

Number Series

What is Number Series?

To define what a Number Series is, it refers to a sequence of numbers following some pattern. Candidates need to find the missing or wrong number in the provided number series. There may be some questions where one of the terms in the given series will be incorrect, and candidates need to find out the term of the series by identifying the pattern involved in the formation of the series.

There is no set pattern and each question in number series may follow a different type of pattern or sequential arrangement of letters or digits, which candidates need to detect using their common sense and reasoning ability.

Types of Number Series Questions

Now that the number series basics are covered, let us see below the various types of number series questions that may come in your competitive exams:

- 1. Addition Number Series:** In this type of number series, specific numbers based on some pattern are added to get the next number.
- 2. Subtraction Number Series:** In these type of number series questions, specific numbers based on some pattern are subtracted to get the next number.
- 3. Multiplication Number Series:** In this type of number series, a particular type of number pattern is multiplied to get the next number.
- 4. Division Number Series:** In these type of number series questions, a particular type of number pattern is divided to get the next number.
- 5. Square Number Series:** In square number series, each number is a perfect square of a particular number pattern.
- 6. Cube Number Series:** In these type of number series questions, each number is a perfect cube of a particular number pattern.
- 7. Fibonacci Number Series:** In this type of number series, the next number is the addition of two previous numbers.
- 8. Alternating Number Series:** In these type of number series questions, multiple number patterns are used alternatively to form a series.
- 9. Mixed Operator Number Series:** In this type of number series, multiple operators are applied to get the next number in the series.

10. Arranging Number Series: In these type of number series questions, candidates need to rearrange numbers, as specified, and then answer the given questions.

Important Patterns of Number Series:

1. Series with an increasing difference (most commonly asked)
2. Series with a constant difference (the difference will be the same)
3. Series with decreasing difference (the difference will be decreasing)
4. Perfect squares and cubes of numbers' series (concept of squares and cubes will be there, either directly or indirectly)
5. Miscellaneous series (which may consist of different operations together like addition, subtraction, division, etc)

Tips and Tricks to Solve Number Series Questions:

1. The Easiest way to approach number series questions is to observe the difference between the various terms. Here are some methods and tips you can use to solve number series questions:
2. If you observe carefully a constant difference between the different numbers, it means that the question belongs to the series with a constant degree category.
3. If you observed carefully the difference between the various numbers it is either increasing or decreasing, then the question belongs to either the series with an increasing difference or the series with decreasing difference respectively.
4. In case, you are not able to spot an increasing or decreasing difference between the numbers, try to divide the 2nd term of the series with the first, the 2nd term with the 3rd term and so on. If the answer to the constant division comes as the same number, then this question belongs to the product series.
5. In case, none of the above approach works, you can write every term of the question as to the multiplication of 2 factors and try to spot a pattern between the terms.
6. If you are not able to spot a pattern and the difference between the terms is decreasing or increasing at an accelerated rate, you can try for the square/cube series.

Some Examples

Find the missing term.

Q1. Given a Series 2, 5, 12.5, ?, 78.125, 195.3125

Find what number would come in place of the question mark(?).

- a) 31.25
- b) 40.25
- c) 32.50
- d) 21.00

Answer : (a) 31.25

Explanation

If you observe the pattern, then you can see

$$2 \times 2.5 = 5$$

$$5 \times 2.5 = 12.5$$

$$12.5 \times 2.5 = 31.25$$

$$31.25 \times 2.5 = 78.125$$

$$78.125 \times 2.5 = 195.3125$$

Hence, the correct answer is 31.25

Q2. Given a Series 50, 45, 40, 35, 30, ?

Find what number would come in place of the question mark(?).

a) 28

b) 15

c) 25

d) 20

Answer : (c) 25

Explanation :

If you observe the pattern, then you will see, it's nothing but constant difference series.

$$50 - 5 = 45$$

$$45 - 5 = 40$$

$$40 - 5 = 35$$

$$35 - 5 = 30$$

$$30 - 5 = 25$$

Hence, the correct answer is 25.

Q3. Given a Series -10, -8, 6, 40, 102, ?

Find what number would come in place of the question mark(?).

a) 105

b) 117

c) 216

d) 129

Answer : (b) 117

Explanation:

Observing patterns carefully you will find that this question belongs to the category of square series.

$$-10 + (22 - 2) = -8$$

$$-8 + (42 - 2) = 6$$

$$6 + (62 - 2) = 40$$

$$40 + (82 - 2) = 102$$

$$102 + (102 - 2) = 200$$

Hence, the correct answer is 117.

Q4. Given a Series 25,49,121,169,?

Find what number would come in place of the question mark(?).

a) 225

b) 256

c) 289

d) 361

Answer: (c) 289

Explanation:-

Observing patterns carefully, you will observe that, this series is based on two concepts one is squares and the other is a prime number.

$$5^2 = 25$$

$$7^2 = 49$$

$$11^2 = 121$$

$$13^2 = 169$$

$$17^2 = 289$$

Hence, the correct answer is 289

Q5. Given a Series 1, 30 5, 26, 9, 22, 13, 18, ?

Find what number would come in place of the question mark(?).

a) 17

b) 22

c) 28

d) 19

Answer : (a) 17

Explanation:-

Observing the pattern carefully, you will observe that, this series consist of 2 different series.

Let me point out them for ease of understanding —

$$1 + 4 = 5$$

$$5 + 4 = 9$$

$$9 + 4 = 13$$

$$13 + 4 = 17.$$

Similarly,

$$30 - 4 = 26$$

$$26 - 4 = 22$$

$$22 - 4 = 18$$

EXERCISE

1. What will come at the place of question mark ?

1, 9, 25, 49, ?, 121.

A. 100

B. 91

C. 64

D. 81

2. What will come at the place of question mark?

4, 7, 12, 19, 28, ?

A. 49

B. 36

C. 30

D. 39

3. What will come at the place of question mark ?

6, 11, 21, 36, 56, ?

A. 91

B. 51

C. 81

D. 42

4. What will come at the place of question mark ?

10, 100, 200, 310, ?

A. 430

B. 420

C. 410

D. 400

5. What will come at the place of question mark ?

8, 28, 116, 584, ?

A. 1752

B. 3504

C. 3508

D. 3502

Answer Key

1. D

2. D

3. C

4. A

5. C

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