# Series

# **Learning Objection**

- Introduction
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- Number Series
- Mixed Series

# Introduction

A series is a sequence of many elements following a particular pattern or rule. Such sequence is formed by putting the elements one after another from left to right. There are mainly three types of series - Letter series, Number series and Mixed series.

### **Letter Series**

A letter series is a sequence of many elements made of English alphabets. Such sequence is formed by putting the letters one after another from left to right.

### Type 1

This type of letter series is a sequence of Setters related to each other by some specific pattern.

# Which one of the following letters will come in place of the question mark (?)?

AEIMQ?	
(a) T	(b) U
(c) V	(d) W
(e) None of these	

### Ans. (b)

Explanation: The letters in the series are moved four steps forward alternatively.



## 1. Replace the question mark (?) in the given letter series with the correct letter.

CEHJMO?	
(a) Q	(b) S
(c) R	(d) T
(e) None of these	

Ans. (c)

**Explanation:** The letters in this series are moved two and three steps forward alternately.



# **Commonly Asked Questions**

Replace the question mark (?) in the given letter series with the correct letter. I R P M K?

ONI MA:	
(a) G	(b) E
(c) H	(d) F
(e) None of these	
(c)	

Ans.

**Explanation:** The letters in this series are moved three and two steps backward alternately.



Replace the question mark (?) in the given letter series with the correct letter. ABFGKL?

(a) P	(b) M
(c) R	(d) O

(e) None of these

#### Ans. (a)

**Explanation:** The letters in this series are moved one and four steps forward alternately.

А	В	F	G	к	L	P
L						
+1	l +	4 +	1 +	4 -	⊦1 ·	+4

### Type 2

In this type, a group of English alphabets forms a series according to a certain rule.

WV, PO, IH, BA?	
(a) ST	(b) RS
(c) UT	(d) UV
(e) None of these	

#### Ans. (c)

**Explanation:** Each of the two letters in the group forming the series moved backward by seven steps. So, the missing group of letters is UT.

1st	2nd 3rd		4th	
group	group	group	group	
W <u>7</u> V <u>7</u>	$\rightarrow P -7$ $\rightarrow O -7$	→ I <u>-7</u> → H <u>-7</u>	$\rightarrow$ B ${\longrightarrow}$ A ${\longrightarrow}$	∠→ U ∠→ T

### DF, GJ, KM, NQ, RT?

(a) EI	(b) UX
(c) UV	(d) XY

- (c) UV
- (e) None of these

#### Ans. (b)

**Explanation:** The two letters of each group are separated by a difference of two and three letters alternately, while the first Setter of each group is obtained by adding one from the last letter of the previous group.



# **Commonly Asked Questions**

### BE, CF, DG, EH, FI?

(a) GJ	(b) JG
(c) GH	(d) HK
(e) None of these	

#### Ans.

(a)

**Explanation:** In this series, both the first and second letters of the term move one step forward in the next term. JE, LH, OL, SQ, ?

(a) WV	(b) WX
(c) VW	(d) XW
(e) None of these	

### Ans. (e)

**Explanation: The first** letter of term moves 2, 3, 4, 5 steps forward while the second letter moves 3, 4, 5, 6 steps forward as shown below:



### Type 3

In this type, there is a series of the groups of three letters related to each other according to a certain rule and the groups are also moving according to a certain rule.

### Recognise the pattern in each of the following series and select the correct options.

<b>BXJ, ETL, HPN, KL</b>	.P, ():
(a) NHR	(b) MHQ
(c) MIP	(d) NIR
(e) None of these	

### Ans. (a)

**Explanation:** In the given series, the first letter of the terms moves 3 letters forward, second letter moves 4 letters backward and third letter moves 2 letters forward.

lst	term	lind	term	Illrd	term	IVth term	Vth term	1
	в — +3	→ E	+3	→ H	+3	→ K —	+3 N	
	x <u>4</u>	→ T	4	→P	4	→ L	<u>−4</u> H	
	J <u>+2</u>	→ L	+2	→ N	+2	→ P	+2 R	

### AYD, BVF, DRH, (...), KGL:

(a) FMI	(b) GMJ
(c) HLK	(d) GLJ
(e) None of these	

### Ans.

(b)

**Explanation:** The given series follows the following pattern:

I termII termIII termFirst LetterA $\stackrel{+1}{\longrightarrow}$  B $\stackrel{+2}{\longrightarrow}$  D $\stackrel{+3}{\longrightarrow}$  G $\stackrel{+4}{\longrightarrow}$  KSecond LetterY $\stackrel{-3}{\longrightarrow}$  V $\stackrel{-4}{\longrightarrow}$  R $\stackrel{-5}{\longrightarrow}$  M $\stackrel{-6}{\longrightarrow}$  GThird LetterD $\stackrel{+2}{\longrightarrow}$  F $\stackrel{+2}{\longrightarrow}$  H $\stackrel{+2}{\longrightarrow}$  L

Thus, the missing term is GMJ.

# **Commonly Asked Questions**

(a) UUU	(b) UST
(c) VUS	(d) TUV

(e) None of these

### Ans. (a)

The three alphabets in one group correspond to the alphabets in the next group in the manner + 6, + 5, + 4 respectively i.e.

C F	   +6	ι κ 11↑	↑	i +6	0 111	P.C 1\1	)  +6	UL ↑↑	<u>ו</u> ו∪ 1
	+5		Ш	+5		Ц	+5		
	+4			+4			+4		

### KNQ, TWZ, CFI, ?

(a) KOR (b) LOR (c) MNQ (d) JLM

(e) None of these

**Explanation:** All the alphabet in this group series is in succession of +3, the alphabetical series repeat from 'A' on reaching 'Z',

К	Ν	Q	Т	W	Ζ	С	F	- 1	L	0	R
							L				
+3	3 +3	3+	3+	3 +	3+	-3 +	-3 -	+3	+3	+3	+3

### Type 4

This is a special type of letter series in which a set of alphabets repeats or sometimes a letter is repeating many times according to a pattern.

### Example

### Select the missing letters in the letter series given below from the given options.

a	_ bc _	bb	_ab	_ C _	bbc
(a)	abc	ba			(b) b a c b a
(c)	abb	сa			(d) b a c c a
(e)	None	e of th	nese		

### Ans. (b)

**Explanation:** In the given series, term 'abbe' is repeated. So, correct sequence is as follows: abbc / abbc / abbc / abbc / abbc

Thus, the letters missing in the given series are 'b a c b a'. So, option (b) is the correct choice.

### Select the missing letters in the series given below from the options provided.

(a) a a b c a	(b) a c a c a
(c) a a a c b	(d) a b b c b
(e) None of these	

### **Ans.** (b)

**Explanation:** In the given series, the terms 'aa', 'bb' and 'cc' are repeated periodically. So, the correct sequence is as follows:

aa / bb / cc / aa / bb / cc / aa / bb

Thus, the letters missing in the given series are 'a c a c a'. So, option (b) is the correct choice.

# **Commonly Asked Questions**

### Select the missing letters in the letter series given below from the options provided

a_c_cac_	b_bcb_	a	
(a) a b a b c		(b)	bbbac
(c)		(d)	abcab
(e) None of th	ese		

### Ans.

(c)

**Explanation:** In the given series, if all the terms are divided into the groups of three the second letter of previous group becomes first, third letter of the previous group becomes second and the first letter of the previous group becomes the third letter in successive pair. So, the correct sequence is as follows: abc / bca / cab / abc / bca

Thus, the letters missing in the given series are 'b b a a c'. So, option (c) is the correct choice.

### Select the missing letters in the letters series given below from the options provided.

aaa \_ bb \_ aab \_ baaa \_ bba \_ a

(a) b a a b a	(b) b a b a b
(c) b a b b b	(d) b a b b a
(e) None of these	

### **Ans.** (d)

**Explanation:** In the given series, the terms' aaa' and 'bbb' are repeated periodically. So, the correct sequence is as follows:

aaa / bbb / aaa / bbb / aaa / bbb / aaa

Thus, the letters missing in the given series are 'b a b b a'. So, option (d) is the correct choice.

# **Number Series**

A number series is a sequence of many elements made of number only. Such sequence is formed by putting the numbers one after another from left to right.

### Example

### Find the missing term in the series given below:

1, 6, 12, 19, 27?	
(a) 38	(b) 35
(c) 36	(d) 54
(e) None of these	

### Ans. (c)

**Explanation:** The difference between each of the two successive terms in the series increases by 1, after beginning from 5, i.e.,

1	6	12	19	27	36
+5	+	-6 +	7.	+8	+9

### Find the missing term in the series given below.

57, 87, 50, 81, 45,	, 77, 42,?
(a) 71	(b) 75
(c) 53	(d) 69
(e) None of these	

### Ans.

(b)

**Explanation:** There are two alternate series: Series I: 57, 50, 45, 42 (Difference between two successive terms is increasing by 2 starting from - 7; - 7, - 5, - 3) Series II: 87, 81, 77 (Difference between two successive terms is increasing by 2 starting from -6, - 6, - 4, - 2)



As the required term comes in series II it will be 75.

# Find the missing term in the

#### **4, 9, 19, 34, 54, ?, 109** (a) 89 (b) 84

(c) 74 (d) 79

(e) None of these

Explanation: The difference between each of two successive terms increases by S after beginning from 5, i.e.,

### Find the missing term in the series given below»

**6, 7, 9, 11, 15, 15, 24, 19?** (a) 32 (b) 34 (c) 36 (d) 37

(e) None of these

#### **Ans.** (c)

**Explanation:** There are two alternate series:

**Series I:** 6, 9, 15, 24 (Difference between two successive terms is increasing by +3 i.e. the differences are +3, +6, +9 etc.)

Series II: 7, 11, 15, 19 (Difference between each of the two successive terms is 4)

As the required term comes in series I, so it will be 36.

### Find the missing term in the series given below.

3, 6, 9, 36, 27, 216, 81?

(a) 1296	(b) 648
(c) 243	(d) 1944

(e) None of these

#### **Ans.** (a)

**Explanation:** There are two alternate series:

**Series I:** 3, 9, 27, 81 (Each term multiplies by 3 to give the next term) **Series II:** 6, 36, 216, 1296 (Each term multiplies by 6 to give the next term)

As the required term comes in second series, so it will be 1296.

### **Mixed Series**

A mixed series is a sequence of many elements made of numbers and letters arranged from left to right, in some cases some symbols may take place in such series. The symbols may be '+', '-', ' $\times$ ', ' $\pm$ ', '?', '>', '<', = etc. in other words, we can say that a mixed series is sequence of diverse elements.

### Example

81Y, 27S, 9N, 3J,?	
(a) 1E	(b) 0F
(c) 1G	(d) 0H
(e) None of these	

#### Ans.

(c)

Explanation: The numbers are divided by 3 at each step and the Setters are moved 6, 5, 4, 3 steps backward,



Thus, the required missing term is 1G.

### P3C, R5F, T81, V12L, (...)

, , ,	, , ,
(a) X 17 O	(b) X 17 M
(c) U 17 O	(d) Y 17 M
(e) None of these	

## **Ans.** (b)

**Explanation:** In the given sequence, each term contains two letters and a number in between them. Each of these components follows a separate pattern as shown below:

	First term	Second term	I	Third term	Fourth term	Fifth term
First Letter	Р —	+2 → R -	+2	→ T —	+2 → V	+2 → X
Second Num	ber 3 —	+2 → 5 -	+3	→ 8	<u>+4</u> →12 —	+5 17
Third Letter	с —	+3 F -	+3	→ I —	+3→L —	+3 0

Thus, the missing term is X170.

# **Commonly Asked Questions**

### 3J, 6m, 12l, ?, 48n

(a) 24o	(b) 18 m
(c) 26 m	(d) 22o
(e) None of these	

### Ans. (a)

**Explanation:** Every number is double the previous number and the sequence letters is +3, -1 (3 steps forward, 1 step backward) which is repeated.

3	j	6 m	12 I	24 o	48 n
		×2	×2	×2	×2
_		+3	-1	+3	-1

So, the missing term is 240.

# Which one of the following does not fit in the letter number series given below?

G4T, J10R, M20F	P, P43N, S90L
(a) J10R	(b) S90L
(c) M20P	(d) G4T
(e) None of these	

### Ans.

(a)

**Explanation: The** letters on the left are moved 3 steps forward, the letters or the right are moved 2 steps backward and the sequence of numbers is  $(4\times2) + 1$ .  $(9\times2) + 2$ ,  $(20\times2) + 3$ ,  $(43\times2) + 4$ . So, J9R should be in place of J10R.