

Aptitude Advanced

Series Numeric & Alphabetic

eBook

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Chapter 1: Series Alphabets

Now before we proceed to discuss the various types of questions related to alphabetical series, we will talk of some basic facts which are essential to understanding of these types of questions,

I. THE ALPHABET: The normal English alphabet contains 26 letters in all, as shown below

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

(Usually, questions on alphabet are accompanied by this normal alphabet). From A to M, the alphabet completes its first half, while the other half starts from N and ends at Z.

A – M \Rightarrow 1 – 13 (First Alphabetical Half)

N – Z \Rightarrow 14 – 26 (Second Alphabetical Half)

II. EJOTY: For purpose of convenience, it is helpful to remember this simple formula called EJOTY, with the help of which you can easily find the position of any letter without much effort. But for practical purposes, you should learn by heart the positions of different letters in the alphabet.

E J O T Y
5 10 15 20 25

Now, for instance, we wish to find the position of, say, the 17th letter from the left side. You already know that the 15th letter from the left side is O, therefore, the only thing you have to do is to find a letter which is two positions ahead of O, which is Q (The Answer). Using this simple formula, you can quickly find the position of any letter from the left side without much brain-rattling. Remembering the positions of different alphabets is basic to solving any question on alphabetical series, so examinees must remember their positions. One of the best ways to achieve it is to practice EJOTY. Simply write down the full names of any 200 people you can imagine and do as follows:

For example, let's say the name of the person imagined is ZUBINA. Now from EJOTY, we know that Z stands for 26, U stands for 21, B stands for 2, I stands for 9, N stands for 14 and A stands for 1. Now add up all these positions (26+21+2+9+14+1). What you get on addition does not have any significance, but it can be a very good way to make out and remember the individual positions of all the letters in the alphabet.

III. FINDING POSITIONS: Much more commonly, you get questions in the tests, which provide you alphabetical positions from the right side. Since we are used to counting from the left side i.e. A, B, C... and not Z, Y, X..., the formula we discussed earlier will be applicable with a bit of modification. But before we proceed to discuss it, it is essential to remember one simple mathematical fact.

Let's say there is a row of 7 boys in which a boy is standing 3rd from left. We want to know his position from the right side.

1 st	2 nd	3 rd	4 th	5 th	6 th	7 th

You can see for yourself that the boy who was 3rd from the left is placed 5th from the right side.

The sum of both the positions is 8 ($3 + 5$), while the total number of boys is 7. This happens because we are counting a single boy twice in the calculation process. If we had subtracted 3 from 7 (as some of us might do), we would have got 4, which is obviously not the correct position from the right side. An important conclusion emerges from this discussion. *If we are dealing with an*

alphabet and we have been given the position of any letter from either side, we will add 1 to the total number of letters and then subtract position from one side to get its position from the other side. For example, let's find the position from the right of a letter, which is the 9th from the left side.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12
26	25	24	23	22	21	20	19	18	17	16	15

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1

As you can see for yourself, the 9th letter from the left side, I, comes out to be the 18th from the right side. Their sum ($9 + 18 = 27$) is again one more than the total number of alphabets i.e. 26. We can do this operation easily by adding one to the total number of letters ($26 + 1 = 27$) and then subtracting 9 from it. It gives you the letter position 18th from the right, which you can verify yourself from the above alphabet. The same procedure will be applicable if we are given an initial right position and are supposed to find it from the left side. Take for example, a letter, which is placed 11th from the right side.

If we want to locate its position from the left side, we will add 1 to total number of letters and then subtract the right position from it to get its position from the left side. $27 - 11$ gives you 16. Using EJOTY, you can easily conclude that the letter is P (16th from left, 11th from right).

The same logic is applicable if we are dealing with situation in which the position from the top is given to us and we want to find it from the bottom and vice-versa.

IV. Still another type of question is asked; finding the midpoint between two letters in the alphabet. For instance, let's talk of a case, which requires us to find the mid-point between the 11th letter and the 17th letter from the left side.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12

→

26	25	24	23	22	21	20	19	18	17	16	15
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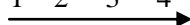
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1


←

You can see that there are five letters between these two positions i.e. L, M, N, O and P. Obviously, the midpoint of 5 items is the third item from either side, whether counted from the left or the right. It comes out to be N, which is the correct answer. But frankly speaking, so much labor is not exactly required in solving such questions.. In such questions, if the positions are given from the same side(i.e. either both are from left or both are from right), simply add up the two positions, get their average and you have the answer. In this case, the two positions are 11 and 17 from left. Adding them and averaging them gives you 14. Recollect the EJOTY formula and you immediately come up with the letter which is 14th from the left side (preceding O). The same procedure will be applicable if you are given a case in which both the positions are counted from the right side. Remember that the answer you will get will be from the same sides, which you have been given. Let's make this thing clearer by taking a practical example.

*Consider a case in which we have to find the mid-point between the 13th and the 19th letter from the right side. Adding the two positions gives us 32, the average of which is 16. So we get the mid-point, which is 16th from

the right side (the same as the sides given in the question). Now we have to convert this position into a position from the left. Applying the logic discussed earlier, we subtract 16 from 27 and get 11th from the left, which is obviously K. You can verify this answer by looking up the above alphabet. In fact, for such questions, one should have so much practice that one does not need to look up the alphabet, which proves to be time-consuming.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12
											
26	25	24	23	22	21	20	19	18	17	16	15

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1
													

Now let us consider the third case in which we have to find the mid-point between two alphabetical positions, one of which is given from the left and the other from the right.

*Take, for instance, a case in which we have to find the mid-point between the 6th position from the left side and

the 11th position from the right side. The first thing we have to do is to convert the right position into a left position to make the data comparable in nature. Doing so gives us 16. Now add up 16 and 6 (because now both are from the same side), average them, apply EJOTY and you get the correct answer.

V. REVERSING: Many questions concerning reversing of alphabets are a part of reasoning tests. Consider this question

1.1 Solved Examples

Example 1 : What will the 11th letter of the following alphabet if the second half of the alphabet is written in reverse order?

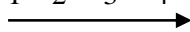
A	B	C	D	E	F	G	H	I	J	K	L		
1	2	3	4	5	6	7	8	9	10	11	12		
													
26	25	24	23	22	21	20	19	18	17	16	15		
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1
													

Solution: The most important thing to remember in a question like the above is to determine where the required position falls, i.e. in the first or the second half. In this case, the answer falls in the first half. Therefore, if the second half is written in reversed order, it will have no impact on the position of our letter. This can be likened to reversing the tail of an elephant and asking if it would have an impact on its trunk. The answer is obviously no. So in this case, we have to simply decide the 11th letter from the left side, which is K, by using the EJOTY method.

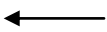
Example 2 : What will be the 12th letter from the right side if the first half of the alphabet is written in reverse order?

Solution: Now examine it carefully. This question is pretty same as the earlier one. The examiner has cleverly phrased his question so as to trap you. If you want to count from the right side and the answer falls in the first half from the right side (the normal second half is now your first half because you have started counting from this side), reversing the first half of a normal alphabet will have no impact on the right answer. So now the question can be rephrased like finding the 12th letter

from the right side. The correct answer as you can find quite comfortably is O.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12
											
26	25	24	23	22	21	20	19	18	17	16	15

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
---	---	---	---	---	---	---	---	---	---	---	---	---	---

13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1
													

Example 3 : Which letter will be the 17th from the left side if the second half of the normal alphabet is reversed?

Solution: Now this is posing a bit difficult problem. Your answer will fall in the second half(because the first half is complete when you are at position 13 from left). So the letters A-M remain the same while from N – Z are written like Z, Y, X till N. In effect, we can count 13 letter from A – M and then simply add four letters from the behind of the alphabet. You can see for yourself that the fourth letter from the rear side is W, which is the correct answer. But we have solved this question by looking at the above alphabet. Let's solve it the faster way without looking up the alphabet.

Since only the 2nd half is being reversed, we can easily skip the first 13 letters, which we will assume to have been counted in a normal way. The question is how to find the 17th letter from the left with the reversed second half. Simply count the fourth letter from the right side (which is obviously the 23rd from the left side), which if added to the number 13, makes it the 17th from left. Refer to the following figure for clarity. Applying our earlier procedure, the 4th from right is W; we get the same correct answer.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12
→											
26	25	24	23	22	21	20	19	18	17	16	15

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1

Now let's consider a case in which the entire alphabet is reversed.

Example 4: What would be the 16th letter from the left side if the normal English alphabet were written in reverse order?

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12

26 25 24 23 22 21 20 19 18 17 16 15

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
---	---	---	---	---	---	---	---	---	---	---	---	---	---

13	14	15	16	17	18	19	20	21	22	23	24	25	26
14	13	12	11	10	9	8	7	6	5	4	3	2	1



Solution: Obviously the alphabet will look like Z, Y, X... from the left if we reverse the whole of it. Now just imagine that what was on the left earlier has become on the right now. So A will go to the right extreme, followed by B and so on. In reality, what was 16th from the left earlier has now become the 16th from the right side. So if this 16th from right can be converted to the left side i.e. 11 and we already know from EJOTY that the 11th letter from left is K

Example 5 : What will be the 5th letter to the right of the 9th letter from the left side in a normal alphabet?

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
---	---	---	---	---	---	---	---	---	---	---	---	---	---

13 14 15 16 17 18 19 20 21 22 23 24 25 26

Solution: Go to the end of the question. It asks you to start counting from left and arrive at the 9th from the left which is I. Now starting from I, we are to find the 5th letter to its right as per the statement, which is N.

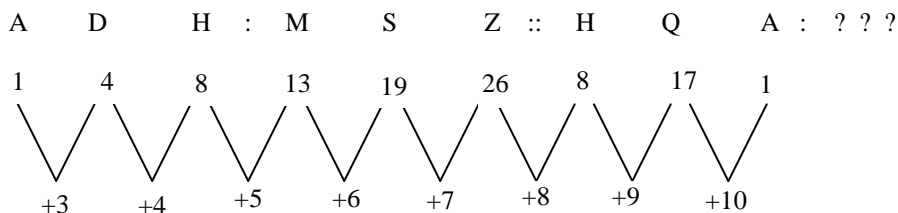
In reality N is placed at the 14th from left which is a figure you can get by adding the numbers in the question (9 + 5).

Rule No. 1: Whenever we are given two opposite directions, i.e., left-right or right-left, we will add up those two numerals and will count from the direction given at the end of the question.

Now examine this one :

Example 6 : ADH : MSZ :: GOW : ?

Solution: The components of all the sequences are related to their preceding and the following components in a specific manner. To simplify the things, we will assign the respective alphabetical positions to the letters.



As you can see from the above illustration, the difference between the consecutive components is increasing by one position each time. So, the question requires you to determine the next three letters working with the same logic. It is here that your EJOTY formula will prove handy. Applying it, you can readily find the answer i.e. +11, +12 and then +13, which turns out to be L XK.

Chapter 2: Continuous Pattern Series

This type of series consists of small letters which follow a certain pattern. Some spaces are left blank in between the series. We have to fill the blanks from the given options to follow a pattern. As there is not much which can be done in terms of learning, except for the examples, let us start with the following examples.

2.1 Solved Examples

Example 1: ab__ baa__ ab _

1. aaaaa

2. aabaa

3. aabab

4. baabb

Solution: In order to answer this, put all the options one by one in blanks. There you will realize that it is only the second option, which gives a particular pattern and the pattern is aba/aba/aba/aba

Example 2: _aa _ ba _ bb _ ab _ aab

1. aaabb

2. babab

3. bbaab

4. bbbaa

Solution: We have _aa _ba _bb _ab _aab

If we put the first option i.e. aaabb in the blank spaces we get aaaa/baab/bbab/baab. Here no pattern is formed. Now put the second option 'babab' in the blank spaces we get baaa/babb/baab/baab. Again no pattern is formed. Now put the third option 'bbaab' in the blank spaces we get the pattern

baab / baab / baab / baab. Here a uniform pattern is formed. If we put the 4th option in blank spaces we get baab/babb/baab/aaab. Here, again the pattern is not uniform. So answer is option 3.

Example 3: ac _ cab _ baca _ aba _ acac

1. aacb

2. acbc

3. babb

4. bcbb

Solution: The answer is 1st option. Pattern becomes acac / abab / acac / abab / acac. Thus acac and abab is repeated.