(b) In First figure = $1^2$ , $3^2$ , $5^2$
	In 2nd Figure = $2^2, 4^2, 6^2$
	Similar $2^2$ $5^2$ $7^2$
Fy O	In last Figure = $3^2$ , $5^2$ , $7^2$ Find Missing Term?
LA.2	
	$\uparrow$ $\uparrow$ $\uparrow$
	(a) 30 (b) 13
	(c) 70 (d) 118
Sol.	(b) In 1st figure = $\frac{15+12}{9}=3$
	In 2nd Figure = $\frac{44+28}{9} = 8$
	Similarly
	In last figure = $\frac{64+53}{9}$ = <b>13</b>

(a) 56,84,

(b) 21,14



 $(4 \times 9) + (7 + 3) = 46$ Ex.7 5 12 4 5 18 2 5 ? 2 (a) 15 (b) 18 (d) 16 (c) 17 Sol. (b) In first Figure  $=\frac{3'4'2'5}{10}=12$ In 2nd figure =  $\frac{6' 5' 3' 2}{10}$ = 18 In last figure =  $\frac{5' 9' 2' 2}{10}$ = 18 Ex.8 12 61 167 33 121 52 89 (a) 240 (b) 230 (d) 251 (c) 232 Sol. (b) In First Figure 17 + 12 + 8 + 52 = 89In 2nd Figure 24 + 33 + 61 + 49 = 167In 3rd figure 61 + 33 + 121 + 15 = 230 Ex.9 32)25 8 40 2 5 (a) 32 (b) 44 (c) 38 (d) 50 Sol. (b) In 1st figure  $(6 + 2 + 4 + 8) \times$ 2 = 40In 2nd figure  $(6 + 2 + 3 + 5) \times$ 2 = 32In 3rd figure  $(5 + 4 + 4 + 9) \times$ 2 = 44Ex.10 9-5-19 13-7-27 17-(b) 20 (a) 18 (d) 24 (c) 22 Sol. (b) In Figure  $= \frac{(9+19) - (14+4)}{2} = 5$ In 2nd figure  $=\frac{(13+27)-(6+20)}{2}=7$ 

In 3rd figure  $= \frac{(35+17)-(26+8)}{2} = 9$ Ex.11 30 4 (b) 22 (a) 21 (d) 27 (c) 25 Sol. (a) In first figure  $\Rightarrow \frac{4 \times 3 \times 2 \times 1}{4} = 6$ In 2nd figure  $\Rightarrow \frac{4 \times 5 \times 2 \times 3}{4} = 30$ In 3rd figure  $\Rightarrow \frac{1 \times 6 \times 7 \times 2}{4} = 21$ Ex.12 :" 6) 25(5)81 25(4)25 36(?)9 (a) 2 (b) 3 (c) 4 (d) 5 Sol. In 1st figure  $0\frac{\sqrt{25} + \sqrt{100} + \sqrt{25} + \sqrt{100}}{5} = 6$ In 2nd figure =  $\frac{\sqrt{25} + \sqrt{81} + \sqrt{36} + \sqrt{25}}{5} = 5$ In 3rd figure  $\frac{\sqrt{25} + \sqrt{25} + \sqrt{25} + \sqrt{25}}{5} = 4$ In 4th figure =  $\frac{\sqrt{49} + \sqrt{9} + \sqrt{16} + \sqrt{36}}{5} = 4$ Ex.13 (a) 23 (b) 19 (c) 20 (d) 22 Sol. (a) In 1st figure = (22 - 16) $\times (15 - 9) = 36$ In 2nd figure = (11 - 7) $\times$  (13 -9) = 16 In 3rd figure = (23 - 15) $\times (21 - 13) = 64$ 

Ex.14 (b) 10 (a) 3 (c) 15 (d) 60 Sol. (a) In 1st figure = 1 + 3 + 4+8 = 16In 2nd figure = 3 + 5 + 8+4 = 20In 3rd figure = 6 + 4 + 5 + 3= 18 Ex.15 (b) 10 (a) 12 (d) 6 (c) 8 Sol. (d) In 1st figure = (12 - 6)=(15 - 9) = 6In 2nd figure = (12 - 4)=(16 - 8) = 8In 3rd figure = (11 - 5)=(14-8)=6Ex.16 (a) 38 (b) 80 (c) 89 (d) 18 Sol. (b) In 1st Figure = 9 + 5 + 15+92 = 121In 2nd Figure = 16 + 19+20 + 24 = 79In 3rd Figure = 7 + 8 + 9+ 56 = 80 Ex.17 (a) 35 (b) 37 (d) 73 (c) 45 Sol. (d) In first Figure =  $(5 \times 6)$  $+(3 \times 3) = 39$ Change Place = 93In 2nd figure =  $(7 \times 5)$  $+ (4 \times 4) = 51$ Change Place = 15In 3rd Figure =  $(5 \times 5)$  $+ (4 \times 3) = 37$ Change Place = 73



= 10 In 2nd Figure = 5 + 8 - 3 = 10 In 3rd Figure = 9 + 6 - 4 = 11Ex.22 2 (a) 6543 (b) 5634 (c) 5364 (d) 3564 (c) In first figure = Sol.  $\underbrace{\overset{a}{\xi} + 8}_{\xi} \underbrace{\overset{o}{z}}_{2} \underbrace{\overset{a}{\varphi}}_{\xi} \underbrace{\varepsilon}^{7+3} \underbrace{\overset{o}{\varphi}}_{2} \underbrace{\overset{a}{\varphi}}_{g} \underbrace{\varepsilon}^{2+6} \underbrace{\overset{o}{\varphi}}_{2} \underbrace{\overset{a}{\varphi}}_{g} \underbrace{\varepsilon}^{2+6} \underbrace{\varepsilon}^{3+5} \underbrace{\varepsilon}_{g} \underbrace{\varepsilon}^{3+5} \underbrace{\varepsilon}^{3+5} \underbrace{\varepsilon}_{g} \underbrace{\varepsilon}^{3+5} \underbrace{$ 6543

 $\underbrace{\underbrace{a5+1}_{\xi} \ddot{o} \underbrace{a6+2}_{g} \ddot{o} \underbrace{a7+3}_{g} \ddot{o} \underbrace{a4+8}_{g} \ddot{o}}_{g} \dot{c} \underbrace{a6+2}_{g} \ddot{o} \underbrace{a7+3}_{g} \ddot{o} \underbrace{a4+8}_{g} \ddot{o}}_{g} \dot{c} \underbrace{a6+2}_{g} \dot{o} \underbrace{a6+2}_{g} \dot{o}$ 

 $= \underbrace{ \underbrace{ \overset{ 3}{\xi} \overset{ 3}{\xi} \overset{ 7}{2} \overset{ \circ}{\overset{ +}{\xi}} \underbrace{ \overset{ 3}{\xi} \overset{ 1}{\xi} \overset{ 7}{\xi} \overset{ \circ}{\xi} \overset{ 3}{\xi} \overset$ 

In 2nd figure=

In last figure

3456

5364