MAGIC CIRCLES & SQUARES

Magic Squares Problems

In these types of questions, numbers are arranged according to some rule in the cells made into a square. One cell is left empty, and we have to find the way the numbers are arranged and mark the answer from the choice given below. Let us consider some examples :–

❖ EXAMPLES ❖

Ex.1

? / 108	2
18	3 / 6

(A) 1 (B) 36

(C) 216 (D) 1944

Sol. The answer is 1944 as the numbers are arranged in the following way,

$2 \times 3 = 6$, $3 \times 6 = 18$, $6 \times 18 = 108$,

$18 \times 108 = 1944$

Ex.2

7	6	5
3	3	4
2	3	?

(A) 12 (B) 3

(C) 4 (D) 5

Sol. The answer is 3 because the sum of the numbers in each column is 12.

Ex.3

32	35	39
42	46	51
3	8	?

(A) 11 (B) 90

(C) 60 (D) 14

Sol. The answer is 14 because the numbers are increasing by 3 and 4 in the first row, 4 and 5 in the second row and 5 and 6 in the third row.

Ex.4

7	9	16
4	15	?
13	8	21

(A) 29 (B) 19 (C) 23 (D) 25

Sol. The answer is 19 because the sum of the first two numbers in each row gives the third number, i.e. $7 + 9 = 16$, $4 + 15 = 19$, $13 + 8 = 21$

Ex.5

17	11	19
12	13	16
25	4	?

(A) 36 (B) 9 (C) 25 (D) 64

Sol. In the first column $25 = (17 - 12)^2$ therefore $(19 - 16)^2$ is 9

Ex.6

21	56	70
45	87	84
115	180	?

(A) 130 (B) 195 (C) 295 (D) 150

Sol. The rule is that in each row the difference of first two numbers is doubled.

i.e. $(56 - 21) \times 2 = 70$. Hence the required number $(180 - 115) \times 2 = 130$

Ex.7

17	15	8
99	95	64
36	45	?

(A) 729 (B) 1331 (C) –729 (D) –343

Sol. The rule is that in a row as $(17 - 15)^3 = 8$.

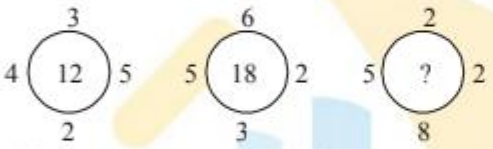
Therefore $(36 - 45)^3 = (-9)^3 = -729$

Magic Circle Problems

This unit is based on numerical calculations. Usually these are circles, the first two of which have four numbers at four points on the circle and one inside the circle. These numbers are placed according to some rules or sequence. The third cycle has any four numbers with fifth missing. We are required to find this number from the given choice, according to the same rule that holds good for other two circles.

◆ **EXAMPLES** ◆

Ex.8



(A) 12 (B) 14

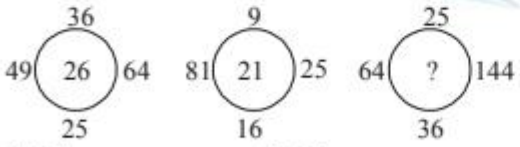
(C) 16 (D) 18

Sol. The answer to above question is (C) i.e. 16, because the numbers inside the first two circles are obtained by multiplying the outside numbers and dividing by 10, i.e.

$$\frac{5 \times 3 \times 4 \times 2}{10} = \frac{120}{10} = 12$$

The same follows for the second and third circles.

Ex.9



(A) 24 (B) 25

(C) 23 (D) 31

Sol. The answer is (D) i.e. 31, because the numbers inside the first two circles are obtained by taking the sum of the square roots of the four numbers outside the circles, e.g.

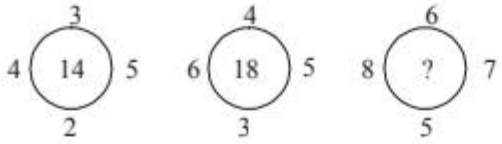
$$\sqrt{49} + \sqrt{64} + \sqrt{25} + \sqrt{36}$$

$$= 7 + 8 + 5 + 6 = 26 \text{ (I}^{st} \text{ Circle)}$$

and $\sqrt{16} + \sqrt{25} + \sqrt{9} + \sqrt{81}$

$= 4 + 5 + 3 + 9 = 21$ (IInd Circle)

Ex.10



(A) 24 (B) 26

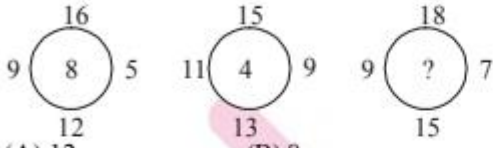
(C) 28 (D) 22

Sol. The answer is (B) i.e. 26, because

$(5^2 - 4^2) + (3^2 - 2^2) = 14$ (Ist circle) and

$(6^2 - 5^2) + (4^2 - 3^2) = 18$ (IInd circle)

Ex.11



(A) 12 (B) 8

(C) 4 (D) 5

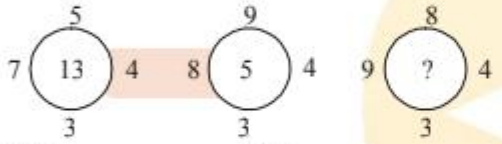
Sol. The answer is (D) i.e. 5, because

$(9 - 5) + (16 - 12) = 8$ (Ist Circle)

$(11 - 9) + (15 - 13) = 4$ (IInd Circle)

so, $(9 - 7) + (18 - 15) = 5$ (IIIrd Circle)

Ex.12



(A) 4 (B) 8

(C) 12 (D) 15

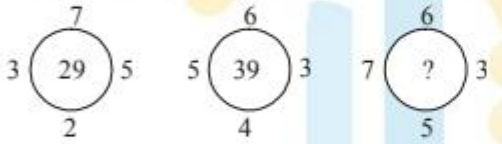
Sol. The answer is (C) i.e. 12 because

$(7 \times 4) - (5 \times 3) = 28 - 15 = 13$ (Ist Circle)

$(8 \times 4) - (9 \times 3) = 32 - 27 = 05$ (IInd Circle)

So, $(9 \times 4) - (8 \times 3) = 36 - 24 = 12$ (IIIrd Circle)

Ex.13



(A) 49 (B) 51

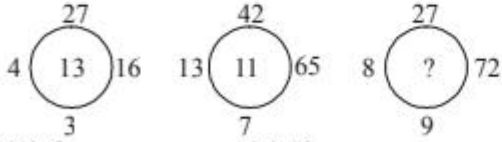
(C) 59 (D) 21

Sol. Answer is (B) i.e. 51, because

$(3 \times 5) + (7 \times 2) = 29$ and

$(5 \times 3) + (6 \times 4) = 39$

Ex.14



(A) 9 (B) 12

(C) 15 (D) 18

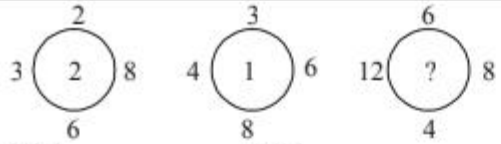
Sol. Answer is (B) i.e. 12, because

$(16 \div 4) + (27 \div 3) = 13$ (Ist Circle) and

$(65 \div 13) + (42 \div 7) = 5 + 6 = 11$ (IInd Circle)

So, $(72 \div 8) + (27 \div 9) = 9 + 3 = 12$ (IIIrd Circle)

Ex.15



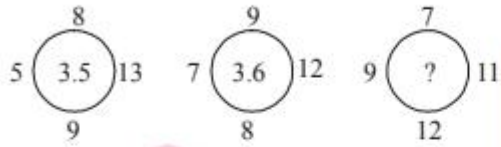
(A) 3 (B) 4
(C) 5 (D) 6

Sol. Ansser is (B) i.e. 4 because

$(4 \times 6) \div (8 \times 3) = 24 \div 24 = 1$ (II^{nd} Circle)

So, $(12 \times 8) \div (6 \times 4) = 96 \div 24 = 4$ (III^{rd} Circle)

Ex.16



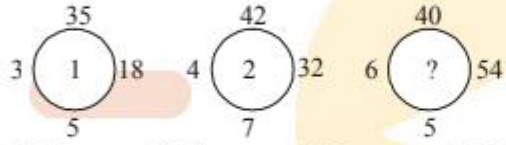
(A) 3.7 (B) 3.8 (C) 3.9 (D) 3.1

Sol. Answer is 3.9 because

$$\frac{(5+13+9+8)}{10} = 35 \div 10 = 3.5$$

So, $\frac{(7+9+11+12)}{10} = 39 \div 10 = 3.9$

Ex.17



(A) 0 (B) 1 (C) 3 (D) 5

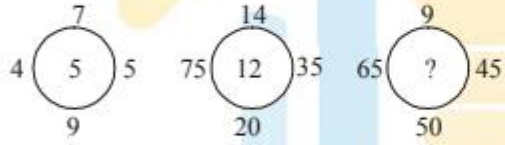
Sol. Answer is (B) i.e. 1 because pattern is

$(35 \div 5) - (18 \div 3) = 7 - 6 = 1$

$(32 \div 4) - (42 \div 7) = 8 - 6 = 2$

So, $(54 \div 6) - (40 \div 5) = 9 - 8 = 1$ Ans.

Ex.18



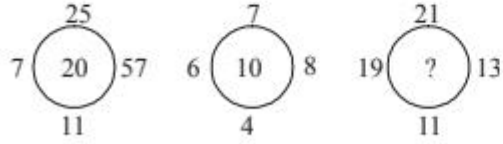
(A) 7 (B) 9 (C) 13 (D) 15

Sol. Answer is (C) i.e. 13 because

$\sqrt{4+7+5+9} = \sqrt{25} = 5$

$\sqrt{65+45+9+50} = \sqrt{169} = 13$ Ans.

Ex.19



(A) 16 (B) 25 (C) 36 (D) 49

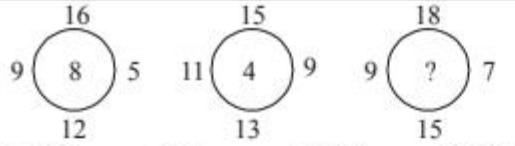
Sol. Answer is (A) i.e. 16 because

$2 \times \sqrt{25+57+11+7} = 2\sqrt{100} = 20$

$2 \times \sqrt{7+8+4+6} = 2\sqrt{25} = 10$

So, $2 \times \sqrt{21+13+19+11} = 2\sqrt{64} = 16$ Ans.

Ex.20



(A) 24 (B) 5 (C) 28 (D) 27

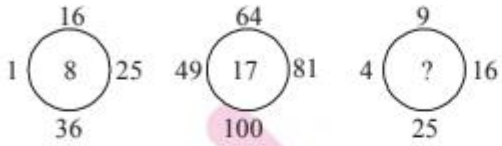
Sol. Answer is (B) i.e. 5 because

$(16 + 9) - (12 + 5) = 8$

$(11 + 15) - (9 + 13) = 4$

So, $(9 + 18) - (15 + 7) = 5$ Ans

Ex.21



(A) 6 (B) 7 (C) 8 (D) 9

Sol. Answer is (B) i.e. 7 because

$(\sqrt{1} + \sqrt{16} + \sqrt{25} + \sqrt{36}) \div 2$

$= 16 \div 2 = 8$

$(\sqrt{49} + \sqrt{64} + \sqrt{81} + \sqrt{100}) \div 2$

$= 34 \div 2 = 17$

So, $(\sqrt{4} + \sqrt{9} + \sqrt{16} + \sqrt{25}) \div 2$

$= 14 \div 2 = 7$ Ans.

EXERCISE

Q.1

3	25	2
4	64	4
3	?	3

(A) 81 (B) 6 (C) 39 (D) 36

Q.2

45	9	54
34	9	43
24	?	42

(A) 18 (B) 30 (C) 3 (D) 10

Q.3

7	11	19
13	21	37
27	43	?

(A) 75 (B) 65 (C) 74 (D) 73

Q.4

5	28	3
11	125	4
9	?	11

(A) 85 (B) 92 (C) 99 (D) 70

Q.5

13	4	165
3	2	7
?	11	14

(A) 25 (B) 7 (C) 5 (D) 2

Q.6

41	43	4
47	53	36
?	61	4

(A) 57 (B) 59 (C) 63 (D) 67

Q.7

2	3	31
5	7	368
1	4	?

(A) 25 (B) 45 (C) 17 (D) 65

Q.8

4	9	25
49	?	361
121	169	289

(A) 519 (B) 81 (C) 100 (D) 529

Q.9

9	?	16
64	10	36
144	20	256

(A) 20 (B) 40 (C) 5 (D) 0

Q.10

6	18	24
23	73	113
11	37	?

(A) 65 (B) 78 (C) 75 (D) 4

Q.11

50	1	7
111	11	10
335	11	?

(A) 16 (B) 18 (C) 15 (D) 10

Q.12

5	11	36
11	4	125
15	15	?

(A) 240 (B) 250 (C) 290 (D) 300

Q.13

5	1	126
4	4	68
7	5	?

(A) 340 (B) 348 (C) 400 (D) 70

Q.14

256	128	32
112	56	14
800	400	?

(A) 200 (B) 100 (C) 25 (D) 50

Q.15

19	3	25
17	11	39
9	5	?

(A) 19 (B) 21 (C) 23 (D) 25

Q.16

12	15	54
37	14	102
71	23	?

(A) 168 (B) 178 (C) 188 (D) 190

Q.17

5	11	96
9	13	88
8	17	?

(A) 225 (B) 165 (C) 185 (D) 250

Q.18

5	7	74
11	8	185
13	?	205

(A) 5 (B) 6 (C) 7 (D) 8

Q.19

4	3	70
7	8	359
5	10	?

(A) 115 (B) 125 (C) 130 (D) 145

Q.20

11	7	324
15	6	441
9	5	?

(A) 140 (B) 106 (C) 186 (D) 196

Q.21

12	6	81
17	5	121
6	8	?

(A) 49 (B) 64 (C) 70 (D) 50

Q.22

225	64	23
16	1	5
49	81	?

(A) 71 (B) 16 (C) 60 (D) 30

Q.23

50	70	15
64	16	10
114	38	?

(A) 19 (B) 17 (C) 38 (D) 91

Q.24

1	3	28
2	5	133
7	?	407

(A) 4 (B) 6 (C) 8 (D) 9

Directions (Q. 1-4) :

In these questions some figures are given. In these figures some numbers are given. These numbers follow a certain system. One such number is missing. Find out the number from the given choices.

Q.25

8	7	5
10	7	5
9	7	?

(A) 2 (B) 5 (C) 1 (D) 25

Q.26

15	6	5
13	3	9
8	2	?
20	7	13

(A) 1 (B) 4 (C) 6 (D) 7

Q.27 Which one number can be placed at the sign of interrogation (?) in figure III so that it follows the operations of numbers in figure I and figure II ?

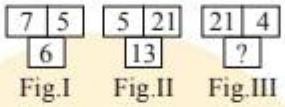


Fig.I Fig.II Fig.III

(A) 4 (B) 8 (C) 20 (D) 14

Q.28 Insert the missing number in the given trend :

2	10	4
3	17	5
3	?	4

(A) 16 (B) 15 (C) 12 (D) 14

Directions :

Choose the missing number in question 16-19. The relation between the number within the bracket and those outside the brackets are the same for both lines in each question.

Q.29 17 (112) 39
28 ( ) 49
30

(A) 42 (B) 77 (C) 108 (D) 154

Q.30 341 (250)466
282 ( )398

(A) 200 (B) 232 (C) 250 (D) 322

Q.31 17 (102) 12
15 ( ) 10

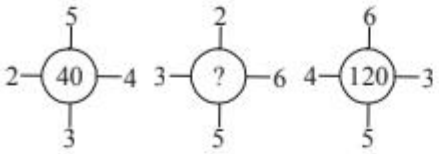
(A) 52 (B) 32 (C) 42 (D) 75

Q.32 12 (336) 14
15 ( ) 16

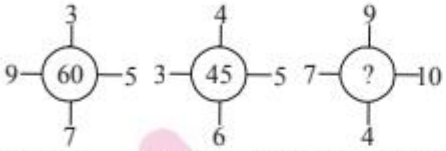
(A) 420 (B) 380 (C) 320 (D) 480

Direction :

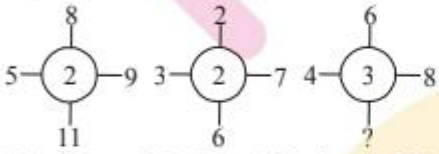
In question 33–42 numbers are placed in the figure on the basis of some rules. One place in the figure is indicated by (?). Find out the correct alternative to replace the question mark and encircle its letter.

Q.33 

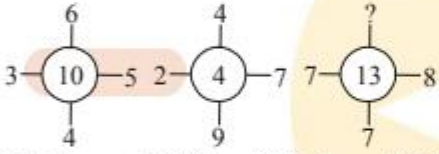
(A) 50 (B) 55 (C) 60 (D) 70

Q.34 

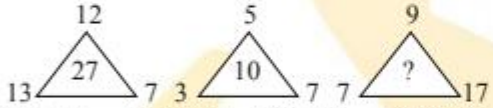
(A) 75 (B) 70 (C) 65 (D) 60

Q.35 

(A) 4 (B) 6 (C) 2 (D) 8

Q.36 

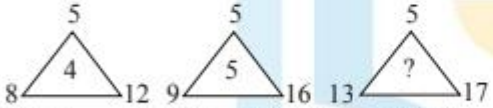
(A) 9 (B) 8 (C) 7 (D) 5

Q.37 

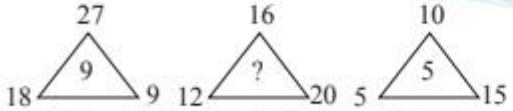
(A) 25 (B) 20 (C) 27 (D) 28

Q.38 

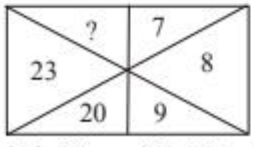
(A) 14 (B) 34 (C) 60 (D) 70

Q.39 

(A) 6 (B) 7 (C) 8 (D) 9

Q.40 

(A) 12 (B) 10 (C) 8 (D) 6

Q.41 

(A) 29 (B) 28 (C) 22 (D) 26

Q.42 1 : 310 : : 3 : ?

(A) 17 (B) 19 (C) 730 (D) 930

Direction :

In questions 43 to 47 the number inside the small square is related some way to the numbers outside it. Identify the relationship and indicate your answer on your answersheet by encircling the appropriate letter.

Q.43

(A) 13 (B) 15 (C) 17 (D) 14

Q.44

(A) 4 (B) 5 (C) 6 (D) 8

Q.45

(A) 7 (B) 10 (C) 13 (D) 12

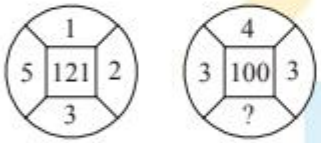
Q.46

(A) 2 (B) 2.5 (C) 3 (D) 4.5

Q.47

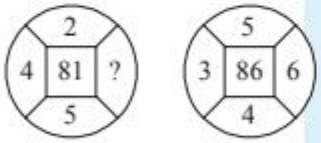
(A) 4.2 (B) 4.6 (C) 6.2 (D) 2.4

Q.48



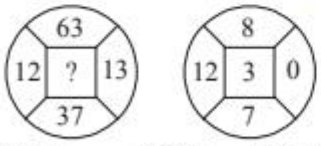
(A) 5 (B) 3 (C) 2 (D) 0

Q.49



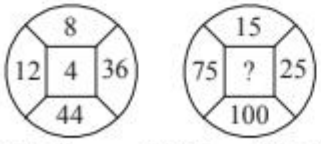
(A) 7 (B) 6 (C) 5 (D) 3

Q.50



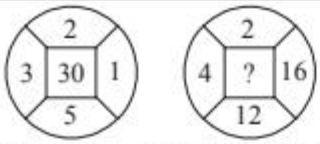
(A) 1 (B) 2 (C) 3 (D) 5

Q.51



(A) 4 (B) 5 (C) 6 (D) 3

Q.52

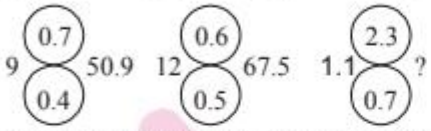


(A) 3478 (B) 1632 (C) 7684 (D) 1536

Q.53

(A) 36 (B) 08 (C) 09 (D) 11

Q.54



(A) 22.59 (B) 21.5 (C) 24.55 (D) 27

Q.55

5	7	0.9
8	9	1.4
13	16	?

(A) 2.9 (B) 2.8 (C) 2.7 (D) 2.6

Q.56

2	72	18
9	9	162
?	32	128

(A) 4 (B) 50 (C) 02 (D) 15

Q.57

8	2	4	8
5	3	2	30
3	5	6	?

(A) 14 (B) 22 (C) 27 (D) 18

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Ans.	D	A	A	B	C	B	D	D	C	A	B	A	B	B	A	C	A	B	D	D	A	A	A	A	C
Ques.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Ans.	A	D	D	D	B	D	D	C	A	B	D	D	D	A	C	D	D	A	B	D	D	A	D	B	D
Ques.	51	52	53	54	55	56	57																		
Ans.	B	D	C	C	D	C	B																		