

# SERIES COMPLETION



# WHAT IS IT?

- In this type of questions, some numbers and/or alphabetical letters are given.
- They all form a series and the series changes in certain order.
- The series may also have one or more numbers/letters missing.
- You are required to observe that specific order in which the series changes and then complete the series.



# TYPES OF SERIES

- Number Series
- Alpha series
- Letter series
- Number and letter Analogy



# NUMBER SERIES



# TYPES OF NUMBER SERIES

## I. Prime number Series :

Example (1) : 2,3,5,7,11,13, .....

Answer : The given series is prime number series . The next prime number is 17.

Example (2) :2,5,11,17,23,.....41.

Answer: The prime numbers are written alternately.

## II. Difference Series :

Example (1): 2,5,8,11,14,17,.....,23.

Answer: The difference between the numbers is 3. ( $17+3 = 20$ )

Example (2): 45,38,31,24,17,.....,3.

Answer: The difference between the numbers is 7. ( $17-7=10$ ).

### III. Multiplication Series:

Example (1) : 2,6,18,54,162,.....,1458.

Answer: The numbers are multiplied by 3 to get next number. ( $162 \times 3 = 486$ ).

Example: (2) : 3,12,48,192,.....,3072.

Answer : The numbers are multiplied by 4 to get the next number. ( $192 \times 4 = 768$ ).

### IV. Division Series:

Example (1): 720, 120, 24, .....,2,1

Answer:  $720/6=120$ ,  $120/5=24$ ,  $24/4=6$ ,  $6/3=2$ ,  $2/2=1$ .

Example (2) : 32, 48, 72, 108, ....., 243.

Answer: 2. Number  $\times \frac{3}{2}$  = next number.  $32 \times \frac{3}{2} = 48$ ,  $48 \times \frac{3}{2} = 72$ ,  $72 \times \frac{3}{2} = 108$ ,  $108 \times \frac{3}{2} = 162$ .

## V. $n^2$ Series:

Example(1) : 1, 4, 9, 16, 25, ....., 49

Answer: The series is  $1^2, 2^2, 3^2, 4^2, 5^2, \dots$ . The next number is  $6^2=36$ ;

Example (2) : 0, 4, 16, 36, 64, ....., 144.

Answer :The series is  $0^2, 2^2, 4^2, 6^2$ , etc. The next number is  $10^2=100$ .

## VI. $n^2-1$ Series :

Example : 0, 3, 8, 15, 24, 35, 48, .....,

Answer : The series is  $1^2-1, 2^2-1, 3^2-1$  etc. The next number is  $8^2 -1=63$ .

**Another logic** : Difference between numbers is 3, 5, 7, 9, 11, 13 etc. The next number is  $(48+15=63)$ .

## VII. $n^2 +1$ Series :

Example : 2, 5, 10, 17, 26, 37, ....., 65.

Answer : The series is  $1^2+1, 2^2+1, 3^2+1$  etc. The next number is  $7^2+1=50$ .

### **VIII. $n^2+n$ Series (or) $n^2-n$ Series :**

Example : 2, 6, 12, 20, ....., 42.

Answer : The series is  $1^2+1$ ,  $2^2+2$ ,  $3^2+3$ ,  $4^2+4$  etc. The next number =  $5^2+5=30$ .

**Another Logic :** The series is  $1 \times 2$ ,  $2 \times 3$ ,  $3 \times 4$ ,  $4 \times 5$ . The next number is  $5 \times 6=30$ .

**Another Logic :** The series is  $2^2-2$ ,  $3^2-3$ ,  $4^2-4$ ,  $5^2-5$ . The next number is  $6^2-6=30$ .

### **IX. $n^3$ Series :**

Example : 1, 8, 27, 64, 125, 216, ..... .

Answer : The series is  $1^3$ ,  $2^3$ ,  $3^3$ , etc. The missing number is  $7^3=343$ .

### **X. $n^3+1$ Series :**

Example : 2, 9, 28, 65, 126, 217, 344, .....

Answer : The series is  $1^3+1$ ,  $2^3+1$ ,  $3^3+1$ , etc. The missing number is  $8^3+1=513$ .



### **XI. $n^3-1$ Series :**

Example : 0, 7, 26, 63, 124, ....., 342.

Answer: The series is  $1^3-1$ ,  $2^3-1$ ,  $3^3-1$  etc. The missing number is  $6^3-1=215$ .

### **XII. $n^3+n$ Series :**

Example : 2, 10, 30, 68, 130, ....., 350.

Answer : The series is  $1^3+1$ ,  $2^3+2$ ,  $3^3+3$  etc .The missing number is  $6^3+6=222$ .

### **XIII. $n^3-n$ Series :**

Example :0, 6, 24, 60, 120, 210, .....,

Answer : The series is  $1^3-1$ ,  $2^3-2$ ,  $3^3-3$ , etc. The missing number is  $7^3-7=336$ .

**Another Logic :** The series is  $0 \times 1 \times 2$ ,  $1 \times 2 \times 3$ ,  $2 \times 3 \times 4$ , etc. The missing number is  $6 \times 7 \times 8=336$ .

**XIV.  $n^3+n^2$  Series :**

Example : 2, 12, 36, 80, 150, .....,

Answer: The series is  $1^3+1^2, 2^3+2^2, 3^3+3^2$  etc. The missing number is  $6^3+6^2=252$

**XV.  $n^3-n^2$  Series:**

Example: 0, 4, 18, 48, 100, .....,

Answer : The series is  $1^3-1^2, 2^3-2^2, 3^3-3^2$  etc. The missing number is  $6^3-6^2=180$

**XVI.  $xy, x+y$  Series:**

Example: 48, 12, 76, 13, 54, 9, 32, .....,

Answer :  $4+8=12, 7+6=13, 5+4=9, 3+2=5$ .

**XVII. Factorial Series:**

Example: 1, 1, 2, 6, 24, 120, .....,

Answer :  $0!=1, 1!=1, 2!=2, 3!=6, 4!=24, 5!=120, 6!=720$

# ALPHA SERIES

❖ In following alphabet series , one term missing as shown by question mark (?). Choose missing term from options.

U, O, I, ?, A

- (a) E
- (b) C
- (c) S
- (d) G

Ans: a

The series consists of vowels A, E, I, O, U written in a reverse order.

- ❖ In following alphabet series , one term missing as shown by question mark . Choose missing term from options.

Y, W, U, S, Q, ?, ?

- a) N,J
- b) M,L
- c) J,R
- d) L,M
- e) O,M

Ans: e

The series consists of alternate letters in reverse order.



❖ Find the missing term.

WFB, TGD, QHG, ?

- a) NIJ
- b) NIK
- c) NJK
- d) OIK
- e) PJK

Ans: b

W   -3      T      -3      Q      -3      N

❖ Find the missing term.

ELFA, GLHA, ILJA, \_\_\_\_\_, MLNA

- a) OLPA
- b) KLMA
- c) LLMA
- d) KLLA

Ans: d

The second and forth letters in the series, L and A, are static. The first and third letters consist of an alphabetical order beginning with the letter E.



# LETTER SERIES

Q1. Complete the series.

ba\_ba\_bac\_acb\_cbac

- A) aacb
- B) bbca
- C) ccba
- D) cbac
- E) None of these

Ans: c



Q2. n\_mnp\_ \_ p\_ npmn\_ mnp

- a) pmnpm
- b) pmnpp
- c) pmnmp
- d) pnpmn
- e) Pppmn

Ans: c

The block of letters npm has been repeated.



# NUMBER AND LETTER ANALOGY

❖  $3 : 12 :: 5 : ?$

- a) 25
- b) 35
- c) 30
- d) 15

Ans: c

$$3 \quad (3^2)+3 \quad 12$$

$$5 \quad (5^2)+5 \quad 30$$



❖  $14 : 9 :: 26 : ?$

- a) 12
- b) 13
- c) 31
- d) 15

Ans: D

$$14 = (2 \times 9 - 4)$$

$$26 = (2 \times 15 - 4)$$

$$? = 15$$



# PRACTICE QUESTIONS

Ex.1 Which number would replace question mark in the series

7, 12, 19, ?, 39.

a)29

b)28

c)26

d)24



# SOLUTION

Clearly, the given sequence follows the pattern :

+ 5, +7, +9 ... i.e.,

$$7 + 5 = 12,$$

$$12 + 7 = 19$$

Missing number =  $19 + 9 = 28$ .

Hence, the answer is (b).



Ex.2 Which is the number that comes next in the sequence :

0 6 24 60 120 210 ?

- a) 240      b) 290      c) 336      d) 504



# SOLUTION

Clearly, the given series is

$$1^3 - 1, 2^3 - 2, 3^3 - 3, \dots, 4^3 - 4, 5^3 - 5$$

$$\text{Next number} = 7^3 - 7 = 343 - 7 = 336.$$

Hence, the answer is (c).

Ex.3 Which is the number that comes next in the following sequence ?

4, 6, 12, 14, 28, 30, (?)

- a) 32
- b) 60
- c) 62
- d) 64



# SOLUTION

The given sequence is a combination of two series :

I. 4. 12, 28, (     )             and

II. 6. 14, 30.

Now, the pattern followed in each of the above two series is :

+ 8, + 16. + 32

So. missing number =  $(28 + 32) = 60$ .

Hence, the answer is (b).





Ex4. Look at this series:

14, 28, 20, 40, 32, 64, ...

What number should come next?

A. 52

B. 56

C. 96

D. 128

# SOLUTION

- **Answer:** Option B
- **Explanation:**
- This is an alternating multiplication and subtracting series: First, multiply by 2 and then subtract 8.



Ex5. Newspaper : Press :: Cloth : ?

- a) Tailor
- (b) Textile
- (c) Fibre
- (d) Factory
- (e) Mill



# SOLUTION

- **Answer:** Option E
- **Explanation:**
- Newspaper is printed in Press and Cloth is manufactured in Mill.



Ex6. Cup is to coffee as bowl is to

- A. Dish
- B. Soup
- C. Spoon
- D. food



# SOLUTION

- **Answer:** Option **B**
- **Explanation:**
- Coffee goes into a cup and soup goes into a bowl. Choices a and c are incorrect because they are other utensils. The answer is not choice d because the word food is too general.



Ex7. Which word does NOT belong with the others?

- A. tire
- B. steering wheel
- C. engine
- D. car



# SOLUTION

- **Answer:** Option **D**
- **Explanation:**
- Tire, steering wheel, and engine are all parts of a car.





Ex8. Which word does NOT belong with the others?

- A. inch
- B. ounce
- C. centimeter
- D. yard



# SOLUTION

- **Answer:** Option B
- **Explanation:**
- An ounce measures weight; the other choices measure length.



Thank you!