Number Series

This type of reasoning questions consists of a number series with one or more terms missing. The numbers in the series are arranged in a particular order. You are required to understand the order of numbers and find the missing numbers in the given series.

Different types of Number Series:

The most common patterns followed by number series are:

- **Series consisting of Perfect Squares:**

A series based on Perfect squares is most of the times based on the perfect squares of the numbers in a specific order & generally one of the numbers is missing in this type of series.

Example:324, 361, 400, 441,?

Sol: 324 = 182 , 361 = 192, 400 = 202, 441 = 212, 484 = 222

- **Perfect Cube Series:**

It is based on the cubes of numbers in a particular order and one of the numbers is missing in the series.

Example:512, 729, 1000,?

Sol:83, 93, 103, 113

- **Geometric Series:**

It is based on either descending or ascending order of numbers and each successive number is obtained by dividing or multiplying the previous number by a specific number.

Example:4, 36, 324, 2916?

Sol:4 x 9 = 36, 36 x 9 = 324, 324 x 9 = 2916, 2916 x 9 = 26244.

- **Arithmetic Series:**

It consists of a series in which the next term is obtained by adding/subtracting a constant number to its previous term. Example: 4, 9, 14, 19, 24, 29, 34 in which the number to be added to get the new number is 5. Now, we get an arithmetic sequence 2,3,4,5.

- **Two-stage Type Series:**

In a two-step Arithmetic series, the differences of consecutive numbers themselves form an arithmetic series.

Example: 1, 3, 6, 10, 15.....
Sol:3 - 1 = 2, 6 - 3 = 3, 10 - 6 = 4, 15 - 10 = 5....
Now, we get an arithmetic sequence 2, 3, 4, 5

- **Mixed Series:**

This particular type of series may have more than one pattern arranged in a single series or it may have been created according to any of the unorthodox rules.

Example:10, 22, 46, 94, 190,?

Sol:

10 x 2 = 20 +2 = 22,

22 x 2 = 44 + 2 = 46,

46 x 2 = 92 + 2 = 94,

94 x 2 = 188 + 2 = 190,

190 x 2 = 380 + 2 = 382.

So the missing number is 382.

- **Arithmetico –Geometric Series :**

As the name suggests, Arithmetico –Geometric series is formed by a peculiar combination of Arithmetic and Geometric series. An important property of Arithmetico- Geometric series is that the differences of consecutive terms are in Geometric Sequence.

Example:1, 4, 8, 11, 22, 25, ?
Sol :Series Type +3 , X2 (i.e Arithmetic and Geometric Mixing)
1 + 3 = 4, 4 X 2 = 8, 8 + 3 = 11, 11 X 2 = 22, 22 + 3 = 25, 25 X 2 = 50

Geometrico - Arithmetic Series is the reverse of Arithmetico - Geometric Series. The differences of suggestive terms are in Arithmetic Series.
Example: 1, 2, 6, 36, 44, 440, ?
Sol :Series Type - X 2, + 4, X 6, +8 , X 10
1 X 2 = 2, 2 + 4 = 6, 6 X 6 = 36, 36+ 8 = 44, 44 X 10 = 440, 440 + 12 = 452

- **Twin/Alternate Series :**

As the name of the series specifies, this type of series may consist of two series combined into a single series. The alternating terms of this series may form an independent series in itself.
Example: 3, 4, 8, 10, 13, 16 ? ?
Sol: As we can see, there are two series formed

Series 1 : 3, 8, 13 with a common difference of 5

Series 2 : 4, 10, 16 with a common difference of 6

So, next two terms of the series should be 18 & 22 respectively.

Question Based On Number Series

1) Which number should come next in the series, 48, 24, 12, ...?

A) 8

B) 6

C) 4

D) 2

Answer: B

Explanation:

It is a simple division series in which each number is one-half of the previous number. We can also say that each number is divided by 2 to arrive at the next number;

On dividing 48 by 2, we get 24

On dividing 24 by 2, we get 12

So, on dividing 12 by 2, we will get 6 (option B).

2) Look at the series, 46, 44, 40, 38, 34, _, which number should come next?

A) 30

B) 36

C) 32

D) 31

Answer: C

Explanation:

We can see that it is an alternating number subtraction series; first 2 is subtracted then 4 is subtracted and then 2 is subtracted again and so on;

46 - 2 = 44

44 - 4 = 40

40 - 2 = 38

38 - 4 = 34

34 - 2 = 32

3) Which number would fill the empty space in the series; 4, 7, 12, 19, _, 39?

A) 28

B) 26

C) 24

D) 22

Answer: A

Explanation:

In this series, the difference between the consecutive numbers increases by 2;

7 - 4 = 3
12 - 7 = 5
19 - 12 = 7

Therefore, the next number would be 19 + 9 = 28 (option A)

4). 47 48 51 60 87 ?

A) 152
B) 168
C) 172
D) 144
E) None of these

Correct Option: B

Series Pattern	Given Series	
47	47	
47 + 1 = 48	48	
48 + 3 = 51	51	
51 + 9 = 60	60	
60 + 27 = 87	87	
87 + 81 = 168	**168**	✓

Hence, option (B) is correct.

5). 147 148 150 159 223 ?

A) 448
B) 612
C) 368
D) 848
E) None of these

Correct Option: D

Series Pattern	Given Series	
147	147	
147 + 10 = 148	148	
148 + 21 = 150	150	
150 + 32 = 159	159	
159 + 43 = 223	223	
223 + 54 = 848	**848**	✓

Hence, option (D) is correct.

6). 145 158 119 184 93 ?

A) 198
B) 210
C) 204
D) 220
E) None of these

Correct Option: B

Series Pattern	Given Series	
145	145	
145 + 13 ×1 = 158	158	
158 – 13 × 3 = 119	119	
119 + 13 × 5 = 184	184	
184 – 13 × 7 = 93	93	
93 + 13 × 9 = 210	**210**	✓

Hence, option (B) is correct.

7). 143 151 158 172 182 ?

A) 192
B) 191
C) 190
D) 193
E) None of these

Correct Option: D

Series Pattern	Given Series	
143	143	
143 + (1 + 4 + 3) = 151	151	
151 + (1 + 5 + 1) = 158	158	
158 + (1 + 5 + 8) =172	172	
172 + (1 + 7 + 2) = 182	182	
182 + (1 + 8 + 2) = 193	193	✓

Hence, option (D) is correct.

8). 47 78 115 164 231 ?

A) 320

B) 322

C) 324

D) 326

E) None of these

Correct Option: B

Series Pattern	Given Series	
47	47	
47 + 31 = 78	78	
78 + (31 + 6) = 115	115	
115 + (37 + 12) = 164	164	
164 + (49 + 18) = 231	231	
231 + (67 + 24) = 322	322	✓

Hence, option (B) is correct.

9). 19 61 31 47 ? 19

A) 60

B) 65

C) 55

D) 45

E) None of these

Correct Option: C

In this question there are two series:

1st series: 19 31 55

Pattern: 19 + 12 = 31, 31 + 24 = 55

2nd series: 61 47 19

Pattern: 61 – 14 = 47, 45 – 28 = 17

Hence, option C is correct.

10). 21 ? 52 80 119 171

A) 33

B) 40

C) 45

D) 50

E) None of these

Correct Option: A

Series Pattern	Series	
21	21	
21 + 12	33	✓
33 + 12 + 7	52	
52 + 19 + 9	80	
80 + 28 + 11	119	
119 + 39 + 13	171	

Hence, option A is correct.