Series completion

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- 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.
- The students are required to observe that specific order in which the series changes and then complete the series.
- Similarly, the students have to decide about the missing letter or number that would suit for the blank space if they continue to change in some order. Some common types are explained in the following slides.

Types of Series:

- Number Series
- Alpha series
- Letter series

- Number and letter Analogy

Tricks to solve series completion

Step 1:

Observe are there any familiar numbers in the given series like primes numbers, perfect squares, cubes and so on which are easy to identify.

Step 2:

Calculate the differences between the numbers. Observe the pattern in the differences. If the differences are growing rapidly it might be a square series, cube series or multiplicative series. If the numbers are growing slowly, then it is an addition or subtraction series.

If the differences are not having any pattern then

1. **It might be a double or triple series**. Here every alternate number or every 3rd number form a series
2. **It might be a sum or average series**. Here sum of two consecutive numbers gives 3rd number. or average of first two numbers give next number

Step 3:

Sometimes number will be multiplied and will be added another number. So we need to check those patterns.

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. (162x3 = 486).

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

Answer : The numbers are multiplied by 4 to get the next number. (192x4 =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 x 3/2= next number. 32x3/2=48, 48x3/2=72, 72x3/2=108, 108x3/2=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, ... 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 1x2, 2x3, 3x4, 4x5. The next number is 5x6=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 0x1x2, 1x2x3, 2x3x4, etc. The missing number is 6x7x8=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:

1) 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

2) 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

3) Find the missing term.

WFB, TGD, QHG, ?

(a) NIJ

(b) NIK

(c) NJK

(d) OIK

(e) PJK

4) Find the missing term.

ELFA, GLHA, ILJA, _____, MLNA

(a) OLPA

(b) KLMA

(c) LLMA

(d) KLLA

Letter series:

Q1. Complete the series.

ba_ba_bac_acb_cbac

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

Q2. n_mnp_ _ p_ npmn_ mnp

a) pmnpm

b) pmnpp

c) pmnmp

d) pnpmn

e) Pppmn

Q3. Find the last 5 missing letters of the series.

pq_st_p_rss_pq _ _ _ _ _ _

a) rstqp
b) tsrqp
c) rstpq
d) rtspq
e) Prstq

Number and letter Analogy:

Q1. 3 : 12 :: 5 : ?

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

Q2. 14 : 9 :: 26 : ?

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

Q3. MO : 13 11 :: HJ : ?

(a) 19 17
(b) 18 16
(c) 8 10
(d) 16 18