

Series

A **Series** is a sequence of numbers obtained by some particular predefined rule and applying that predefined rule it is possible to find out the next term of the series.

A series can be created in many ways. Some of these are discussed below :

(i) Arithmetic Series

An arithmetic series is one in which successive numbers are obtained by adding (or subtracting) a fixed number to the previous number. For example,

(i) 3, 5, 7, 9, 11,

(ii) 10, 8, 6, 4, 2,

(iii) 13, 22, 31, 40, 49,

(iv) 31, 27, 23, 19, 15, etc.

are arithmetic series because in each of them the next number can be obtained by adding or subtracting a fixed number. (For example, in 3, 5, 7, 9, 11, every successive number is obtained by adding 2 to the previous number).

(ii) Geometric Series

A geometric series is one in which each successive number is obtained by multiplying (or dividing) a fixed number by the previous number.

For example,

(i) 4, 8, 16, 32, 64,

(ii) 15, -30, 60, -120, 240,

(iii) 1024, 512, 256, 128, 64,

(iv) 3125, -625, 125, -25, 5,

are geometric series because, in each of them, the next number can be obtained by multiplying (or dividing) the previous number by a fixed number. (For example, in : 3125, -625, 125, -25, 5, every successive number is obtained by dividing the previous number by -5.)

(iii) Series of squares, cubes etc

These series can be formed by squaring or cubing every successive number.

For example,

(i) 2, 4, 16, 256, ...

(ii) 3, 9, 81, 6561,

(iii) 2, 8, 512, etc.

are such series. (In the first and second, every number is squared to get the next number while in the third it is cubed).

(iv) Mixed Series

A mixed series is basically the one we need to have a sound practice. Because it is generally the mixed series which is asked in the examination. By a mixed series, we mean a series which is created according to any non-conventional (but logical) rule. Because there is no limitation to people's imagination, there are infinite ways in which a series can be created and naturally it is not possible to club together all of them. Still we are giving examples of some more popular ways of creating these mixed series. (We shall be giving them names, which are not generalised and probably not found in any other book, but which are given with the purpose of clarifying their logic without difficulty).

1) Two-tier Arithmetic Series. We have seen that in an arithmetic series the difference of any two successive numbers is fixed. A Two-tier Arithmetic Series shall be the one in which the differences of successive numbers themselves form an arithmetic series.

Examples

(a) 1, 2, 5, 10, 17, 26, 37,

(b) 3, 5, 9, 15, 23, 33, etc.

are examples of such series. [In 1, 2, 5, 10, 17, 26, 37,; for example, the differences of successive numbers are 1, 3, 5, 7, 9, 11,.... which is an arithmetic series.

Note: Two-tier arithmetic series can be denoted as a quadratic function.

For example, the above series

(a) is $0^2, 1, 1^2, 1, 2^2, 1, 3^2, 1, \dots$ which can be denoted as

$f(x) = x^2 + 1$, where $x = 0, 1, 2, \dots$

Similarly example (b) can be denoted as

$f(x) = x^2 + x + 3$, $x = 0, 1, 2, 3, \dots$

II) Three-tier Arithmetic Series. This, as the name suggests, is a series in which the differences of successive numbers form a two-tier arithmetic series; whose successive term's differences, in turn, form an arithmetic series.

For example

a) 336, 210, 120, 60, 24, 6, 0,

is an example of three-tier arithmetic series.

[The differences of successive terms are

120, 90, 60, 36, 18, 6,

The differences of successive terms of this new series are

36, 30, 24, 18, 12,

which is an arithmetic series.]

Note: Three-tier arithmetic series can be denoted as a cubic function.

For example, the above series is (from right end)

$1^3, 1, 2^3, 2, 3^3, 3, 4^3, 4, \dots$ which can also be denoted as

$f(x) = x^3 - x$; $x = 1, 2, \dots$

III) We know that,

i) In an arithmetic series we add (or deduct) a fixed number to find the next number, and

ii) In a geometric series we multiply (or divide) a fixed number to find the next number.

We can combine these two ideas into one to form a)

Arithmetico-Geometric Series. As the name suggests, in this series each successive term should be found by first adding a fixed number to the previous term and then multiplying it by another fixed number.

For example

1, 6, 21, 66, 201,

is an arithmetico-geometric series. (Each successive term is obtained by first adding 1 to the previous term and then multiplying it by 3).

Note : The differences of successive numbers should be in Geometric Progression.

In this case, the successive differences are 5, 15, 45, 135, which are in GP.

b) **Geometrico-Arithmetic Series.** As the name suggests, a geometrico-arithmetic series should be the one in which each successive term is found by first multiplying (or dividing) the previous term by a fixed number and then adding (or deducting) another fixed number.

For example

3, 4, 7, 16, 43, 124,

is a geometrico-arithmetic series. (Each successive term is obtained by first multiplying the previous number by 3 and then subtracting 5 from it.)

Note: The differences of successive numbers should be in geometric progression. In this case, the successive differences are 1, 3, 9, 27, 81, which are in GP.

IV) Twin Series. We shall call these twin series, because they are two series packed in one .

1, 3, 5, 1, 9, -3, 13, -11, 17,

is an example of twin series. (The first, third, fifth etc. terms are 1, 5, 9, 13, 17 which is an arithmetic series. The second, fourth, sixth etc. are 3, 1, -3, -11 which is a geometrico-arithmetic series in which successive terms are obtained by multiplying the previous term by 2 and then subtracting 5.)

V) Other Series. Besides, numerous other series are possible and it is impossible to even think of (let alone write them down) all of them. It is only through a lot of practice and by keeping abreast with the latest trends that one can expect to master the series.

Suggested steps for solving series questions

Despite the fact that it is extremely difficult to lay down all possible combinations of series, still, if you follow the following step-by-step approach, you may solve a series question easily and quickly:

Step I: Preliminary Screening

First check the series by having a look at it. It

may be that the series is very simple and just a first look may be enough and you may know the next term. Some examples are given below, where preliminary screening is sufficient to tell you the next term.

- Ex.** i) 4, -8, 16, -32, 64, ?
 ii) 1, 4, 9, 16, 25, 36, 49, ?
 iii) 1, 3, 6, 10, 15, 21, ?
 iv) 2, 6, 18, 54, 162, ?

Answer i) Each term is multiplied by -2.
 Next term : -132.

ii) The series is $+3, +5, +7, +9, +11, +13, +15$.
 Next term: $49 + 15 = 64$.

Another approach: The series is, $1^2, 2^2, 3^2$ etc.
 Next term: $8^2 = 64$.

iii) The series is $+2, +3, +4, +5, +6, +7$.
 Next term: $21 + 7 = 28$.

iv) Each term is multiplied by 3.
 Next term: $162 \times 3 = 486$.

Step II: Check Trend: Increasing / Decreasing / Alternating

If you fail to see the rule of the series by just preliminary screening you should see the trend of the series. By this we mean that you should check whether the series increases continuously or decreases continuously or whether it alternates, i.e. increases and decreases alternately. For example, the series i) and ii) in the following examples are increasing, the series iii) is decreasing and the series iv) is alternating.

- Ex.** i) 3, 10, 21, 36, 55, 78.
 ii) 5, 10, 13, 26, 29, 58.
 iii) 125, 123, 120, 115, 108, 97.
 iv) 253, 136, 352, 460, 324, 631, 244.

Step III (A) (to be employed if the series is increasing or decreasing) Feel the rate of increase or decrease

For an increasing (or decreasing) series, start with the first term and move onwards. You will notice that the series proceeds either arithmetically or geometrically or alternately. By an arithmetic increase, we mean that there is an increase (or decrease) of terms by virtue of addition (or subtraction). In such cases you will 'feel' that the series rises (or falls) rather slowly. By a geometric increase (or decrease) we mean that there is an increase (or decrease) of terms by virtue of multiplication (or division) or if there is addition it is of squares or of cubes. In such cases, you will 'feel' that the series rises (or falls) very sharply. By an alternative increase (or decrease) we mean that

the series may be irregularly increasing or decreasing. In such cases, the rise (or fall) may be sharp then slow and then again sharp and so on.

For example, consider the series: 4, 5, 7, 10, 14, 19, 25. Here the series increases and the increase is slow. A gradual, slow increase. So you should try to test for an arithmetic type of increase. Indeed, it turns out to be a two-tier arithmetic series, the differences 1, 2, 3, 4, 5, forming a simple series.

Again, consider the series: 1, 2, 6, 15, 31, 56. Here you may immediately 'feel' that the series rises very sharply. So, you should try to test for a geometric type of increase. On trial you may see that the series is not formed by successive multiplications. So, you should check for addition of squared numbers, cubed numbers etc. Indeed the series turns out to be $1, 1+1^2, 1+1^2+2^2, 1+1^2+2^2+3^2$ etc. Another similar example could be of the series 1, 5, 14, 30, 55, 91. This is $1^2, 1^2+2^2, 1^2+2^2+3^2, 1^2+2^2+3^2+4^2$ etc. Another example could be: 2, 9, 28, 65, 126, 217. This is: $1^3+1, 2^3+1, 3^3+1$ etc.

[Note: We have seen that there may be two ways in which a geometric increase (or decrease) may take place. In one case it is because of multiplications (or divisions) by terms and in other case it is because of addition (or subtraction) of squared or cubed terms. How do we differentiate between the two? We can differentiate between the two by looking at the trend of the increase. If the increase is because of addition of squared or cubed terms, the increase will be not very sharp in the later terms (fourth, fifth, sixth terms etc.) For example, watch the series: 1, 2, 6, 15, 31, 56. Here the series appears to rise very steeply: $1, 1 \times 2 = 2, 2 \times 3 = 6, 6 \times 2.5 = 15, 15 \times 2 = 31, 31 \times (1. something) = 56$. Thus we see multiplications are by 2, 3, 2.5, 2, respectively. That is, the rise is very sharp initially but later it slows down. The same can be said to be true of the series: 1, 5, 14, 30, 55, 91. Here, $1 \times 5 = 5, 5 \times 3 = 14, 14 \times 2 = 30, 30 \times 1.8 = 55, 55 \times 1.6 = 91$. Here too, the rise is very sharp initially, but later it slows down. **In such cases, therefore, where the rise is very sharp initially but slows down later on, you should check for addition of squared or cubed numbers.]**

As our next example, consider the series: 3, 5, 11, 25, 55, 117. We see that this series, too, rises very sharply. Hence, there must be a geometric type of increase. Further, the rate of increase does not die down in later terms. In fact, it picks up as the series

progresses. Hence, this time the geometric increase should be of the first kind, i.e., through multiplication. The series must be formed by multiplications by 2 and some further operation. Now it is easy. A little more exercise will tell us that the series is: $\times 2 - 1$, $\times 2 + 1$, $\times 2 + 3$, $\times 2 + 5$, $\times 2 + 7$ etc. Another and similar example could be: 7, 8, 18, 57, 232, 1165. Here the series is: $\times 1 + 1$, $\times 2 + 2$, $\times 3 + 3$, $\times 4 + 4$, $\times 5 + 5$.

As our last example we will take up a series which shows an alternating increase. In such cases there are two possibilities: one, that two different series may be intermixed or the other, that two different kinds of operations may be being performed on successive terms. To understand this, let us see the following examples. Consider the series: 1, 3, 5, 10, 14, 29, 30, 84. You can see that this series increases gradually and hence it is an increasing series but the increase, in itself, is irregular, haphazard. In fact, it is a mix of two series: 1, 5, 14, 30 which is a series: $1, 1+2^2, 1+2^2+3^2, 1+2^2+3^2+4^2$; and the other series: 3, 10, 29, 84 which is another series: $\times 3 + 1$, $\times 3 - 1$, $\times 3 - 3$ etc. Again, consider the series: 3, 13, 20, 84, 91, 459. This is also an increasing series with a haphazard increase (alternating increase) with sharp and then slow rises coming alternately. Here, two different kinds of operations are being performed alternately: the first operation is that of multiplication by 3, 4, 5 successively and adding a constant number 4 and the second operation is that of adding 7. Hence the series is: $\times 3 + 4$, $+ 7$, $\times 4 + 4$, $+ 7$, $\times 5 + 4$.

Step III (B) (to be employed if the series is neither increasing nor decreasing but alternating) Check two possibilities

For an alternating series, where the terms increase and decrease alternately, the rules remain, more or less, the same as those for a series showing alternating increase.

(Note: Please note the difference between an alternating increase and a series having alternating increase carefully. In an alternating increase terms increase, decrease alternately. But a series having alternating increase increases continuously [and on having alternating decrease decreases continuously]. The increase may be haphazard and irregular - alternately, sharp and slow - but the increase is continuous. For example, 15, 22, 20, 27, 25 is an alternating series because there is increase and decrease in terms, alternately.

On the other hand, 1, 3, 5, 10, 14, 29, 30 is an increasing series having alternating increase.)

For an alternating series you should check for two possibilities: One, that the series may be a mix of two series (twin series) and two, that two different kinds of operations may be going on. For example, consider the series: 4, 8, 6, 12, 9, 16, 13. This is an alternating series. It is a mix of two simple series: 4, 6, 9, 13 and 8, 12, 16 etc. Again, consider the series: 800, 1200, 600, 1000, 500, 900. Here, two different kinds of operations are going on. One, addition of 400 and two, division by 2.

A summary of the three steps

[Very Important]

Step I: Do a preliminary screening of the series. If it is a simple series you will be able to solve it easily.

Step II: If you fail in preliminary screening then determine the trend of the series. Determine whether it is increasing, decreasing or alternating.

Step III (A): Perform this step only if a series is increasing or decreasing. Use the following rules:

- i) If the rise of a series is slow or gradual, the series is likely to have an addition-based increase; successive numbers are obtained by adding some numbers.
- ii) if the rise of a series is very sharp initially but slows down later on, the series is likely to be formed by adding squared or cubed numbers.
- iii) if the rise of a series is throughout equally sharp, the series is likely to be multiplication-based; successive terms are obtained by multiplying by some terms (and, maybe, some addition or subtraction could be there, too.)
- iv) if the rise of a series is irregular and haphazard there may be two possibilities. Either there may be a mix of two series or two different kinds of operations may be going on alternately. (The first is more likely when the increase is very irregular; the second is more likely when there is a pattern, even in the irregularity of the series).

Step III (B): (to be performed when the series is alternating)

[Same as (iv) of step (iii). Check two possibilities]

Some solved examples**Ex.** Find the next number of the series

- i) 8, 14, 26, 50, 98, 194
- ii) 8, 8, 9, 9, 11, 10, 14, 11
- iii) 325, 259, 204, 160, 127, 105
- iv) 54, 43, 34, 27, 22, 19
- v) 824, 408, 200, 96, 44, 18
- vi) 16, 17, 21, 30, 46, 71
- vii) 3, 3, 6, 18, 72, 360
- viii) 3, 4, 8, 17, 33, 58
- ix) 6, 16, 36, 76, 156, 316
- x) -2, 4, 22, 58, 118, 208

Solutions

- i) Sharp increase and terms roughly doubling every time. On checking with 2 as multiple the series is:
next term = previous term $\times 2 - 2$. Next term = 382.
- ii) Irregular. Very irregular. Likely to be, therefore, mixed. On checking it is a mix of two series: 8, 9, 11, 14, (+1, +2, +3 etc.) and 8, 9, 10, 11.
Next term = 14 + 4 = 18.
- iii) Gradual slow decrease. Likely to be arithmetical decrease. Check the differences of successive terms. They are: 66, 55, 44, 33, 22. Hence, next decrease will be : 11.
Next term = 105 - 11 = 94.
- iv) Gradual slow decrease. Likely to be arithmetical decrease. Check differences. They are 11, 9, 7, 5, 3. Hence, next decrease will be 1.
Next term = 19 - 1 = 18.
- v) Sharp decrease and terms roughly being halved everytime. Checking with 2 as divisor the series is:
Next term = (previous term - 8) $\div 2$. Next term = 5.
- vi) Preliminary screening tells us that each term is obtained by adding $1^2, 2^2, 3^2, 4^2, 5^2, \dots$, respectively.
Next term = 71 + 6² = 107
- vii) Sharp increase. The series is: $\times 1, \times 2, \times 3, \times 4, \times 5, \dots$. Next term = 360 $\times 6 = 2160$
- viii) Sharp increase that slows down later on. (Ratios of successive terms rise sharply from $4 \div 3 = 1.3$ to $8 \div 4 = 2$ to $17 \div 8 = 2.125$ and then start falling to $33 \div 17 = 1.9$ and then to $58 \div 33 = 1.8$). Hence likely to be addition of squared or cubed numbers. On checking the series is: $+1^2, +2^2, +3^2, +4^2, +5^2, \dots$. Next term = 58 + 6² = 94.
- ix) Sharp increase with terms roughly doubling each time. Likely to have geometrical nature with 2 as

multiple. On checking the series is: $\times 2 + 4$. Next term = 316 $\times 2 + 4 = 636$

- x) Series increases sharply but then its speed of rise slows down. Likely to be addition of squared or cubed numbers. On checking, the series is: $1^3 - 3, 2^3 - 4, 3^3 - 5, 4^3 - 6, \dots$. Next term = 7³ - 9 = 334

Finding wrong numbers in a series

In today's examinations, a series is more likely to be given in the format of a complete series in which an incorrect number is included. The candidate is required to find out the wrong number.

Obviously, finding the wrong number in a series is very easy once you have mastered the art of understanding how the series is likely to be formed. On studying a given series and applying the concepts employed so far you should be able to understand and thus "decode" the formation of the series. This should not prove very difficult because usually six terms are given and it means that at least five correct terms are given. This should be sufficient to follow the series.

We are giving below some solved examples on this particular type where you are required to find out the wrong numbers in a series:

Selected number series**Which Of The Following Does Not Fit In The Series?**

- 1) 2, 6, 12, 27, 58, 121, 248
- 2) 3, 9, 18, 54, 110, 324, 648
- 3) 1, 1.5, 3, 6, 22.5, 78.75, 315
- 4) 190, 166, 145, 128, 112, 100, 91
- 5) 895, 870, 821, 740, 619, 445, 225
- 6) 1, 2, 6, 21, 86, 445, 2676
- 7) 864, 420, 200, 96, 40, 16, 6
- 8) 4, 12, 30, 68, 146, 302, 622
- 9) 7, 10, 12, 14, 17, 19, 22, 22
- 10) 196, 168, 143, 120, 99, 80, 63
- 11) 258, 130, 66, 34, 18, 8, 6
- 12) 2, 6, 24, 96, 285, 568, 567
- 13) 6072, 1008, 200, 48, 14, 5, 3
- 14) 2, 1, 10, 19, 14, 7, 16
- 15) 318, 368, 345, 395, 372, 422, 400, 449
- 16) 2807, 1400, 697, 347, 171, 84, 41, 20
- 17) 824, 408, 396, 96, 44, 18, 5
- 18) 5, 7, 13, 25, 45, 87, 117
- 19) 2185, 727, 241, 79, 30, 7, 1

- 20) 2, 3, 10, 15, 25, 35, 50, 63
 21) 2, 7, 28, 60, 126, 215, 344
 22) 0, 4, 19, 48, 100, 180, 294
 23) 1, 2, 7, 34, 202, 1420
 24) 823, 734, 645, 556, 476, 378, 289
 25) 1, 4, 11, 34, 102, 304, 911
 26) 5, 8, 20, 42, 124, 246, 736
 27) 13700, 1957, 326, 65, 16, 6, 2
 28) 1, 1.5, 3, 20.25, 121.5, 911.25, 8201.25
 29) 3, 6, 10, 20, 33, 62, 94
 30) 0, 6, 23, 56, 108, 184, 279
 31) 1, 2, 6, 12, 66, 197, 786
 32) 1, 2, 6, 144, 2880, 86400, 3628800
 33) -1, 5, 20, 59, 119, 209, 335
 34) 1, 2, 4, 8, 15, 60, 64
 35) 49, 56, 64, 71, 81, 90, 100, 110
 36) 1, 3, 10, 29, 74, 172, 382
 37) 25, 26, 24, 29, 27, 36, 33
 38) 36, 54, 18, 27, 9, 18.5, 4.5
 39) 144, 132, 125, 113, 105, 93, 84, 72, 61, 50
 40) 3, 9, 36, 72, 216, 864, 1728, 3468
 41) 1, 1, 1, 4, 2, 1, 9, 5, 1, 16
- Answers**
- 1) $6(2 \times 2 + 1 = 5; 5 \times 2 + 2 = 12; 12 \times 2 + 3 = 27; 27 \times 2 + 4 = 58;$
and so on)
 2) 110; (Multiply by 3 and 2 alternately)
 3) $6(1 \times 1.5 = 1.5; 1.5 \times 2 = 3; 3 \times 2.5 = 7.5; 7.5 \times 3 = 22.5; \dots)$
 4) 128; $(190 - 24 = 166; 166 - 21 = 145; 145 - 18 = 127; 127 - 15 = 112; \dots)$
 5) 445; (reduce the successive numbers by $5^2, 7^2, 9^2, 11^2, \dots$)
 6) $86(1 \times 1 + 1 = 2; 2 \times 2 + 2 = 6; 6 \times 3 + 3 = 21; 21 \times 4 + 4 = 88; \dots)$
 7) 96; (Start from right end; $2(6 + 2) = 16; 2(16 + 4) = 40; 2(40 + 6) = 92; 2(92 + 8) = 200 \dots$)
 8) 302; (Add 8, 18, 38, 78, 158 and 318 to the successive numbers)
 9) 19; (There are two series; $S_1 = 7, 12, 17, 22;$
 $S_2 = 10, 14, 18, 22$)
 10) 196; (Add 17, 19, 21, 23, \dots to the successive numbers from RE)
 11) 8; (Add 4, 8, 16, 32, 64, 128 to the successive numbers from RE)
 12) 24; $(2 \times 6 - 6 = 6; 6 \times 5 - 5 = 25; 25 \times 4 - 4 = 96; 96 \times 3 - 3 = 285; \dots)$
 13) 1008; (From RHS; $3 \times 1 + 2 = 5; 5 \times 2 + 4 = 14; 14 \times 3 + 6 = 48;$
 $48 \times 4 + 8 = 200; 200 \times 5 + 10 = 1010$)
 14) 19; $(2 \times 2 = 1; 1 + 9 = 10; 10 + 2 = 5; 5 + 9 = 14; 14 + 2 = 7;$
 $7 + 9 = 16)$
 15) 400; (There are two series; $S_1 = 318 + 27 = 345;$
 $345 + 27 = 372; 372 + 27 = 399; S_2 = 368 + 27 = 395;$
 $395 + 27 = 422; \dots)$
 16) 347; $(20 \times 2 + 1 = 41; 41 \times 2 + 2 = 84; 84 \times 2 + 3 = 171; \dots)$
 17) 396; $[(824 - 8) \div 2 = 408; (408 - 8) \div 2 = 200; (200 - 8)$
 $\div 2 = 96; \dots]$
 18) 87; (Add 2, 6, 12, 20, 30 and 42 to the successive numbers)
 19) 30; $[(2185 - 4) \div 3 = 727; (727 - 4) \div 3 = 241; (241 - 4) \div 3 = 79; \dots]$
 20) 25; $[1^2 + 1 = 2; 2^2 - 1 = 3; 3^2 + 1 = 10; 4^2 - 1 = 15; 5^2 + 1 = 26; \dots]$
 21) 60; $[1^3 + 1 = 2; 2^3 - 1 = 7; 3^3 + 1 = 28; 4^3 - 1 = 63; \dots]$
 22) 19; $[1^4 - 1 = 0; 2^4 - 2 = 4; 3^4 - 3 = 18; 4^4 - 4 = 48; 5^4 - 5 = 100; \dots]$
 23) 202; $[1 \times 2 - 1 = 1; 1 \times 3 - 1 = 2; 2 \times 4 - 1 = 7; 7 \times 5 - 1 = 34; 34 \times 6 - 1 = 203; \dots]$
 24) 476; (Hundred-digit of each number is decreasing by one and unit-and ten-digits are increasing by one.)
 25) 102; $[1 \times 3 + 1 = 4; 4 \times 3 - 1 = 11; 11 \times 3 + 1 = 34 \dots]$
 26) 20; [Series is $\times 2, -2, \times 3, -2, \times 2, -2, \times 3, -2, \dots]$
 27) 6; [Series is $-1 + 7, -1 + 6, -1 + 5, -1 + 4, -1 + 3, \dots]$
 28) 3; [Series is $\times 1.5, \times 3, \times 4.5, \times 6, \times 7.5, \times 9]$
 29) 33; [Series is $\times 2, \times 1.5 + 1, \times 2, \times 1.5 + 1, \times 2, \times 1.5 + 1]$
 30) 108; [Series is $1^2, 2^0, 2^2, 2^1, 3^1, 2^2,$
 $4^2, 2^3, 5^2, 2^4, \dots]$
 31) 12; [Series is $\times 3 - 1, \times 4 - 2, \times 3 - 1, \times 4 - 2, \dots]$
 32) 6; [Series is $1 \times 2, \times 2 \times 3, \times 3 \times 4, \times 4 \times 5, \times 5 \times 6,$
 $\dots]$
 33) 20; [Series is $1^3, 2, 2^2, 3, 3^2, 4, 4^2, 5,$
 $5^3, 6, \dots]$
 34) 8; [Series is $\times 2, +2, \times 3, +3, \times 4, +4, \dots]$
 35) 71; [Series is $7^2, 7^2, 7, 8^2, 8^2, 8, 9^2, 9^2, 9, \dots]$
 36) 172; [Series is $\times 2 + 1, \times 2 + 4, \times 2 + 9, \times 2 + 16, \times 2 + 25, \dots]$
 37) 24; [Series is $1^2, 1, 2^2, 2, 3^2, 3, \dots]$

- 38) 18.5; [Series is $\times 1.5, +3, \times 1.5, +3, \times 1.5, +3$]
 39) 61; [Series is $-12, -7, -12, -8, -12, -9, -12, -10, -12, \dots$]
 40) 3468; [Series is $\times 3, \times 4, \times 2, \times 3, \times 4, \times 2, \times 3, \dots$]
 41) 5; [Series is
 $1^2, 1^1, 1^0, 2^2, 2^1, 2^0, 3^2, 3^1, 3^0, 4^2, \dots$]

Some Unique Series

These series may be asked in examinations, so you must be aware of them.

I Series of Date or Time

- 1) Which of the following doesn't fit into the series?
 5-1-96, 27-1-96, 18-2-96, 12-3-96, 2-4-96

Soln: Each successive date differs by 22 days. If you recall that 96 is a leap year, you will find that 12-3-96 should be replaced by 11-3-96.

- 2) Which of the following doesn't fit into the series?
 5.40, 8.00, 10.20, 12.30, 3.00, 5.20

Soln: Each successive time differs by 2 hrs 20 minutes. So 12.30 should be replaced by 12.40.

Note: Keep in mind that the problem of series may be based on dates or times. Sometimes it doesn't strike our mind and the question is solved wrongly.

II. Fractional series

Which of the following doesn't fit into the series?

- 1) $\frac{4}{5}, \frac{7}{15}, \frac{1}{15}, \frac{1}{5}, \frac{8}{15}$

Soln: Whenever you find that most of the fractions have the same denominators, change all the denominators to the same value. For example, in this question, the series becomes:

$$\frac{12}{15}, \frac{7}{15}, \frac{1}{15}, \frac{3}{15}, \frac{8}{15}$$

Now, it is clear that numerators must decrease successively by 5. Therefore, $\frac{1}{15}$ should be replaced by $\frac{2}{15}$.

Note: The above method is useful when the fractional values are decreased by a constant value (a con-

stant fraction). In this case the values are decreased by $\frac{5}{15}$ or $\frac{1}{3}$.

- 2) $\frac{4}{5}, \frac{23}{35}, \frac{18}{35}, \frac{12}{35}, \frac{8}{35}, \frac{3}{35}$

Soln: By the above rule if we change all the fractions with the same denominators, the series is

$$\frac{28}{35}, \frac{23}{35}, \frac{18}{35}, \frac{12}{35}, \frac{8}{35}, \frac{3}{35}$$

We see that numerators decrease by 5, thus $\frac{12}{35}$

should be replaced by $\frac{13}{35}$.

Now, we conclude that the above fractions decrease successively by $\frac{5}{35}$ or $\frac{1}{7}$.

- 3) $\frac{118}{225}, \frac{100}{199}, \frac{82}{173}, \frac{66}{147}, \frac{46}{121}, \frac{28}{95}$

Soln: We see that all the denominators differ, so we can't use the above rule. In this case usually, the numerators and denominators change in a definite pattern. Here, numerators decrease successively by 18 whereas denominators decrease

successively by 26. Thus $\frac{66}{147}$ should be replaced by $\frac{64}{147}$.

- 4) $\frac{12}{89}, \frac{15}{86}, \frac{18}{82}, \frac{21}{80}, \frac{24}{77}, \frac{27}{74}$

Soln: Numerators increase successively by 3 whereas denominators decrease successively by 3. Thus

$$\frac{18}{82} \text{ should be replaced by } \frac{18}{83}.$$

Note: More complicated questions based on fractions are not expected in the exams because it is not easy to find the solution in complicated cases.

III. Some numbers followed by their LCM or HCF

- 1) 1, 2, 3, 6, 4, 5, 6, 60, 5, 6, 7, (Fill up the blank)
Soln: The series can be separated in three parts. 1, 2,

3, 6/4, 5, 6, 60/5, 6, 7 In each part fourth number is LCM of first three numbers. Thus the answer should be 210.

- 2) 8, 6, 24, 7, 3, 21, 5, 4, 20,, 9, 18
1)1 2)3 3)4 4)5 5)6

Soln : 8, 6, 24/ 7, 3, 21/ 5, 4, 20/ .., 9, 18
Third number in each part is LCM of first two numbers. Thus, the answer should be 6.

- 3) 8, 4, 4, 7, 8, 1, 3, 9, 3, 2, 1,
1)1 2)2 3)3
4)5 5) None of these

Soln : 8, 4, 4/ 7, 8, 1/ 3, 9, 3/ 2, 1 ...
In each part, third number is HCF of first to numbers. Thus our answer should be 1.

IV. Some numbers followed by their product

- 1) 2, 3, 6, 18, 108, 1844
Which of the above numbers does not fit into the series?

Soln : $2 \times 3 = 6$
 $3 \times 6 = 18$
 $6 \times 18 = 108$
 $18 \times 108 = 1944$
Thus, 1844 is wrong.

- 2) 5, 7, 35, 8, 9, 72, 11, 12, 132, .., 3, 6. Fill up the blank.

Soln : 5, 7, 35/ 8, 9, 72/ 11, 12, 132/ 2, 3, 6
In each group third number is the multiplication of first and second. Thus our answer is 2.

V. By use of digit-sum

- 1) 14, 19, 29, 40, 44, 51, 59, 73
Which of the above numbers doesn't fit into the series?

Soln : Next number = Previous number + Digit-sum of previous number
Like, $19 - 14 + (4 + 1)$
 $29 - 19 + (1 + 9)$
 $40 - 29 + (2 + 9)$

Thus, we see that 51 should be replaced by 52.

- 2) 14, 5, 18, 9, 22, 4, 26, 8, 30, 3, .., .. Fill up the blanks.

Soln : 1st, 3rd, 5th, 7th, numbers follow the pattern of $+4$ ($14 + 4 = 18$, $18 + 4 = 22$,). Whereas 2nd, 4th, 6th are the digit-sums of their respective previous number ($5 = 1 + 4$, $9 = 1 + 8$,) Thus, our answer is 34 and 7.

VI. Odd number out

Sometimes a group of numbers is written out of

which one is different from others.

- 1) 22, 44, 88, 132, 165, 191, 242. Find the number which doesn't fit in the above series (or group).

Soln : 191; Others are divisible by 11 or 191 is the single prime number.

- 2) Which one of the following series doesn't fit into the series?

29, 31, 37, 43, 47, 51, 53

Soln : 51; All other are prime numbers.

A note on Arithmetic Progressions. Arithmetic progression is basically the arithmetic series.

A succession of numbers is said to be in Arithmetic Progression (A.P.) if the difference between any term and the term preceding it is constant throughout. This constant is called the common difference (c.d.) of the A.P.

To find the n th term of an A.P. Let the first term of an A.P. be a and the common difference be d .

Then the A.P. will be $a, a+d, a+2d, a+3d, \dots$

Now first term $t_1 = a = a + (1-1)d$

second term $t_2 = a + d = a + (2-1)d$

third term $t_3 = a + 2d = a + (3-1)d$

fourth term $t_4 = a + 3d = a + (4-1)d$

fifth term $t_5 = a + 4d = a + (5-1)d$

Proceeding in this way, we get n th term $t_n = a + (n-1)d$

Thus n th term of an A.P. whose first term is a and common difference is d is given by $t_n = a + (n-1)d$

Some Solved Examples

Ex. 1: Find the first five terms of the sequence for which $t_1 = 1, t_2 = 2$ and $t_n = t_{n-2} + t_{n-1}$.

Soln : Given, $t_1 = 1, t_2 = 2, t_n = t_{n-2} + t_{n-1}$

Putting $n = 1$, we get $t_3 = t_1 + t_2 = 1 + 2 = 3$

$n = 2$, we get $t_4 = t_2 + t_3 = 2 + 3 = 5$

$n = 3$, we get $t_5 = t_3 + t_4 = 3 + 5 = 8$

Thus the first five terms of the given sequence are 1, 2, 3, 5 and 8.

Ex. 2: How many terms are there in the A.P. 20, 25, 30, ..., 100?

Soln : Let the number of terms be n .

Given $t_1 = 100, a = 20, d = 5$, we have to find n .

Now $t_n = a + (n-1)d$ $100 = 20 + (n-1)5$

or $80 = (n-1)5$ or, $n-1 = 16$ $n = 17$.

Ex. 3: A person was appointed in the pay scale of Rs. 700-40-1500. Find in how many years he will reach maximum of the scale.

Soln : Let the required number of years be n .

Given $t_n = 1500$, $a = 700$, $d = 40$, to find n .

$$\therefore t_n = a + (n-1)d$$

$$1500 = 700 + (n-1)40$$

$$\text{or, } (n-1)40 = 800 \text{ or, } n-1 = 20 \text{ or, } n = 21.$$

Two-line number series

Nowadays this type of number series is also being asked in examinations.

In this type of no. series one complete series is given while the other is incomplete. Both the series have the same definite rule. Applying the very definite rule of the complete series, you have to determine the required no. of the incomplete series. For example:

Ex. 1: 4 14 36 114 460

$$2 \ a \ b \ c \ d \ e$$

Find the value of e .

Soln: The first series is $\times 1 + 10$, $\times 2 + 8$, $\times 3 + 6$, $\times 4 + 4$,

....

$$a = 2 \times 1 + 10 = 12, b = 12 \times 2 + 8 = 32, c = 32 \times 3 + 6 = 102,$$

$$d = 102 \times 4 + 4 = 412, \text{ and}$$

$$\text{finally } e = 412 \times 5 + 2 = 2062$$

Ex. 2: 5 6 11 28 71 160

$$2 \ 3 \ a \ b \ c \ d \ e$$

What is the value of e ?

Soln: The differences of two successive terms of the first series are 1, 5, 17, 43, 89, the sequence of which is

$$0 \ 1^2, 1^3 \ 2^2, 2^3 \ 3^2, 3^3 \ 4^2, 4^3 \ 5^2.$$

$$a = 3 + 5 = 8, b = 8 + 17 = 25, c = 25 + 43 = 68,$$

$$d = 68 + 89 = 157, \text{ and finally } e = 157 +$$

$$(5^2 \ 6^2 \ 125 \ 36 \ -) 161 = 318$$

Ex. 3: 1296 864 576 384 256

$$1080 \ a \ b \ c \ d \ e$$

What should replace c ?

Soln: The first series is $\div 3 \times 2$

$$a = 1080 \div 3 \times 2 = 720, b = 720 \div 3 \times 2 = 480,$$

$$\text{and finally } c = 480 \div 3 \times 2 = 320$$

Ex. 4: 7 13 78 83 415

$$3 \ a \ b \ c \ d \ e$$

Find the value of b .

Soln: The first series is $+6, \times 6, +5, \times 5$

$$a = 3 + 6 = 9 \text{ and } b = 9 \times 6 = 54$$

Ex. 5: 3240 540 108 27 9

$$3720 \ a \ b \ c \ d \ e$$

What is the value of d ?

Soln: The first series is $-6, +5, -4, +3$

$$a = 3720 \div 6 = 620, b = 620 \div 5 = 124,$$

$$c = 124 \div 4 = 31, \text{ and finally } d = 31 \div 3 = 10.33$$

Ex. 6: 27 44 71 108 155

$$34 \ a \ b \ c \ d \ e$$

What value should replace e ?

Soln: The differences of two successive terms of the series are 17, 27, 37, 47.

$$a = 34 + 17 = 51, b = 51 + 27 = 78,$$

$$c = 78 + 37 = 115,$$

$$d = 115 + 47 = 162, \text{ and finally } e = 162 + 57 = 219$$

Ex. 7: 108 52 24 10 3

$$64 \ a \ b \ c \ d \ e$$

What is the value of c ?

Soln: The series is $-4 \div 2$

$$a = (64 - 4) \div 2 = 30, b = (30 - 4) \div 2 = 13,$$

$$c = (13 - 4) \div 2 = 4.5$$

Ex. 8: $-4 \ -2 \ 1 \ 8 \ 31$

$$-1 \ a \ b \ c \ d \ e$$

Find the value of b .

Soln: The series is repeated as $\times 2 + 6$ and $\times 3 + 7$ alternately.

$$a = -1 \times 2 + 6 = 4 \text{ and } b = 4 \times 3 + 7 = 19$$

Ex. 9: 5 8 41 33 57 42 61

$$3 \ 4 \ a \ b \ c \ d \ e$$

Find the value of d .

Soln: This is an alternate number series having two series: $S_1 = 5 \ 41 \ 57 \ 61$. The differences between two successive terms are $36 (-6^2)$, $16 (-4^2)$, $4 (-2^2)$; and

$$S_2 = 8 \ 33 \ 42$$

The differences between two successive terms are $25 (-5^2)$, $9 (-3^2)$

$$b = 4 + 25 = 29 \text{ and } d = 29 + 9 = 38$$

Remember: In such type of series the first and the second term of the two series may and may not have the similar relationship. As here, for the first series $8 - 5 = 3$ but for the second series $4 - 3 = 1$. However, the series $3 \ a \ c \ e$ will always follow the same property as that of the series S_1 , and the series $4 \ b \ d$ will always follow the same property as that of the series S_2 .

Ex. 10: 1 3 2 10 4 28

$$2 \ a \ b \ c \ d \ e$$

What is the value of e ?

Soln: This series is of grouping-type. Here we consider each two terms of the series separately

and each group separately. That is, for the first series: the first group $g_1 = 1$ and 3; $g_2 = 2$ and 10; $g_3 = 4$ and 28. Here for the two numbers of each group we have to find the relevant property. For example g_1 holds the property $\times 3$, g_2 holds the property $\times 5$ and g_3 holds the property $\times 7$.

The property of multiplication by 3, 5 and 7 is a relevant property.

Here, if we consider these groups in the way that the differences between the two numbers of the groups are 2, 8 and 24. It is not as relevant as the former property of multiplication by 3, 5, and 7.

After determining the property between the two numbers of each group, to determine the property between the groups we consider the first numbers only of each group in the fashion 1, 2 and 4.

The property is $\times 2$.

Now, we directly conclude $e = 7 \times d$ and $b = 2 \times 2 - 4$ and $d = 2 \times 4 - 8$

Thus, $e = 7 \times 8 = 56$.

Note: When the alternate no. series fails to determine the property of the given series, then the grouping type of series is applied. Here, for a moment, if we consider for alternate no. series, we get

$S_1 = 1 \ 2 \ 4$. The property is $\times 2$

$S_2 = 3 \ 10 \ 28$. From merely these three numbers it is not proper to say that S_2 holds a property of $\times 3 + 1$ and $\times 3 - 2$ (as $3 \times 3 + 1 = 10$ and $10 \times 3 - 2 = 28$) or it holds the property of $3, 3^2 + 1$ and $3^3 + 1$ (as in this very case 3 should be replaced by $3^2 + 1$ i.e. 4). Thus we observe that the property of the given series cannot be obtained by applying the method of the alternate no. series. So we proceed for the method of the grouping no. series.

Ex. 11: 220 96 347 77 516 60 733

68 a b c d e

What is the value of d?

Soln: Clearly, this no. series is of the type of alternate no. series. So, to find out the value of d, we are only concerned about the series

$S_1 = 220 \ 347 \ 516 \ 733$

We observe that $220 = 6^3 - 4$, $347 = 7^3 - 4$,

$516 = 8^3 - 4$, $733 = 9^3 - 4$

Now, we get $68 \ 4^{1/2} \ 4^3 \ 4^2 \ 4$

So, $b = (4 + 1 -) 5^3 - 4 = 129$ and $d = (5 + 1 -)$

$6^3 + 4 = 220$

Ex. 12: 2.5 17.5 43.75 153.125

1 a b c d e

Find the value of c.

Soln: The series is $\times 2.5, \times 3.5, \times 2.5, \times 3.5, \dots$

$a = 1 \times 2.5 = 2.5$, $b = 2.5 \times 3.5 = 8.75$ and $c = 8.75 \times 2.5 = 21.875$

Here, after finding out the property of the given series as the direct repeated multiplication by 2.5 and 3.5 (the series is not of the type $\times m$

n that is, $\times 2.5 + 2, \times 3.5 - 6, \times 3 - 2$ etc.), we also observe that 1, the first no. of the second series is half of 2, the first no. of the first series. So, without finding a and b, we can directly find out c as it is equal to half of the corresponding number of the first series. i.e. $c =$

$\frac{43.75}{2} = 21.875$

Ex. 13: 3 6 24 72 144 576

1 a b c d e

What value should replace e?

Soln: The series is $\times 2, \times 4, \times 3, \times 2, \times 4, \dots$

$a = 1 \times 2 = 2$, $b = 2 \times 4 = 8$, $c = 8 \times 3 = 24$, $d = 24 \times 2 = 48$, $e = 48 \times 4 = 192$

The property of the first series is direct repeated multiplication by 2, 4 and 3.

So, we can find out e directly as $e =$ one-third of the corresponding number of the first series,

i.e. $\frac{576}{3} = 192$

Ex. 14: 575 552 533 518 507

225 a b c d e

Find the value of e.

Soln: The difference of the successive terms of the first series are 23, 19, 15, 11.

$a = 225 - 23 = 202$, $b = 202 - 19 = 183$, $c = 183 - 15 = 168$,

$d = 168 - 11 = 157$, and finally $e = 157 - (11 - 4) = 150$.

Note: When the series holds the property of the difference of the successive terms, you can directly proceed as follows:

Difference between the first terms of the two series = $575 - 225 = 350$

$d =$ corresponding number of the first series i.e. $507 - 350 = 157$

And then we have $e = 157 - (11 - 4) = 150$.

Ex. 15: 15 31 11 23 5 11
21 43 a b c d e
What is the value of d ?

Soln: As the numbers are regularly increasing and then decreasing so you can consider for the alternate no. series in the way:

$S_1 = 15, 11, 5$; the difference of the successive terms are 4 and 6 and $S_2 = 31, 23, 11$; the difference of the successive terms are 8 ($= 4 \times 2$) and 12 ($= 6 \times 2$)

Now, in order to determine the value of d , we have to consider S_2 for the second given series as 43 b d.

$b = 43 - 8 = 35$ (As the numbers of S_1 and S_2 for the first given series are continuously decreasing, we cannot have the difference of the successive term = 8 as $b = 43 + 8 = 51$)
Finally, $d = b - 12 = 35 - 12 = 23$.

Note: Here, if we apply the process of grouping type no. series, for the first given series:

$g_1 = 15, 31$, $g_2 = 11, 23$; $g_3 = 5, 11$.

The property between the numbers of each group is $\times 2 + 1$.

For the second given series: $g_1 = 21, 43$; the property where is also $\times 2 + 1$.

Now, the first numbers of the groups are 15, 11, 5; the property is $-4, -6, -8, \dots$

$a = 21 - 4 = 17$

and $c = 17 - 6 = 11$ and then $d = 11 \times 2 + 1 = 23$.
Thus, we get the same result.

Ex. 16: 5 17 13 41 29 89 61
3 11 a b c d e
What is the value of e and d ?

Soln: $S_1 = 5, 13, 29, 61$, the property is $\times 2 + 3$

$S_2 = 17, 41, 89$, the property is $\times 2 + 7$

In order to determine the value of e , we are only concerned with the series S_1 for the second given series as 3 a c e.

$a = 3 \times 2 + 3 = 9$, $c = 9 \times 2 + 3 = 21$ and $e = 21 \times 2 + 3 = 45$.

Also, in order to determine the value of d , we are only concerned with the series S_2 for the second given series as 11 b d.

$b = 11 \times 2 + 7 = 29$ and $d = 29 \times 2 + 7 = 65$

Thus $c = 45$ and $d = 65$

Note: If we solve this sum by the process of grouping no. series:

For the first given series: $g_1 = 5, 17$; $g_2 = 13, 41$; $g_3 = 29, 89$; the property is $\times 3 + 2$.

Also for the second given series $g_1 = 3, 11$.

The property is $\times 3 + 2$.

Now the first numbers of the groups are 5, 13, 29, 61; the property is $\times 2 + 3$.

$a = 3 \times 2 + 3 = 9$ and $c = 9 \times 2 + 3 = 21$ and

$e = 21 \times 2 + 3 = 45$.

$d = c \times 3 + 2$, i.e. $21 \times 3 + 2 = 65$

Thus, we get the same result. However, the grouping process fails in the previous solved questions 9 and 11.

You can check it yourself.

We finally suggest you to apply the process of alternate series first and only if it fails to serve the purpose, then proceed for grouping-type number series.

Ex. 17: 9 19 39 79 159

7 a b c d e

What is the value of e ?

Soln: **First method:** The series is $\times 2 + 1$, i.e. $9 \times 2 + 1 = 19$, $19 \times 2 + 1 = 39$, $39 \times 2 + 1 = 79$, and $79 \times 2 + 1 = 159$

$a = 7 \times 2 + 1 = 15$, $b = 15 \times 2 + 1 = 31$, $c = 31 \times 2 + 1 = 63$, $d = 63 \times 2 + 1 = 127$, and finally $e = 127 \times 2 + 1 = 255$

Other method: The difference between the successive terms of the first series are $(19 - 9) = 10$, $(39 - 19) = 20$, $(79 - 39) = 40$ and $(159 - 79) = 80$. These numbers are in geometric progression having common ratio = 2. It is obviously a systematic sequence of numbers. Applying this very property for the second series, we get

$a = 7 + 10 = 17$, $b = 17 + 20 = 37$, $c = 37 + 40 = 77$, $d = 77 + 80 = 157$ and $e = 157 + (2 \times 80) = 160 + 317$

Here we see that the values of each of a, b, c, d and e is entirely different from the values obtained by the first method. Both the methods have their respective systematic properties, but which of the two has to be applied depends on the provided options.

In such a case, in exams, you have to answer according to the suitability of the given options.

Note: Whenever the chain rule is single throughout the series of the type $\times m$ (where m and n are integers, e.g. $\times 2 + 1$, $\times 2 - 3$, $\times 4 + 6$, $\times 3 + 7$, etc.) this difference of answers will come; so be cautious. In the chain rule when it is not single (e.g. $\times 2 + 1$ and then $\times 2 - 1$ alternately, $\times 3 + 2$ and then $\times 2.5$ alternately etc, or $\times 2 + 1$, $\times 2 + 3$, $\times 2 + 5$, ..., $\times 3 - 7$, $\times 3 - 14$, $\times 3 - 21$, ..., $\times 3$, $\times 2$, $\times 4$ and again $\times 3$, $\times 2$, $\times 4$ etc.) this difference will not appear.

Directions (Ex. 18-22): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of number of marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the position of the numbers to establish the series, give 5 as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

Ex. 18: 17 16 15 13 7 -17

(1) (2) (3) (4) (5)

Soln: 5; The series is: -0!, -1!, -2!, -3!

Ex. 19: 2 1 195 9 40 4

(1) (2) (3) (4) (5)

Soln: 2; The series is: $\times 1 - 1$, $\times 2 + 2$, $\times 3 - 3$, $\times 4 + 4$
Replace (2) with (4).

Ex. 20: 16 15 29 343 86 1714

(1) (2) (3) (4) (5)

Soln: 3; The series is: $\times 1 - 1_2$, $\times 2 - 1_2$, $\times 3 - 1_2$, $\times 4 - 1_2$,

Replace (3) with (4).

Ex. 21: 1728 1452 1526 1477 1607 1443

(1) (2) (3) (4) (5)

Soln: 1; The series is: -11^2 , -9^2 , -7^2 , -5^2 ,
Replace (1) with (4).

Ex. 22: 1 1 1 2 8 4

(1) (2) (3) (4) (5)

Soln: 4; The series is: $1, 1^2, 1^3, 2, 2^2, 2^3$,
Replace (4) with (5).

Exercise-A

- Which one of the following numbers belongs to the given series?
18, 26, 34, 42, 50,
1) 438 2) 338 3) 232 4) 132
[NDA-1997]
- The missing number in the series
5, 13, 9, 17, 13, 21, is
1) 29 2) 25 3) 13 4) 17
[CDS-2000]
- The sum of 40 terms of an Arithmetic Progression whose first term is 2 and common difference is 4, will be
1) 3200 2) 1600 3) 200 4) 2800
[MAT-1999]
- The next number of the sequence 5, 25, 50, 250, 500, ... is
1) 2500 2) 1250 3) 1000 4) 250
[MAT-1999]
- In the following number series there is a wrong number. Find out that number.
56, 72, 90, 108, 132
1) 72 2) 132 3) 108 4) None of these
[MAT-1999]
- What should come in place of the question mark in the following series?
0, 1, 4, 9, 64, 325
1) 15 2) 12 3) 36 4) 32
[MAT-1999]
- What is the next number in the series given below?
2, 5, 9, 14, 20
1) 25 2) 26 3) 27 4) 28
[MAT-2000]
- What is the next number in the series given below?
53, 48, 50, 50, 47
1) 51 2) 46 3) 53 4) 52
[MAT-2000]
- In a G.P., the first term is 5 and the common ratio

- is 2. The eighth term is
1) 640 2) 1280 3) 256 4) 160
[MAT-2000]
10. If p, q, r and s are in Harmonic progression and $p > s$, then
1) $\frac{1}{ps} = \frac{1}{qr}$ 2) $q + r = p + s$
3) $\frac{1}{q} = \frac{1}{p} = \frac{1}{r} = \frac{1}{s}$ 4) None of these
[MAT-2001]
11. The missing number in the series 8, 24, 12, 36, 18, 54, is
1) 27 2) 108 3) 68 4) 72
[MAT-2002]
12. The number of terms in the sequence 4, 11, 18, 186 is
1) 17 2) 25 3) 26 4) 27
[RRB-2001]
13. The next number is the sequence:
 $\frac{1}{22}, \frac{4}{23}, \frac{9}{24}, \frac{16}{25}, \frac{25}{26}, \frac{36}{27}$ is
1) $\frac{20}{28}$ 2) $\frac{47}{28}$ 3) $\frac{49}{28}$ 4) $\frac{49}{48}$
[RRB-2001]
14. The next term of the sequence 0, 7, 26, 63, is
1) 124 2) 126 3) 215 4) 217
[RRB-2001]
15. Which of the following numbers belongs to the series 4, 11, 18, 25, 32, 39,?
1) 2099 2) 2096 3) 2098 4) 2097
[RRB-1998]
- Directions (Q. 16-20): Locate the missing number in questions 16 to 20:**
16. 3, 7, 13, 21, 31,?
1) 34 2) 37 3) 42 4) 43
[RRB-1999]
17. 3, 15, 35, 63,? 143.
1) 75 2) 81 3) 99 4) 125
[RRB-1999]
18. 4, 7, 12,? 28, 39.
1) 15 2) 19 3) 21 4) 23
[RRB-1999]
19. 2, 7, 14, 32, 58,?
1) 92 2) 132 3) 80 4) 86
[RRB-1999]
20. 17, 14, 15, 12, 13, 10,?
1) 7 2) 11 3) 14 4) 9
[RRB-1999]
21. A set of papers was counted and numbered from 1 to 40. If the paper number 4 was drawn first and after that every 7th paper was drawn, then what will be the number on the paper drawn in the end?
1) 36 2) 37 3) 38 4) 39
[RRB-1999]
22. The missing number in the series 8, 27, 64, 125, 216, 343, ? is
1) 416 2) 625 3) 512 4) 444
[RRB-2000]
23. Which of the following will appear in the place of question mark in the following series?
5, 243, 15, 81, 45, 27, ?, 9
1) 27 2) 15 3) 5 4) 135
[CBI-1997]
24. Next number of the following series is 2, 5, 9, 14, 20, 27,
1) 30 2) 28 3) 34 4) 35
[Asst. Grade-1998]
25. Look at the following series of dates carefully, 4.12.95; 1.1.96; 29.1.96; 26.2.96. The next date of this series is
1) 24.3.96 2) 25.3.96 3) 26.3.96 4) 27.3.96
[SSC Graduate Level-2000]
26. The next number of the sequence 3, 5, 9, 17, 33, is
1) 65 2) 60 3) 50 4) 49
[SSC Graduate Level-2000]
27. The next term of the sequence $\frac{1}{2}, 3\frac{1}{4}, 6, 8\frac{3}{4}$ is
1) $10\frac{1}{4}$ 2) $10\frac{3}{4}$ 3) $11\frac{1}{4}$ 4) $11\frac{1}{2}$
[SSC Graduate Level-2000]
28. Find the missing number of the sequence 3, 14, 25, 36, 47 ?
1) 1114 2) 1111 3) 1113 4) 1110
[SSC Graduate Level-2000]
29. The next number of the sequence 2, 5, 10, 14, 18, 23, 26, 32, is
1) 33 2) 34 3) 36 4) 37
[SSC Graduate Level-2000]

30. The missing number in the sequence 1, 5, 14, 30, ..., 91 is

1)45 2)55 3)56 4)51

[SSC Graduate Level-2000]

31. Find the wrong number in the series

3, 8, 15, 24, 34, 48, 63

1)15 2)24 3)34

4)48 5)63

[Bank PO Exam-1988]

32. The next number of the sequence

0, 3, 8, 15, 24, 35, is

1)46 2)47 3)48 4)50

[SSC Graduate Level-2000]

33. The next term of the sequence

1, 2, 5, 26, is

1)677 2)47 3)50 4)152

[SSC Graduate Level-2000]

34. Which term of the series

$72 + 63 + 54 + \dots$ is zero?

1)11th 2)10th 3)9th 4)8th

[SSC Graduate Level-2000]

35. The next number of the sequence

2, 16, 54, ? is

1)96 2)116 3)128 4)134

[SSC Graduate Level-2000]

36. Complete the series 8, 13, 22, 35,

1)52, 73 2)47, 62 3)52, 69 4)50, 65

[SI-BSF-2001]

Directions (Q. 37-39): In these questions, find the unmatched term in the given number series:

37. 8, 27, 64, 100, 125, 216, 343

1)125 2)343 3)27 4)100

[RRB-2002]

38. 385, 462, 572, 396, 427, 671, 264

1)671 2)264 3)385 4)427

[RRB-2002]

39. 4, 5, 7, 10, 14, 18, 25, 33

1)18 2)33 3)7 4)14

[RRB-2002]

40. What is the eighth term of the sequence 1, 4, 9, 16, 25,

1)36 2)49 3)64 4)81

[MAT-2002 & MBA-IGNOU-2003]

Directions (Q. 41-45): In each of these questions, a number series is given. After the series, a number is given followed by (1), (2), (3), (4) and (5). You have to complete the series starting with the number given following the sequence of the given

series to answer these questions.

41. 3 10 26 83 336 1683

7 (1) (2)(3) (4) (5)

What will come in place of (2)?

1)32 2)30 3)34

4)36 5) None of these

[IRMA-2002]

42. 4 3 4 7 15 38.5

6 (1) (2)(3) (4) (5)

What will come in place of (3)?

1)8.5 2)9.5 3)8

4)9 5) None of these

[IRMA-2002]

43. 3 4 16 75 364 1945

1 (1) (2)(3) (4) (5)

What will come in place of (3)?

1)72 2)63 3)66

4)69 5) None of these

[IRMA-2002]

44. 2 6 16 38 84 178

3 (1) (2)(3) (4) (5)

What will come in place of (4)?

1)92 2)88 3)98

4)96 5) None of these

[IRMA-2002]

45. 6 10 7 12 8 14

4 (1) (2)(3) (4) (5)

What will come in place of (4)?

1)9 2)5 3)8

4)6 5) None of these

[IRMA-2002]

46. Find the wrong number in the series

2, 9, 28, 65, 126, 216, 344

1)2 2)28 3)65

4)126 5)216

[Bank PO Exam-1998]

Directions (Q. 47-51): In each of these questions, a number series is given. After the series, a number is given followed by (1), (2), (3), (4) and (5). You have to complete the series starting with the number given following the sequence of the given series.

47. 4 14 51 149 295

2 (1) (2) (3) (4) (5)

What will come in place of (3)?

1)22 2)24 3)29

4)26 5) None of these

48. 8 5 6 12 8

- 6 (1) (2)(3) (4) (5)
What will come in place of (1)?
1)3 2)4 3)6
4)2 5) None of these
49. 5 6 11 25 66.5
3 (1) (2)(3) (4) (5)
What will come in place of (4)?
1)51 2)49.5 3)52
4)52.5 5) None of these
50. 3 4 12 45 196
2 (1) (2)(3) (4) (5)
What will come in place of (4)?
1)81 2)126 3)39
4)172 5) None of these
51. 2 10 14 34 62
2 (1) (2)(3) (4) (5)
What will come in place of (2)?
1)10 2)8 3)12
4)6 5) None of these
- [NIPM-Kolkata-2002]**
- Directions (Q. 52-54): In each of the following number series, a wrong number is given. Find out that number.**
52. 4 11 21 34 49 69 91
1)69 2)49 3)34
4)21 5)11
53. 4 6 9 30 90 315 1260
1)6 2)9 3)30
4)90 5)315
54. 8 17 37 79 165 338 689
1)17 2)37 3)79
4)165 5)338
- [BSRB-Bank Clerical-Delhi-1997]**
55. What should come in place of the question mark (?) in the following number series?
22 66 132 396 792 ?
1)2376 2)1584 3)396
4)3168 5) None of these
- [BSRB-Bank Clerical-Jaipur-1997]**
56. What should come in place of the question mark (?) in the following number series?
60 240 120 480 240 ?
1)480 2)120 3)60
4)720 5) None of these
- [BSRB-Bank Clerical-Jaipur-1997]**
57. In the following number series, a wrong number is given. Find out the wrong number.
12 26 56 116 244 498 1008
1)26 2)56 3)116
4)244 5)498
- [BSRB-Bank Clerical-Jaipur-1997]**
58. What should come in place of the question mark (?) in the following number series?
6 106 170 ? 222 226
1)234 2)270 3)219
4)251 5) None of these
- [BSRB-Bank Clerical-Jaipur-1997]**
59. In the following number series, one number is wrong. Find out the wrong number.
2 11 20 26 32 37 38
1)11 2)20 3)26
4)32 5)37
- [BSRB-Bank Clerical-Lucknow-1997]**
60. In the following number series, one number is wrong. Find out the wrong number.
2 3 7 22 89 440 2677 18740
1)7 2)22 3)89
4)440 5)2677
- [BSRB-Bank Clerical-Lucknow-1997]**
61. In the following number series, one number is wrong. Find out the wrong number.
13 15 19 25 33 41 55
1)15 2)19 3)25
4)41 5)33
- [BSRB-Bank Clerical-Lucknow-1997]**
62. What will come in place of the question mark in the following number series?
3 8 27 112 565 ?
1)3300 2)3350 3)3390
4)3396 5) None of these
- [BSRB-Bank Clerical-Lucknow-1997]**
63. In the following number series, one number is wrong. Find out the wrong number.
5 6 14 40 89 170 291
1)6 2)14 3)40
4)89 5)170
- [BSRB-Bank Clerical-Lucknow-1997]**
64. In the following number series, one number is wrong. Find out the wrong number.
445 221 109 46 25 11 4
1)11 2)46 3)25
4)109 5)221
- [BSRB-Bank Clerical-Lucknow-1997]**
65. What will come in place of the question mark (?) in the following number series?
4 148 248 312 ?

- 1)328 2)376 3)412
4)344 5) None of these
- [BSRB-Bank Clerical-Patna-1998]**
66. In the following number series, one number is wrong. Find out the wrong number.
3 7 16 35 75 153 312
1)16 2)75 3)153
4)35 5)7
- [BSRB-Bank Clerical-Patna-1998]**
67. In the following number series, one number is wrong. Find out the wrong number.
14 78 29 65 45 56 47
1)29 2)47 3)45
4)78 5)65
- [BSRB-Bank Clerical-Patna-1998]**
68. In the following number series, one number is wrong. Find out the wrong number.
2 3 6 12 45 157.5 630
1)45 2)3 3)157.5
4)12 5)6
- [BSRB-Bank Clerical-Patna-1998]**
69. What should come in place of the question mark (?) in the following number series?
6 21 55 176 ?
1)715 2)539 3)537
4)713 5) None of these
- [BSRB-Bank Clerical-Patna-1998]**
70. In the following number series, one number is wrong. Find out the wrong number.
1 2 6 21 87 445 2676
1)6 2)21 3)87
4)2 5)445
- [BSRB-Bank Clerical-Patna-1998]**
71. What should come in place of the question mark (?) in the following number series?
7 176 297 378 ?
1)459 2)427 3)403
4)387 5) None of these
- [BSRB-Bank Clerical-Patna-1998]**
72. What should come in place of the question mark (?) in the following number series?
3 14 36 80 ?
1)172 2)176 3)168
4)184 5) None of these
- [BSRB-Bank Clerical-Patna-1998]**
73. In the following number series, one number is wrong. Find out the wrong number.
12 156 35 135 71 118 69
- 1)156 2)35 3)118
4)135 5)71
- [BSRB-Bank Clerical-Patna-1998]**
74. In the following number series, one number is wrong. Find out the wrong number.
5 6 15 51 89 170 291
1)15 2)170 3)89
4)6 5)51
- [BSRB-Bank Clerical-Patna-1998]**
75. In the following number series, one number is wrong. Find out the wrong number.
2 3 10 42 172 885 5346
1)885 2)10 3)172
4)3 5)42
- [BSRB-Bank Clerical-Patna-1998]**
76. What should come in place of the question mark (?) in the following number series?
5 149 249 313 ?
1)377 2)349 3)329
4)317 5) None of these
- [BSRB-Bank Clerical-Patna-1998]**
77. In the following number series, one number is wrong. Find out the wrong number.
2 3 4.5 15 45 157.5 630
1)45 2)15 3)3
4)157.5 5)4.5
- [BSRB-Bank Clerical-Patna-1998]**
78. What should come in place of the question mark (?) in the following number series?
4 5 14 51 ?
1)220 2)162 3)280
4)216 5) None of these
- [BSRB-Bank Clerical-Patna-1998]**
79. In the following number series, one number is wrong. Find out the wrong number.
18 187 87 164 64 145 81
1)87 2)64 3)145
4)187 5)164
- [BSRB-Bank Clerical-Patna-1998]**
80. What should come in place of the question mark (?) in the following number series?
5 14 32 68 ?
1)140 2)138 3)144
4)142 5) None of these
- [RBI-Bank Clerical Exams-1998]**
81. In the following number series, one number is wrong. Find out the wrong number.
4 6 12 36 90 315 1260

- 1)315 2)12 3)6
4)90 5)36
- [RBI-Bank Clerical Exams-1998]**
82. In the following number series, one number is wrong. Find out the wrong number.
2 6 16 72 304 1540 9264
1)1540 2)72 3)304
4)6 5)16
- [RBI-Bank Clerical Exams-1998]**
83. In the following number series, one number is wrong. Find out the wrong number.
11 12 21 46 110 176 297
1)176 2)110 3)21
4)46 5)12
- [RBI-Bank Clerical Exams-1998]**
84. In the following number series, one number is wrong. Find out the wrong number.
3 10 28 64 152 324 672
1)64 2)152 3)10
4)324 5)28
- [BSRB-Bank Clerical-Mumbai-1998]**
85. What should come in place of the question mark (?) in the following number series?
6 9 18 45 157.5 472.5 1890 ?
1)18 2)472.5 3)45
4)9 5)157.5
- [BSRB-Bank Clerical-Mumbai-1998]**
86. In the following number series, one number is wrong. Find out the wrong number.
3 4 10 33 148 685 4116
1)685 2)10 3)4
4)148 5)33
- [BSRB-Bank Clerical-Mumbai-1998]**
87. What should come in place of the question mark (?) in the following number series?
5 86 135 160 ?
1)185 2)169 3)209
4)161 5) None of these
- [BSRB-Bank Clerical-Mumbai-1998]**
88. What should come in place of the question mark (?) in the following number series?
4 2 2 3 6 ?
1)12 2)9 3)6
4)15 5) None of these
- [BSRB-Bank Clerical-Mumbai-1998]**
89. In the following number series, one number is wrong. Find out the wrong number.
2 6 16 36 84 178 368
- 1)178 2)6 3)84
4)16 5)36
- [BSRB-Bank Clerical-Mumbai-1998]**
90. What should come in place of the question mark (?) in the following number series?
7 71 120 156 ?
1)172 2)192 3)165
4)181 5) None of these
- [BSRB-Bank Clerical-Mumbai-1998]**
91. In the following number series, one number is wrong. Find out the wrong number.
4 6 12 30 75 315 1260
1)30 2)315 3)12
4)6 5)75
- [BSRB-Bank Clerical-Mumbai-1998]**
92. Spot out the wrong number from the following number series.
17.0 18.5 16.0 17.5 14.0 16.5
1)17.5 2)14.0 3)16.5
4)18.5 5) None of these
- [BSRB-Bank Clerical-Hyderabad-1998]**
93. What should come in place of the question mark (?) in the following number series?
13 19 25 31 ? 43 49
1)33 2)35 3)37
4)41 5) None of these
- [BSRB-Bank Clerical-Hyderabad-1998]**
94. Which is the next number in the sequence 11, 10, 18, 51, 200?
1)995 2)1005 3)975
4)1015 5)985
- [BSRB-Bank Clerical-Chandigarh-1998]**
95. In the following number series, one number is wrong. Find out the wrong number.
8 7 12 33 128 635 3814
1)7 2)33 3)635
4)12 5)3814
- [BSRB-Bank Clerical-Chandigarh-1998]**
96. Which is the next number in the sequence 11, 12, 26, 81, 328?
1)1145 2)1745 3)1645
4)1345 5)1545
- [BSRB-Bank Clerical-Chandigarh-1998]**
97. In the following number series, one number is wrong. Find out the wrong number.
5 6 16 57 244 1245 7546
1)57 2)244 3)1245
4)7546 5)16

[BSRB-Bank Clerical-Chandigarh-1998]

Directions (Q. 98-102): What will come in place of the question mark (?) in the following series?

98. 3 5 11 21 ? 53

- 1) 31 2) 32 3) 35
4) 43 5) None of these

99. 71 55 42 32 25 21 ?

- 1) 19 2) 18 3) 16
4) 17 5) None of these

100. 3 15 75 ? 1875 9375

- 1) 375 2) 125 3) 250
4) 625 5) None of these

101. 2 7 23 ? 220 665

- 1) 78 2) 72 3) 70
4) 71 5) None of these

102. 9 16 25 36 49 ?

- 1) 81 2) 62 3) 66
4) 64 5) None of these

[BSRB-Bank Clerical-Bangalore-1999]

Directions (Q. 103-107): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

103. 120 15 105 21 875 87.5 175

- 1) 2) 3) 4) 5)

104. 7 14 17 51 15 90

- 1) 2) 3) 4) 5)

105. 40 14 60 24 80 19

- 1) 2) 3) 4) 5)

106. 15 240 71 192 111 160

- 1) 2) 3) 4) 5)

107. 9 10 24 7 10 55

- 1) 2) 3) 4) 5)

[SBI-PO-Exams-2000]

Directions (Q. 108-112): In each of the following questions, a number series is given. After the

series, below it, a number is given followed by (1), (2), (3), (4) and (5). You have to complete the series starting with the given number following the sequence of the given series. Then answer the questions given below it.

108. 11 15 38 126

- 7 (1) (2) (3) (4) (5)

Which of the following will come in place of (3)?

- 1) 102 2) 30 3) 2140
4) 80 5) 424

109. 2 3 8 27

- 5 (1) (2) (3) (4) (5)

Which of the following will come in place of (5)?

- 1) 184 2) 6 3) 925
4) 45 5) 14

110. 2 3 9 40.5

- 4 (1) (2) (3) (4) (5)

Which of the following will come in place of (2)?

- 1) 486 2) 81 3) 3645
4) 18 5) 6

111. 12 28 64 140

- 37 (1) (2) (3) (4) (5)

Which of the following will come in place of (5)?

- 1) 1412 2) 164 3) 696
4) 78 5) 340

112. 5 12 60 340

- 7 (1) (2) (3) (4) (5)

Which of the following will come in place of (4)?

- 1) 172 2) 5044 3) 1012
4) 20164 5) 28

[BSRB-Mumbai-PO-1998]

113. In the following number series, a wrong number is given. Find out that wrong number.

11 24 66 164 462 1086 2414

- 1) 462 2) 164 3) 24
4) 1086 5) 66

[BSRB-Mumbai-PO-1998]

Directions (Q. 114-118): One number is wrong in each of the number series given in each of the following questions. You have to identify that number and assuming that a new series starts with that number following the same logic as in the given series, which of the numbers given in (1), (2), (3), (4) and (5) given below each series will be the third number in the new series?

114. 3 5 12 38 154 914 4634

- 1) 1636 2) 1222 3) 1834
4) 3312 5) 1488

115. 3 4 10 34 136 685 4116
 1) 22 2) 276 3) 72
 4) 1374 5) 12
116. 214 18 162 62 143 90 106
 1) -34 2) 110 3) 10
 4) 91 5) 38
117. 160 80 120 180 1050 4725 25987.5
 1) 60 2) 90 3) 3564
 4) 787.5 5) 135
118. 2 3 7 13 26 47 78
 1) 11 2) 13 3) 15
 4) 18 5) 20

[SBI-PO-Exams-1999]

Directions (Q. 119-123): In each of the questions given below there is a mathematical series. After the series a number is being given followed by a, b, c, d and e. You have to create another series after understanding the sequence of the given series which starts with the given number. Then answer the questions given below.

119. 1 9 65 393
 2 (1) (2) (3) (4) (5)
 Out of the following numbers which would come in the place of e?
 1) 490 2) 853 3) 731
 4) 729 5) None of these
120. 8 8 12 24
 36 (1) (2) (3) (4) (5)
 Out of the following numbers which would come in the place of e?
 1) 810 2) 36 3) 54
 4) 108 5) None of these
121. 424 208 100 46
 888 (1) (2) (3) (4) (5)
 What number would come in the place of b?
 1) 20 2) 440 3) 216
 4) 56 5) None of these
122. 4 5 9.75 23.5
 7 (1) (2) (3) (4) (5)
 What number would come in the place of d?
 1) 32.5 2) 271.5 3) 8
 4) 14.25 5) None of these
123. 5 294 69 238
 13 (1) (2) (3) (4) (5)
 Which of the following numbers would come in the place of e?
 1) 246 2) 206 3) 125
 4) 302 5) None of these

[Bank of Baroda-PO-1999]

Directions (Q. 124-128): In each of the following questions a number series is given. Only one number is wrong in each series. Find out that wrong number, and taking this wrong number as the first term of the second series formed following the same logic, find out the third term of the second series.

124. 1 2 8 21 88 445
 1) 24.5 2) 25 3) 25.5
 4) 25 5) None of these
125. 6 7 18 63 265 1365
 1) 530 2) 534 3) 526
 4) 562 5) None of these
126. 7 23 58 127 269 555
 1) 263 2) 261 3) 299
 4) 286 5) None of these
127. 5 4 9 18 66 195
 1) 12 2) 25 3) 20
 4) 18 5) None of these
128. 2 7 28 146 877 6140
 1) 242 2) 246 3) 252
 4) 341 5) None of these

[SBI-Associates-PO-1999]

Directions (Q. 129-133): In each of the following questions a number series is given. After the series, a number is given followed by (1), (2), (3), (4) and (5). You have to complete the series starting with the number given following the sequence of the given series. Then answer the question given below it.

129. 9 19.5 41 84.5
 12 (1) (2) (3) (4) (5)
 Which of the following numbers will come in place of (3)?
 1) 111.5 2) 118.5 3) 108.25
 4) 106.75 5) None of these
130. 4 5 22 201
 7 (1) (2) (3) (4) (5)
 Which of the following numbers will come in place of (4)?
 1) 4948 2) 4840 3) 4048
 4) 4984 5) None of these
131. 5 5.25 11.5 36.75
 3 (1) (2) (3) (4) (5)
 Which of the following numbers will come in place of (3)?
 1) 34.75 2) 24.75 3) 24.5
 4) 34.5 5) None of these
132. 38 19 28.5 71.25

18 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (4)?

- 1) 118.75 2) 118.25 3) 108.25
4) 118.125 5) None of these

133. 25 146 65 114

39 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (5)?

- 1) 122 2) 119 3) 112
4) 94 5) None of these

[Guwahati-PO-1999]

Directions (Q. 134-138): In each of the following questions a number series is given. A number in the series is suppressed by letter 'A'. You have to find out the number in the place of 'A' and use this number to find out the value in the place of the question mark in the equation following the series.

134. 36 216 64.8 388.8 A 699.84 209.952

$$A \div 36 = ?$$

- 1) 61.39 2) 0.324 3) 3.24
4) 6.139 5) 32.4

135. 42 62 92 132 A 242 312

$$A + 14 = ? \times 14$$

- 1) $11\frac{6}{7}$ 2) 14 3) $12\frac{5}{7}$

- 4) $12\frac{1}{2}$ 5) $12\frac{1}{6}$

136. 4 7 12 19 28 A 52

$$A^2 - 4 = ?$$

- 1) 1365 2) 1353 3) 1505
4) 1435 5) 1517

137. 18 24 A 51 72 98 129

$$A \frac{3}{7} \frac{4}{5} ?$$

- 1) 12 2) $11\frac{23}{35}$ 3) $12\frac{12}{35}$

- 4) $14\frac{2}{5}$ 5) $10\frac{2}{7}$

138. $\frac{3}{8} \frac{3}{4} \frac{9}{16} \frac{9}{8} \frac{27}{32} \frac{27}{16}$ A

$$\sqrt{A} ?$$

- 1) $\frac{3}{2}$ 2) $\frac{6}{8}$ 3) $\frac{6}{4}$

- 4) $\frac{3}{4}$ 5) $\frac{9}{8}$

[BSRB-Mumbai-PO-1999]

Directions (Q. 139-143): In each of the following questions, a number series is given. After the series, a number is given followed by (1), (2), (3), (4) and (5). You have to complete the series starting with the number given, following the sequence of the given series.

139. 15 16 25 50

189 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (5)?

- 1) 354 2) 273 3) 394
4) 426 5) None of these

140. 6 3.5 4.5 8.25

40 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (3)?

- 1) 20.5 2) 21.5 3) 33.75
4) 69.5 5) None of these

141. 9 10 22 69

5 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (2)?

- 1) 15 2) 28 3) 14
4) 45 5) None of these

142. 2 10 27 60

5 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (2)?

- 1) 39 2) 13 3) 34
4) 38 5) None of these

143. 5 149 49 113

146 (1) (2) (3) (4) (5)

Which of the following numbers will come in place of (4)?

- 1) 290 2) 234 3) 254
4) 218 5) None of these

[BSRB-Calcutta-PO-1999]

Directions (Q. 144-148): In each of the following questions, a number series is given in which one number is wrong. You have to find out that number and have to follow the new series which will be started

by that number. By following this, which will be the third number of the new series?

144. 1 2 6 33 148 765 4626
1) 46 2) 124 3) 18
4) 82 5) None of these

145. 2 9 5 36 125 648 3861
1) 12 2) 11 3) 75
4) 72 5) None of these

146. 3 4 12 45 190 1005 6066
1) 98 2) 96 3) 384
4) 386 5) None of these

147. 6 10.5 23 59.5 183 644 2580
1) 183.5 2) 182.5 3) 183
4) 182 5) None of these

148. 2 7 19 43 99 209 431
1) 181 2) 183 3) 87
4) 85 5) None of these

[BSRB-Hyderabad-PO-1999]

Directions (Q. 149-153): In each of the following question a number series is given. A number in the series is suppressed by 'P' mark. First you have to find out the number in the place of the 'P' mark and use this number to find out the answer of the question following the series.

149. 188 186 P 174 158 126

$$\sqrt{P} \quad 13 \quad ?$$

- 1) 14.03 2) 14.10 3) 13.00
4) 13.67 5) None of these

150. 3.2 4.8 2.4 3.6 P 2.7

$$0.06\% \text{ of } 54 \div P = ?$$

- 1) 0.18 2) 1.62 3) 0.62
4) 18.0 5) 0.018

151. 4 $6\frac{1}{3}$ $8\frac{2}{3}$ P $13\frac{1}{3}$ $15\frac{2}{3}$

$$30\% \text{ of } (P^2 + 13^2) = ?$$

- 1) 78.73 2) 87.00 3) 98.83
4) 172.80 5) None of these

152. 220 182 146 114 84 58 P

$$P \frac{1}{\sqrt{256}} \quad ?$$

- 1) $2\frac{1}{8}$ 2) 2 3) $2\frac{1}{4}$

- 4) $3\frac{7}{8}$ 5) None of these

153. 25 37 51 67 85 P 127

$$20\% \text{ of } P \sqrt{625} \quad ?$$

- 1) 625 2) 550 3) 450
4) 525 5) None of these

[NABARD-1999]

Directions (Q. 154-158): In each of the following questions a number series is given. A number is given after the series and then (1), (2), (3), (4) and (5) are given. According to the given series, you have to form a new series which begins with the given number, and then answer the question asked.

154. 6 3.0 4.5 2.25

$$40 \quad (1) \quad (2) \quad (3) \quad (4) \quad (5)$$

Which of the following numbers will come in place of (3)?

- 1) 20.5 2) 21.5 3) 33.75
4) 69.5 5) 15

155. 5 9 26 90

$$13 \quad (1) \quad (2) \quad (3) \quad (4) \quad (5)$$

Which of the following numbers will come in place of (5)?

- 1) 2880 2) 2292 3) 1716
4) 3432 5) None of these

156. 4 9 25 103

$$3 \quad (1) \quad (2) \quad (3) \quad (4) \quad (5)$$

Which of the following numbers will come in place of (3)?

- 1) 391 2) 81 3) 91
4) 79 5) None of these

157. 6 10 32 126

$$2 \quad (1) \quad (2) \quad (3) \quad (4) \quad (5)$$

Which of the following numbers will come in place of (1)?

- 1) 4 2) 6 3) 2
4) 3 5) None of these

158. 1260 628 312 154

$$788 \quad (1) \quad (2) \quad (3) \quad (4) \quad (5)$$

Which of the following numbers will come in place of (4)?

- 1) 194 2) 45.5 3) 48
4) 72.5 5) None of these

[BSRB-Chennai-PO-2000]

Directions (Q. 159-163): In each of the following questions a number series is given. After the series, a number is given below it followed by (1), (2), (3), (4) and (5). You are required to complete the series starting with the number given following the

sequence of the given series. Then answer the given questions.

159. 12 24 96 576 4608

9 (1) (2) (3) (4) (5)

What will come in place of (4)?

- 1) 1080 2) 676 3) 3608
4) 3456 5) None of these

160. 150 299 601 1197 2401 4793

60 (1) (2) (3) (4) (5)

What will come in place of (5)?

- 1) 1917.2 2) 1913 3) 1922
4) 861 5) None of these

161. 3 9 81 6561

2 (1) (2) (3) (4) (5)

What will come in place of (4)?

- 1) 656 2) 4374 3) 1024
4) 65536 5) None of these

162. 3 7 24 101 512

5 (1) (2) (3) (4) (5)

What will come in place of (3)?

- 1) 55 2) 149 3) 168
4) 752 5) None of these

163. 2 6 40 1606 2579244

1 (1) (2) (3) (4) (5)

What will come in place of (4)?

- 1) 45 2) 95 3) 30489
4) 30633 5) None of these

[BSRB-Bhopal-PO-2000]

164. What will come in place of the question mark (?) in the following number series?

2 9 28 65 ?

- 1) 96 2) 106 3) 126
4) 130 5) None of these

[BSRB-Bhopal-PO-2000]

Directions (Q. 165-169): In each of the following questions a number series is given. One term of the series is denoted by 'N'. You have to calculate the value of 'N' and using the value of 'N' so obtained you have to replace the question mark (?) with suitable value.

165. 99 163 N 248 273 289

$\sqrt{2N - 17} ?$

- 1) 20.5 2) 20.0 3) 21.5
4) 19.5 5) 21.0

166. 6 2 6 $1\frac{1}{2}$ 6 N

150% of N = ?

1) 9.00 2) 1.25 3) 1.80

4) 1.50 5) 1.875

167. N 12 9 $7\frac{1}{5}$ 6 $5\frac{1}{7}$

18% of N + 24% of N = ?

- 1) 6.72 2) 8.40 3) 15.12
4) 7.56 5) 2.52

168. 125 N 1127 1176 9408 9472

$N^2 - 2N - ?$

- 1) 25599 2) 22499 3) 25920
4) 26243 5) 16899

169. 14.8 17.2 N 22.0 2.8 41.2

25% of 25 N = ?

- 1) 71.25 2) 77.5 3) 76.25
4) 55.00 5) 167.50

[BSRB-Bangalore-PO-2000]

170. In the following number series, one number is wrong. Find out the wrong number.

3 10 35 172 885 5346 37471

- 1) 10 2) 5346 3) 885
4) 35 5) 172

[BSRB-Delhi-PO-2000]

171. In the following number series, one number is wrong. Find out the wrong number.

318 158 76 38 18 8 3

- 1) 38 2) 18 3) 158
4) 318 5) 76

[BSRB-Delhi-PO-2000]

Directions (Q. 172-176): In each of the following questions a number series is given. A number in the series is suppressed by letter 'N'. You have to find out the number in the place of 'N' and use this number to find out the value in the place of the question mark in the equation following the series.

172. 68 68.5 69.5 71 N 75.5 78.5

$N \times 121 + ? = 10000$

- 1) 1160 2) 1200 3) 1150
4) 1180 5) None of these

173. 19 20 24 33 49 74 N 159

$N^2 + 10000 = ?$

- 1) 121.0 2) 12.1 3) 1.21
4) 0.121 5) None of these

174. 51 43 N 30 25 21 18

$N^2 - 2N = ?$

- 1) 1155 2) 1224 3) 1295
4) 1368 5) None of these

175. 2 5 14 41 122 365 N

$$N - 16\frac{2}{3}\% \text{ of } 5670 - (7)^2 = 10^2$$

1) 7 2) $\sqrt{149}$ 3) 49

4) $\sqrt{7}$ 5) None of these

176. 510 254 N 62 30 14 6

40% N + ? = 9²

1) 31.4 2) 29.8 3) 50.4

4) 30.6 5) None of these

[BSRB-Delhi-PO-2000]

Directions (Q. 177-181): A number series is given in each of the following questions. A number is given after the series followed by (1), (2), (3), (4) and (5). First you have to understand how the series is formed and then starting with that number you have to complete the second series. Now answer the given questions.

177. 13 14 5 18 0.5

19 (1) (2) (3) (4) (5)

What would come in place of (5)?

1) 13.75 2) 27 3) 18.75

4) 6.75 5) None of these

178. 17 21.5 30.5 44 62

21 (1) (2) (3) (4) (5)

What would come in place of (5)?

1) 84.5 2) 88.5 3) 86

4) 88 5) None of these

179. 1 8 10 35 136

2 (1) (2) (3) (4) (5)

What would come in place of (3)?

1) 40 2) 42 3) 51

4) 49 5) None of these

180. 12 26 11 36 9

7 (1) (2) (3) (4) (5)

What would come in place of (3)?

1) 7 2) 21 3) 4

4) 11 5) None of these

181. 2 3 6 15 45

16 (1) (2) (3) (4) (5)

What would come in place of (4)?

1) 360 2) 120 3) 300

4) 240 5) None of these

[BSRB-Patna-PO-2001]

Directions (Q. 182-186): In each of the following number series only one number is wrong. If the wrong number is corrected, the series gets established following a certain logic. Below the series a

number is given followed by (1), (2), (3), (4), (5) and (f). You have to complete the series following the same logic as in the given series after correcting the wrong number. Now answer the following questions giving the correct values for the letter in the questions.

182. 2 3 2 15 76 245 1434

3 (1) (2) (3) (4) (5) (f)

What will come in place of (3)?

1) 16 2) 22 3) 24

4) 21 5) None of these

183. 1 2 8 33 148 740 4626

2 (1) (2) (3) (4) (5) (f)

What will come in place of (4)?

1) 156 2) 164 3) 168

4) 152 5) None of these

184. 2 4.5 11 30 93 312 1136

1 (1) (2) (3) (4) (5) (f)

What will come in place of (2)?

1) 6 2) 81 3) 16.75

4) 18.75 5) None of these

185. 2 14 18 46 82 176 338

4 (1) (2) (3) (4) (5) (f)

What will come in place of (5)?

1) 238 2) 338 3) 218

4) 318 5) None of these

186. 1 3 7 11 21 43 85

4 (1) (2) (3) (4) (5) (f)

What will come in place of (f)?

1) 275 2) 279 3) 277

4) 273 5) None of these

[SBI-Bank-PO-2001]

Directions (Q. 187-191): In each of the following questions a number series is given with one wrong number. Find that wrong number.

187. 2 3 6 15 45 156.5 630

1) 3 2) 45 3) 15

4) 6 5) 156.5

188. 36 20 12 8 6 5.5 4.5

1) 5.5 2) 6 3) 12

4) 20 5) 8

189. 1 3 9 31 128 651 3313

1) 651 2) 128 3) 31

4) 9 5) 3

190. 2 3 10 40 172 855 5346

1) 3 2) 855 3) 40

4) 172 5) 10

191. 5 8 16 26 50 98 194

1) 8 2) 26 3) 50

4)16 5)98

[Corporation Bank PO-2002]

Directions (Q. 192-196): In each of these questions a number series is given. Only one number is wrong in each series. You have to find out the wrong number.

192. 10 15 24 35 54 75 100

1)35 2)75 3)24

4)15 5)54

193. 1 3 4 7 11 18 27 47

1)4 2)11 3)18

4)7 5)27

194. 3 2 3 6 12 37.5 115.5

1)37.5 2)3 3)6

4)2 5)12

195. 2 8 32 148 765 4626 32431

1)765 2)148 3)8

4)32 5)4626

196. 2 3 11 38 102 229 443

1)11 2)229 3)120

4)38 5)3

[IBPS Bank PO Exam-2002]

Directions (Q. 197-201): What will come in place of the question mark (?) in the following number series?

197. 2 9 30 105 ? 2195

1)432 2)426 3)440

4)436 5) None of these

198. 3 4 12 45 ? 1005

1)152 2)198 3)144

4)192 5) None of these

199. 1 3 9 31 ? 651

1)97 2)127 3)129

4)109 5) None of these

200. 5 ? 4 7.5 17 45

1)3.5 2)3 3)2.5

4)2 5) None of these

201. 15 30 ? 40 8 48

1)10 2)20 3)18

4)12 5) None of these

[Andhra Bank SO Exam-2002]

Directions (Q. 202-206): In each of the following questions a number series is given. After the series a number is given followed by (a), (b), (c), (d) and (e). You have to complete the series starting with the number given and following the sequence of the original series. Answer the questions that follow the series.

202. 5 6 16 57 244 1245

2 (a) (b) (c) (d) (e)

What will come in place of (d)?

1)46 2)39 3)156

4)173 5) None of these

203. 3 5 9 17 33 65

7 (a) (b) (c) (d) (e)

What will come in place of (d)?

1)95 2)51 3)99

4)49 5) None of these

204. 7 4 5 9 20 52.5

3 (a) (b) (c) (d) (e)

What will come in place of (c)?

1)4.5 2)2 3)6

4)7 5) None of these

205. 3 10 32 111 460 2315

2 (a) (b) (c) (d) (e)

What will come in place of (b)?

1)29 2)30 3)26

4)28 5) None of these

206. 5 8 6 10 7 12

7 (a) (b) (c) (d) (e)

What will come in place of (c)?

1)14 2)16 3)9

4)11 5) None of these

[RBI Grade 'B' Officer's Exam-2002]

Directions (Q. 207-211): In each of these questions a number series is given. Only one number is wrong in each series. You have to find out the wrong number.

207. 1 2 4.5 11 30 92.5 329

1)92.5 2)4.5 3)11

4)2 5)30

208. 2 5 7 12 19 32 50

1)7 2)12 3)32

4)19 5)5

209. 2 13 65 271 817 1639 1645

1)13 2)65 3)271

4)817 5)1639

210. 3 4 16 75 366 1945 11886

1)16 2)75 3)366

4)1945 5)4

211. 2 14 91 546 3002 15015

1)15015 2)91 3)14

4)3002 5)546

[NABARD Assistant Manager-2002]

Directions (Q. 212-216): In the following number series, a wrong number is given. Find out that wrong number.

212. 2 11 38 197 1172 8227 65806

- 1)11 2)38 3)197
 4)1172 5)8227
213. 16 19 21 30 46 71 107
 1)19 2)21 3)30
 4)46 5)71
214. 7 9 16 25 41 68 107 173
 1)107 2)16 3)41
 4)68 5)25
215. 4 2 3.5 7.5 26.25 118.125
 1)118.125 2)26.25 3)3.5
 4)2 5)7.5
216. 16 4 2 1.5 1.75 1.875
 1)1.875 2)1.75 3)1.5
 4)2 5)4

[Canara Bank PO Exam-2003]

Directions (Q. 217-221): In each of the following number series, a wrong number is given. Find out that number.

217. 5 10 17 27 37 50 65
 1)10 2)17 3)27
 4)37 5)50
218. 108 54 36 18 9 6 4
 1)54 2)36 3)18
 4)9 5)6
219. 2 3 5 8 14 23 41 69
 1)5 2)8 3)14
 4)41 5)69
220. 0 1 9 36 99 225 441
 1)9 2)36 3)99
 4)225 5)441
221. 3 7.5 15 37.5 75 167.5 375
 1)167.5 2)75 3)37.5
 4)15 5)7.5

[IBPS Jr Executive Exam-2002]

Directions (Q. 222-226): In each of the following questions a number series is given. After the series, a number is given followed by (a), (b), (c), (d) and (e). You have to complete the series starting with the number given following the sequence of the given series and answer the question given below the series.

222. 3 12 30 66 138 282
 7 (a) (b) (c) (d) (e)
 What will come in place of (b)?
 1)34 2)70 3)46
 4)62 5)None of these
223. 2 3 10 39 172 885
 5 (a) (b) (c) (d) (e)
 What will come in place of (d)?
 1)244 2)175 3)208

- 4)196 5)None of these
224. 3 5 22 13.5 35 19
 1 (a) (b) (c) (d) (e)
 What will come in place of (a)?
 1)3 2)2 3)5
 4)4 5)None of these
225. 2 3 7 25 121 721
 3 (a) (b) (c) (d) (e)
 What will come in place of (c)?
 1)31 2)49 3)45
 4)39 5)None of these
226. 4 2 3 7.5 26.25 118.125
 6 (a) (b) (c) (d) (e)
 What will come in place of (c)?
 1)12.25 2)11.5 3)12.5
 4)11.125 5)None of these

[PNB Management Trainee Exam-2003]

Directions (Q. 227-232): In each of the following number series, a wrong number is given. Find out the wrong number.

227. 2 3 6 18 109 1944 209952
 1)3 2)6 3)18
 4)109 5)1944
228. 1 3 6 11 20 39 70
 1)3 2)39 3)11
 4)20 5)6
229. 2 13 27 113 561 3369 23581
 1)13 2)27 3)113
 4)561 5)3369
230. 50 51 47 56 42 65 29
 1)51 2)47 3)56
 4)42 5)65
231. 3 9 23 99 479 2881 20159
 1)9 2)23 3)99
 4)479 5)2881
232. 2 4 5 8 13 21 34
 1)4 2)5 3)8
 4)13 5)21

[SBI Bank PO Exam-2003]

Directions (Q. 233-237): In each of the following questions a number series is given. After the series a number is given followed by (a), (b), (c), (d) and (e). You have to complete the series starting with the number given, following the sequence of the given series, and answer the questions given below the series.

233. 4 2.25 3.25 7.125 18.25 51.875
 7 (a) (b) (c) (d) (e)
 What will come in place of (b)?
 1)4.125 2)5.25 3)6.75

- 4) 4.75 5) None of these
234. 3 40 176 537 1078 1079
1 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 839 2) 738 3) 829
4) 938 5) None of these
235. 3 5 22 13.5 35 19
5 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 16 2) 15.5 3) 14.5
4) 13 5) None of these
236. 9 10 16 57 212 1085
2 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 37 2) 15 3) 18
4) 25 5) None of these
237. 7 20 46 98 202 410
4 (a) (b) (c) (d) (e)
What will come in place of (d)?
1) 166 2) 184 3) 146
4) 162 5) None of these

[Bank of Maharashtra PO-2003]

Answers

1. 2; The numbers 18, 26, 34, 42, 50, are in arithmetic progression. The formula for the n^{th} term is

$$a + (n - 1)d = n^{\text{th}} \text{ term} = T_n$$

$$\text{or } n - 1 = \frac{T_n - a}{d} = \frac{T_n - 18}{8}$$

$$T_n - 18 \text{ should be divisible by } 8.$$

$$T_n = 338.$$

$$\text{Then, } n - 1 = \frac{338 - 18}{8} = \frac{320}{8} = 40$$

$$\text{or } n = 41.$$

Thus 838 is the 41 st term.

2. 4; Pattern is
 $5 + 8 = 13$ & $13 - 4 = 9$
 $9 + 8 = 17$ & $17 - 4 = 13$
 $13 + 8 = 21$ & $21 - 4 = 17$ (missing number)

3. 1; $S_n = \frac{n}{2} [2a + (n - 1)d]$;

where a = first term,

d = common difference and

n = number of terms.

$$S_{41} = 20 [4 + 39 \times 4] = 3200$$

4. 1; The sequence in the given series is $\times 5, \times 2, \times 5, \times 2, \times 5$.
5. 3; The sequence in the given series is $+ 16, + 18, + 20, + 22$. Hence the number 108 must be replaced by 110.
6. 1; The sequence in the given series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \times 4 + 4, \times 5 + 5$.
7. 3; The sequence in the given series is $+ 3, + 4, + 5, + 6, + 7$.
8. 4; The numbers at even places form an A.P., e.g. 48, 50, 52,
9. 1; n^{th} term of a G.P. = ar^{n-1}

where a = first term and r is the common ratio.

$$8^{\text{th}} \text{ term} = 5 \times (2)^7 = 5 \times 128 = 640$$

$$10. 4; \frac{1}{p} \frac{1}{q} \frac{1}{s} \frac{1}{r}$$

11. 1; The sequence in the given series is $\times 3 \quad 2$.
12. 4; n^{th} term of an A.P. with first term a and common difference $d = a + (n - 1)d$
 $4 + (n - 1) \times 7 = 186$
 $n - 1 = 26 \quad n = 27$

13. 3; The sequence of the numerator in the given series = $1^2, 2^2, \dots, 7^2 = 49$
 and the denominators are in AP i.e. 28 next term = $\frac{49}{28}$

14. 1; The terms of the given series are $1^3 - 1, 2^3 - 1, 3^3 - 1, 4^3 - 1, 5^3 - 1$.

15. 4; The members of the series are all the numbers which are multiples of 7 plus 4.

(16-20):

16. 4; The sequence in the given series is $+ 4, + 6, + 8, + 10, + 12$.
17. 3; The sequence in the given series is $+ 12, + 20, + 28, + 36, + 44$.
18. 2; The sequence in the given series is $+ 3, + 5, + 7, + 9, + 11$.
19. 4; The sequence in the given series is $(\text{Prime number})^2 + x$ (where $x = 1, 3, 5, 7, 9, 11$)
20. 2; The sequence in the series formed by the odd-terms is $- 2$.

- 21.4; Papers drawn are as follows:
Number 4,11, 18,25,32,39
- 22.3; The terms of the given series are
 $2^3, 3^3, 4^3, 5^3, 6^3, 7^3, 8^3$.
- 23.4; The sequence in the series formed by the odd-numbered terms of the given series is $\times 3$.
- 24.4; The sequence in the given series is +3, +4, +5, +6, +7, +8
- 25.2; Difference in the consecutive dates is 28 days.
- 26.1; The sequence in the given series is
 $2, 2^2, 2^3, 2^4, 2^5$.
- 27.4; The sequence in the given series is $+2\frac{3}{4}$.
- 28.1; The series contains the numbers divisible by 11 plus 3.
- 29.2; The sequence at odd places in the given series is +8.
- 30.2; The sequence in the given series is $+2^2, +3^2 + 4^2, +5^2, +6^2$.
- 31.3; The difference between consecutive terms are respectively 5, 7, 9, 11 and 13.
So, 34 is a wrong number.
- 32.3; The series +3, +5, +7, +9, +11, +13
- 33.1; The series is $1^2 + 1 - 2, 2^2 + 1 - 5, 5^2 + 1 - 26, 26^2 + 1 - 677$
- 34.3; The given series is in AP. nth term of AP = $a + (n - 1)d$
where a = 1st term of the series = 72
 d = common difference = -9
So, $72 + (n - 1)(-9) = 0$
or, $72 - 9(n - 1) = 0$
 $n = 9$
- 35.3; The terms of the given series are
 $2 \times 1^3, 2 \times 2^3, 2 \times 3^3, 2 \times 4^3$.
- 36.1; The sequence in the given series is
+5, +9, +13, +17, +21.
- (37-39):**
- 37.4; The given series contains cubes of 2, 3, 4, 5, 6 and 7.
- 38.4; In all other terms of the given series, Hundred's digit + Unit's digit = Ten's digit.
- 39.1; $18 - 2 \times 9 = 3 \times 6$ = Product of a prime number and a composite number.
All other numbers of the given series have no composite factor.
- 40.3; $8^2 = 64$
- (41-45):**
- 41.3; The sequence in the given series is $\times 1 + 7, \times 2 + 6, \times 3 + 5, \times 4 + 4, \times 5 + 3$.
The new series formed must be 7, 14, 34, 107,
- 42.1; The sequence in the given series is
 $\frac{1}{2}, 1, 1, 1, 1.5, 1, 2, 1, 2.5, 1$
The new series formed must be 6, 4, 5, 8.5, 18, 46
- 43.2; The sequence in the given series is $\times 1 + 1^3, \times 2 + 2^3, \times 3 + 3^3, \times 4 + 4^3, \times 5 + 5^3$
The new series must be 1, 2, 12, 63, 316,
- 44.5; The sequence in the given series is $\times 2 + 2, \times 2 + 4, \times 2 + 6, \times 2 + 8, \times 2 + 10$.
The new series must be 3, 8, 20, 46, 100, 210
- 45.4; Alternate terms form the series 6, 7, 8 and 10, 12, 14.
The new series must be 4, 8, 5, 10, 6, 12
- 46.5;
 $2 \quad 1^3 \quad 1; 9 \quad 2^3 \quad 1; 28 \quad 3^3 \quad 1; 65 \quad 4^3 \quad 1;$
 $126 = 5^3 \quad 1; 216 \quad 6^3 \quad 1 \text{ \& } 344 \quad 7^3 \quad 1$
216 is a wrong number.
- (47-51):**
- 47.3; 2nd term = $4 \times 5 - 6 = 14$
3rd term = $14 \times 4 - 5 = 51$
4th term = $51 \times 3 - 4 = 149$
5th term = $149 \times 2 - 3 = 295$
The new series is
2, 4, 11, 29, 55, i.e. $c = 29$
- 48.1; The new series must be 6, 3, 4, 10, 6
Hence, $a = 3$.
- 49.5; The sequence in the given series is
 $1, 1, \frac{1}{2}, 2, 2, 3, 2, \frac{1}{2}, 4$
The new series is 3, 4, 8, 19, 51.5
i.e. $d = 51.5$
- 50.4; The terms of the given series are as follows:
2nd term = 1st term $\times 1 + 1^2$
3rd term = 2nd term $\times 2 + 2^2$
4th term = 3rd term $\times 3 + 3^2$
And so on.
The new series is 2, 3, 10, 39, 172, i.e. $d = 172$
- 51.1; The sequence in the given series is $\times 2 + 6, \times 2 - 6, \times 2 + 6, \times 2 - 6$.

The new series is given by 2, 8, 10, 26, 46,
i.e. $b = 10$

(52-54):

52.2: The sequence in the given series is $+7, +10,$
 $+13, +16, +19, +22$

Hence the number 49 must be replaced by 50.

53.2: The sequence in the given series is $\times 1.5, \times 2, \times$
 $3, \times 3.5, \times 4$

Hence, the number 9 must be replaced by 12.

54.5: The sequence in the given series is $\times 2 + 1, \times 2$
 $+ 3, \times 2 + 5, \times 2 + 7, \times 2 + 9, \times 2 + 11.$

Hence the number 338 must be replaced by
339.

55.1: The sequence in the given series is $\times 3, \times 2, \times$
 $3, \times 2, \times 3$

56.5: The sequence in the given series is $\times 4, + 2, \times$
 $4, + 2, \times 4$

Therefore, next number should be 960.

57.3: The sequence in the given series is $\times 2 + 2, \times 2$
 $+ 4, \times 2 + 6, \times 2 + 8, \times 2 + 10, \times 2 + 12$

Hence the number 116 must be replaced by
118.

58.5: The sequence in the given series is $+10^2, +8^2,$
 $+6^2, +4^2, +2^2.$

? is replaced by 206.

59.5: The sequence in the given series is $+9, +9, +6,$
 $+6, +3, +3.$

Hence, the number 37 must be replaced by 35.

60.4: The sequence in the given series is $\times 1 + 1, \times 2$
 $+ 1, \times 3 + 1, \times 4 + 1, \times 5 + 1, \times 6 + 1, \times 7 + 1.$

Hence the number 440 must be replaced by
446.

61.4: The sequence in the given series is $+2, +4, +6,$
 $+8, +10, +12.$

Hence, the number 41 must be replaced by 43.

62.4: The sequence in the given series is $\times 2 + 2, \times 3$
 $+ 3, \times 4 + 4, \times 5 + 5, \times 6 + 6.$

63.2: The sequence in the given series is $1^2, + 3^2,$
 $+ 5^2, + 7^2, + 9^2, + 11^2.$

Hence, the number 14 must be replaced by 15.

64.2: The sequence in the given series is $-3 + 2.$

Hence, the number 46 must be replaced by 53

65.5: The sequence in the given series is $+12^2, +10^2,$
 $+8^2, +6^2.$

Hence, the number 348 should replace the ques-
tion mark.

66.2: The sequence in the given series is $\times 2 + 1, \times 2$
 $+ 2, \times 2 + 3, \times 2 + 4, \times 2 + 5, \times 2 + 6.$

67.3: The sequence in the given series is $+8^2, -7^2,$
 $+6^2, -5^2, +4^2, -3^2.$

68.4: The sequence in the given series is $\times 1.5, \times 2, \times$
 $2.5, \times 3, \times 3.5, \times 4.$

69.4: Second term $-$ 1st term $\times 1 + 15 = 21$

Third term $-$ 2nd term $\times 2 + 13 = 55$

Fourth term $-$ 3rd term $\times 3 + 11 = 176$

Fifth term $-$ 4th term $\times 4 + 9 = 713$

70.3: The number 87 must be replaced by 88. The
sequence in the given series is $\times 1 + 1, \times 2 + 2,$
 $\times 3 + 3, \times 4 + 4, \times 5 + 5, \times 6 + 6.$

71.2: The sequence in the given series is $+13^2, +11^2,$
 $+9^2, +7^2.$

72.3: The sequence in the given series is $\times 2 + 8.$

73.5: The number 71 must be replaced by 54. The
sequence in the given series is $+ 12^2, -11^2, +10^2,$
 $-9^2, +8^2, -7^2.$

74.5: The number 51 must be replaced by 40. The
sequence in the given series is $+1^2, +3^2, +5^2,$
 $+7^2, +9^2, +11^2.$

75.5: The number 42 is wrong which must be re-
placed by 39. The sequence in the given series
is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \times 5 + 5^2, \times 6 +$
 $6^2.$

76.2: The sequence in the given series is $+12^2, +10^2,$
 $+8^2, +6^2.$

77.5: The number 4.5 is wrong which must be re-
placed by 6. The sequence in the given series
is $\times 1.5, \times 2, \times 2.5, \times 3, \times 3.5, \times 4.$

78.1: The sequence in the given series is $\times 1 + 1^2, \times 2$
 $+ 2^2, \times 3 + 3^2, \times 4 + 4^2.$

79.1: The number 87 must be replaced by 43. The
sequence in the given series is $+ 13^2, - 12^2, +$
 $11^2, - 10^2, + 9^2, - 8^2.$

80.1: The sequence in the given series is $\times 2 + 4.$

81.5: The number 36 is wrong. The sequence in the
given series is $\times 1.5, \times 2, \times 2.5, \times 3, \times 3.5, \times 4.$
36 must be replaced by 30.

82.5: The number 16 must be replaced by 20. The
sequence in the given series is $\times 1 + 4, \times 2 + 8,$
 $\times 3 + 12, \times 4 + 16, \times 5 + 20, \times 6 + 24.$

83.2: The number 110 must be replaced by 95. The
sequence in the given series is $+1^2, +3^2, +5^2,$
 $+7^2, +9^2, +11^2.$

84.1: The number 64 must be replaced by 68. The
sequence in the given series is $\times 2 + 4, \times 2 + 8,$
 $\times 2 + 12, \times 2 + 16, \times 2 + 20, \times 2 + 24.$

85.5: The number 157.5 must be replaced by 135.

The sequence in the given series is

$$1\frac{1}{2}, 2, 2\frac{1}{2}, 3, 3\frac{1}{2}, 4.$$

86.4; The number 148 must be replaced by 136. The sequence in the given series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \times 4 + 4, \times 5 + 5, \times 6 + 6$.

87.2; The sequence in the given series is $+9^2, +7^2, +5^2, +3^2$.

88.4; The sequence in the given series is

$$\frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}.$$

89.5; The number 36 must be replaced by 38. The sequence in the given series is $\times 2 + 2, \times 2 + 4, \times 2 + 6, \times 2 + 8, \times 2 + 10, \times 2 + 12$.

90.4; The sequence in the given series is $+8^2, +7^2, +6^2, +5^2$.

91.5; The number 75 must be replaced by 90. The sequence in the given series is

$$1\frac{1}{2}, 2, 2\frac{1}{2}, 3, 3\frac{1}{2}, 4$$

92.2; The sequence in the given series should be $+1.5, -2.5, +1.5, -2.5$ and so on.

Hence, the number 14.0 is wrong and must be replaced by 15.0

93.3; The sequence in the given series is $\times 6$.

94.1; The sequence in the given series is $\times 1 - 1, \times 2 - 2, \times 3 - 3, \times 4 - 4$.

95.5; The sequence in the given series is $\times 1 - 1, \times 2 - 2, \times 3 - 3, \times 4 - 4, \times 5 - 5, \times 6 - 6$.

Hence the number 3814 must be replaced by 3804

96.3; The sequence in the given series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \times 4 + 4, \times 5 + 5$.

97.4; The sequence in the given series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \times 5 + 5^2, \times 6 + 6^2$.

(98-102):

98.3; The sequence in the given series is $+2, +6, +10, +14, +18$.

99.5; The sequence in the given series is $-16, -13, -10, -7, -4, -1$.

The number 20 will replace the '?'.

100.1; The sequence in the given series is $\times 5$.

101.2; The sequence in the given series is $\times 3 + 1, \times 3 + 2, \times 3 + 3, \times 3 + 4, \times 3 + 5$.

102.4; The terms of the given series are squares of 3, 4, 5, 6, 7 and 8.

(103-107):

103.3; The series is $+8, \times 7, +6, \times 5 \dots$

Replace (3) with (5).

104.1; The given series is an alternate series

ie, $S_1 = 7 \ 11 \ 15$; the property is $+4$

$S_2 = 14 \ 51 \ 90$; after interchanging 14 and 90,

we get the series following -39 and -37 .

Replace (1) with (5).

105.3; The given series is an alternate series.

ie, $S_1 = 40 \ 60 \ 80$; the property is $+20$

$S_2 = 14 \ 24 \ 19$; after interchanging 24 and 19,

we get the property as $+5$.

106.5; The series is $+15^2, -13^2, +11^2, -9^2 \dots$

107.2; The series is $\times 1 + 1, +2 + 2, \times 3 + 3 \dots$

Replace (2) with (3)

(108-112):

108.1; The series is $\times 1 + 4, \times 2 + 8, \times 3 + 12, \dots$

109.3; The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \dots$

110.4; The series is $\times 1.5, \times 3, \times 4.5, \dots$

111.1; The series is $\times 2 + 4, \times 2 + 8, \times 2 + 12, \dots$

112.2; The series is $\times 8 - 28, \times 7 - 24, \times 6 - 20, \dots$

113.2; The series is $\times 2 + (2 \times 1^2), \times 2 + (2 \times 3^2), \times 2 + (2 \times 5^2), \times 2 + (2 \times 7^2), \dots$ So, 164 should be replaced by 182.

(114-118):

114.3; The series is $\times 1 + 2, \times 2 + 2, \times 3 + 2, \times 4 + 2, \times 5 + 2, \times 6 + 2$. 914 is incorrect. It should be 772. The new series begins with 914.

115.3; The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \times 4 + 4, \times 5 + 5, \times 6 + 6$. 34 should be 33 and thus the new series starts with 34.

116.4; The series is $-(14)^2, +(12)^2, -(10)^2, +(8)^2, -(6)^2$ and so on.

117.5; The series is $\frac{1}{2}, \frac{3}{2}, \frac{5}{2}, \frac{7}{2}, \frac{9}{2}, \frac{11}{2}$ and so on.

118.1; The series is $+1^2 - 0, +2^2 - 1, +3^2 - 2, +4^2 - 3, +5^2 - 4, +6^2 - 5$.

Thus, 7 is the wrong number.

(119-123):

119.4; The series is $\times 8 + 1, \times 7 + 2, \times 6 + 3$.

$a = 2 \times 8 + 1 = 17, b = 17 \times 7 + 2 = 121, c = 121 \times 6 + 3 = 729$

120.1; The series is $\times 1, \times 1.5, \times 2$

$a = 36 \times 1 = 36, b = 36 \times 1.5 = 54, c = 54 \times 2 = 108, d = 108 \times 2.5 = 270$ and $e = 270 \times 3 = 810$

121. 3; The series is $+2 - 4$

$$a = 888 \div 2 - 4 = 440 \text{ and } b = 440 \div 2 - 4 = 216$$

122. 5; The series is $\times 1 + 1, \times 1.5 + 2.25, \times 2 + 4, (\times 2.5 + 6.25, \times 3 + 9, \dots)$

$$a = 7 \times 1 + 1 = 8, b = 8 \times 1.5 + 2.25 = 14.25, c = 14.25 \times 2 + 4 = 32.5 \text{ and } d = 32.5 \times 2.5 + 6.25 = 81.25 + 6.25 = 87.5$$

123. 2; The series is $+(17)^2, -(15)^2, +(13)^2, -(11)^2, +(9)^2, \dots$

$$c = 13 + (238 - 5) = 233 - 246, d = 246 - (11)^2 =$$

$$246 - 121 = 125 \text{ and } e = 125 + (9)^2 - 125 + 81 = 206$$

(124-128):

124. 5; The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \dots$ So 8 is wrong. Beginning with 8 we get 20 as third term.

125. 5; The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \dots$

126. 2; The series is $\times 2 + 9, \times 2 + 11, \times 2 + 13, \dots$

127. 4; The series is $\times 1 - 1, \times 2 + 2, \times 2 - 2, \times 3 + 3, \dots$

128. 4; The series is $\times 3 + 1, \times 4 + 1, \times 5 + 1, \dots$

(129-133):

129. 5; The series is $\times 2 + 1.5, \times 2 + 2, \times 2 + 2.5 \dots$ So, 108.5 should come in place of (c).

130. 1; The series is $\times 1^2 + 1, \times 1^2 + 1, \times 2^2 + 2, \times 3^2 + 3, \times 4^2 + 4, \dots$

131. 2; The series is $\times 1 + 0.25 \times 1, \times 2 + 0.25 \times 4, \times 3 + 0.25 \times 9 \dots$ So 24.75 should come in place of (c).

132. 4; The series is $\times 0.5, \times 1.5, \times 2.5, \dots$ So 118.125 should come in place of (d).

133. 3; The series is $+11^2, -9^2, +7^2, -5^2, \dots$ So 112 should come in place of (c).

(134-138):

134. 3; The series is $6, \frac{3}{10}$ alternately. So, 116.64

will come in place of A.

$$116.64 \div 36 = 3.24$$

135. 2; The series is $+20, +30, +40, \dots$ So 182 will come in place of A.

$$? \frac{182 - 14}{14} = 14$$

136. 5; The series is $+3, +5, +7, +9 \dots$ So 39 will come in place of A.

$$? = 39^2 - 4 = 1517$$

137. 1; The series is $+6, +11, +16, +21 \dots$ So 35 will come in place of A.

$$? \quad 35 \quad \frac{3}{7} \quad \frac{4}{5} \quad 12$$

138. 5; The series is $\times 2$ and $\frac{3}{4}$ alternately. So $\frac{81}{64}$ will come in place of A.

$$? \quad \sqrt{\frac{81}{64}} \quad \frac{9}{8}$$

(139-143):

139. 1; The series is $+1^2, +3^2, +5^2, +7^2, \dots$

140. 3; The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5, \times 2 + 2, \dots$

141. 3; The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \dots$

142. 1; The series is $\times 2 + 6, \times 2 + 7, \times 2 + 6, \dots$

143. 4; The series is $+(12)^2, -(10)^2, +(8)^2, -(6)^2, \dots$

(144-148):

144. 3; The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \dots$

145. 5; Ans = 13. The series is $\times 1 + 7, \times 2 - 11, \times 3 + 15, \dots$

146. 4; The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \dots$

147. 1; The series is $\times 1.5 + 1.5, \times 2 + 2, \times 2.5 + 2.5, \times 3 + 3, \dots$

148. 2; The series is $\times 2 + 3, \times 2 + 5, \times 2 + 7, \times 2 + 9, \dots$

(149-153):

149. 3; The series is $-2, -4, -8, -16, \dots$

$$\text{So, } P = 186 - 4 = 182$$

$$? \quad \sqrt{P} \quad 13 \quad \sqrt{182} \quad 13 \quad 13$$

150. 5; The series is $\times 1.5, -2, \times 1.5, -2, \dots$

151. 2; The series is $2 \frac{1}{3}$ in each term.

152. 1; The series is $-38, -36, -32, -30, -26, -24$

153. 4; The series is $+12, +14, +16, +18, \dots$

(154-158):

154. The series is $-2, \times 1.5, \dots$

155. 5; Ans = 2860. The series is $\times 1 + 4, \times 2 + 8, \times 3 + 12, \dots$

156. 4; The series is $\times 2 + 1, \times 3 - 2, \times 4 + 3, \times 5 - 4, \dots$

157. 3; The series is $\times 2 - 2, \times 3 + 2, \times 4 - 2, \times 6 + 2, \dots$

158. 2; The series is $-2 - 2$ in each steps

(159-163):

159. 4; The series is $\times 2, \times 4, \times 6, \dots$

160. 2; The series is $\times 2 - 1, \times 2 + 3, \times 2 - 5, \dots$

161. 4; Each number is the square of its preceding number.

162. 2; The series is $\times 2 + 1, \times 3 + 3, \times 4 + 5, \dots$

163. 4; Each number is square of its preceding number plus 2, 4, 6, ...
viz, $2^2 + 2 = 6$, $6^2 + 4 = 40$
164. 3; The series is $1^3 + 1 = 2$, $2^3 + 1 = 9$, $3^3 + 1 = 28$, ...
(165-169):
165. 5; The series is $+8^2, +7^2, +6^2, +5^2$
166. 3; The series is $\frac{1}{3}, 3, \frac{1}{4}, 4$,.....
167. 4; The series is $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$
168. 1; The series is $+6^2, +7, +7^2, +8$,.....
169. 2; The series is $+2.4, -4.8, +9.6, -19.2$,.....
170. 4; Series is $\times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2$,.....
171. 5; The series is $\times 2 - 1$ in each term.
(172-176):
172. 5; The series is $\times 0.5, +1, +1.5, +2$,.....
173. 3; The series is $+1^2, +2^2, +3^2, +4^2$,.....
174. 2; The series is $-8, -7, -6, -5$,.....
175. 1; The series is $\times 3 - 1$ in each term.
176. 4; The series is $\times 2 - 1$ in each term.
(177-181):
177. 3; The series is $\times 1 + 1, \times 2 - 2, \times 3 + 3$,.....
178. 2; The series is $\times 4.5, +9, +13.5$,.....
179. 5; The series is $\times 1 + 7, \times 2 - 6, \times 3 + 5, \times 4 - 4$,.....
180. 2; The series is $\times 2 + 2, \times 2 - 2, \times 3 + 3, \times 3 - 3$,.....
181. 1; The series is $\times 1.5, \times 2, \times 2.5, \times 3$,.....
(182-186):
182. 4; The series is $\times 1 + 1^2, \times 2 - 2^2, \times 3 + 3^2, \times 4 - 4^2$,.....
183. 5; The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2$,.....
184. 5; The series is $\times 2 + 0.5, \times 2 + 2, \times 2 + 8, \times 2 + 32$,.....
185. 1; The series is $\times 2 + 10, \times 2 - 10$ alternately.
(187-191):
186. 3; The series is $\times 2 + 1, \times 2 - 1$ alternately.
187. 5; The series is $\times 1.5, \times 2, \times 2.5, \times 3$ and so on.
188. 1; The series is $-16, -8, -4, -2, -1, -0.5$, and so on.
189. 2; The series is $\times 1 + 2, \times 2 + 3, \times 3 + 4$, and so on.
190. 3; The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2$ and so on.
191. 4; The series is $\times 2 - 2$
(192-196):
192. 1; The series is $+5, +9, +13, +17$ The difference in successive nos. $9 - 5 = 13 - 9 = 17 - 13 = \dots = 4$. Hence, 35 is wrong. It should be 37.
193. 5; The sum of the first two nos. is the third no. Hence, 27 is wrong. It should be 29.
194. 5; The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5$ Hence, 12 is wrong. It should be 14.
195. 4; The series is $2 \cdot 2^2, 3 \cdot 3^2, 4 \cdot 4^2, 5 \cdot 5^2$
Hence 32 is wrong. It should be 33.
196. 2; The series is $1^4, 2^4, 3^4, 4^4$ Hence, 224 is wrong. It should be 227.
(197-201):
197. 4; The series is $\times 1 + 1 \times 7, \times 2 + 2 \times 6, \times 3 + 3 \times 5$
198. 5; The series is $1 \cdot 1^2, 2 \cdot 2^2, 3 \cdot 3^2$,....
199. 3; The series is $\times 1 + 2, \times 2 + 3, \times 3 + 4$,....
200. 2; The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5$,....
201. 1; The series is $\times 2, \times 3, \times 4, \times 5$,....
(202-206):
202. 5; Ans = 172. The series is $1 \cdot 1^2, 2 \cdot 2^2, 3 \cdot 3^2$,....
203. 5; Ans = 97. The series is $\times 2 - 1$ in each term.
204. 3; The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5, \times 2 + 2$,....
205. 2; The series is: $3 \times 1 + 7 \times 1 = 10; 10 \times 2 + 6 \times 2 = 32; 32 \times 3 + 5 \times 3 = 111; 111 \times 4 + 4 \times 4 = 460; 460 \times 5 + 3 \times 5 = 2315$
206. 1; The series is $\times 2 - 2, \times 2 + 2, \times 2 - 2, \times 2 + 2$,....
(207-211):
207. 1; The series is $\times 1 + 1, \times 1.5 + 1.5, \times 2 + 2, \times 2.5 + 2.5$,....
208. 3; The series is $2 + 5 = 7; 7 + 5 = 12; 12 + 7 = 19$;....
209. 2; The series is $\times 6 + 1, \times 5 + 2, \times 4 + 3, \times 3 + 4$,....
210. 3; The series is $1 \cdot 1^3, 2 \cdot 2^3, 3 \cdot 3^3, 4 \cdot 4^3$,....
211. 4; The series is $\times 7, \times 6.5, \times 6, \times 5.5$,....
(212-216):
212. 4; The series is $\times 3 + 5, \times 4 - 6, \times 5 + 7, \times 6 - 8$,....
213. 1; The series is $1^2, 2^2, 3^2, 4^2$,....
214. 4; The series is $7 + 9 = 16; 16 + 9 = 25; 25 + 16 = 41; 41 + 25 = 66; 66 + 41 = 107$
215. 3; The series is $\times 0.5, \times 1.5, \times 2.5, \times 3.5$,....
216. 2; The series is $\times 0.25, \times 0.5, \times 0.75, \times 1$,....
(217-221):
217. 3; The series is $+5, +7, +9, +11$,....
218. 4; The series is $\times 2, \times 1.5$ alternately.
219. 5; The series is an alternate series, having
 $S_1 = 2 \cdot 5 \cdot 14 \cdot 41; \times 3 - 1$ in each term
 $S_2 = 3 \cdot 8 \cdot 23 \cdot 69; \times 3 - 1$ in each term
220. 3; The differences are $1 \cdot 0 - 1 = 1^3; 9 \cdot 1 - 8 = 2^3; 36 \cdot 9 - 27 = 3^3; 99 \cdot 36 - 63 = 4^3$, but

- $100 - 36 - 64 = 4^2$;
 $225 - 100 = 125 = 5^3$;
 $441 - 225 = 216 = 6^3$
221. 1; The series is $\times 2.5, \times 2$ alternately.
(222-226):
 222. 3; The series is $\times 2 + 6$ in each term.
 223. 1; The series is $1 \ 1^2, \ 2 \ 2^2, \ 3 \ 3^2, \dots$
 224. 4; The series is $-2 + 3.5, \times 2 + 12, +2 + 2.5, \times 2 + 8,$
 \dots
 225. 2; The series is $\times 2 - 1, \times 3 - 2, \times 4 - 3, \dots$
 226. 5; The series is $\times 0.5, \times 1.5, \times 2.5, \dots$
(227-232):
 227. 4; 2 3 6 18 **109** 1944 209952
 Here $2 \times 3 = 6; 3 \times 6 = 18; 6 \times 18 = 108;$
 $18 \times 108 = 1944; 108 \times 1944 = 209952$
 228. 2; 1 3 6 11 20 **39** 70
 Here $1 \times 2 + 1 = 3; 3 \times 2 + 0 = 6;$
 $6 \times 2 - 1 = 11; 11 \times 2 - 2 = 20;$
 $20 \times 2 - 3 = 37; 37 \times 2 - 4 = 70$
 229. 1; 2 **13** 27 113 561 3369 23581
 Here $2 \times 2 + 7 = 11; 11 \times 3 - 6 = 27;$
 $27 \times 4 + 5 = 113; 113 \times 5 - 4 = 561;$
 $561 \times 6 + 3 = 3369; 3369 \times 7 - 2 = 23581.$
 230. 4; 50 51 47 56 **42** 65 29
 Here $50 \ 1^2 \ 51;$
 $51 \ 2^2 \ 47; 47 \ 3^2 \ 56;$
 $56 \ 4^2 \ 40; 40 \ 5^2 \ 65;$
 $65 \ 6^2 \ 29$
 231. 3; 3 9 23 **99** 479 2881 20159
 Here $3 \times 2 + 3 = 9; 9 \times 3 - 4 = 23;$
 $23 \times 4 + 5 = 97; 97 \times 5 - 6 = 479;$
 $479 \times 6 + 7 = 2881;$
 $2881 \times 7 - 8 = 20159$
 232. 1; $\frac{2}{-2} \ \frac{4}{+1} \ \frac{5}{-3} \ \frac{8}{+5} \ \frac{13}{-8} \ \frac{21}{+13} \ \frac{34}{-13}$
 Hence the series should be as follows:
 $\frac{2}{-1} \ \frac{3}{+2} \ \frac{5}{-3} \ \frac{8}{+5} \ \frac{13}{-8} \ \frac{21}{+13} \ \frac{34}{-13}$
 Here $1 + 2 = 3; 2 + 3 = 5; 3 + 5 = 8; 5 + 8 = 13$
(233-237):
 233. 4; The series follows the pattern:
 $4 \times 0.5 + 0.25 \times 1^2 = \mathbf{2.25}$
 $\mathbf{2.25} \times 1 + 0.25 \times 2^2 = \mathbf{3.25}$

$$\mathbf{3.25} \times 1.5 + 0.25 \times 3^2 = \mathbf{7.125}$$

$$\mathbf{7.125} \times 2 + 0.25 \times 4^2 = \mathbf{18.25}$$

$$\mathbf{18.25} \times 2.5 + 0.25 \times 5^2 = \mathbf{51.875}$$

Hence, the required answer

$$= 7 \times 0.5 + 0.25 \times 1^2 = \mathbf{3.75} = a$$

$$\mathbf{3.75} \times 1 + 0.25 \times 2^2 = \mathbf{4.75} = b$$

234. 1; The series is based on the pattern

$$5 \ 5^2, \ 4 \ 4^2, \ 3 \ 3^2, \ 2 \ 2^2, \ 1 \ 1^2.$$

Hence the required answer will be:

$$1 \times 5 + 5^2 = \mathbf{30} (-a) \times 4 + 4^2 = \mathbf{136} (-b) \times 3 + 3^2 = \mathbf{417} (-c) \times 2 + 2^2 = \mathbf{838} (-d) \ 838 \times 1 + 1^2 = \mathbf{839}.$$

[Note: In this type of series, observing from the right end will be beneficial; e.g. we see that the last element is greater by 1 to its preceding element. While the second last is greater by **double +4** to its predecessor. ... In this way we can conclude the definite pattern.]

235. 3; The series follows the pattern:

$$7 \ \frac{1}{2}, +6 \times 2, \ 5 \ \frac{1}{2}, +4 \times 2 \dots$$

Now, the required answer

$$= 5 \ 7 \ \frac{1}{2} \ 6 \ a$$

$$(6+6) \times 2 - 24 (-b), \ 24 \ 5 \ \frac{1}{2} = 14.5 (-c)$$

236. 2; The given series is $1 \ 1^2, \ 2 \ 2^2, \ 3 \ 3^2,$

$$4 \ 4^2, \ 5 \ 5^2$$

Hence, the required answer

$$= 2 \ 1 \ 1^2 \ 3 \ a;$$

$$3 \ 2 - 2^2 \ 2 \ b; \ 2 \ 3 \ 3^2 \ 15 \ c$$

237. 5; The successive term is 6 more than the double of its preceding term. Hence required answer
 $-4 \times 2 + 6 = 14 (-a);$
 $14 \times 2 + 6 = 34 (-b);$
 $34 \times 2 + 6 = 74 (-c);$
 $74 \times 2 + 6 = 154 (-d)$

Exercise-B

Directions (Q. 1-5): In each of the following questions, a number series is given based on a certain sequence. Below it another number series is given. You have to follow the same sequence in the second number series and then answer the question below it.

- 7 35 40 240 246
8 a b c d e
Find the value of c.
1)260 2)280 3)290
4)300 5) None of these
- 8 5 5 8 23
9 a b c d e
What is the value of d?
1)49 2)52 3)47
4)42 5) None of these
- 41 73 95 109 117
9 a b c d e
What should replace d?
1)109 2)80 3)79
4)85 5) None of these
- 6 10 18 34 66
7 a b c d e
Find the value of e.
1)131 2)132 3)133
4)134 5) None of these
- 5 13 23 67 131
4 a b c d e
What is the value of c?
1)47 2)48 3)49
4)50 5) None of these

Directions (Q. 6-10): In each of the following questions a number series is given, in which a wrong no. is given. Find out the wrong no. and start the second series with that no. Answer the questions below it.

- 2 5 11 27 58
a b c d e
What no. should come in place of d?
1)29 2)49 3)79
4)99 5) None of these
- 1 2 5 10 677
a b c d e
What no. should come in place of c?
1)51 2)81 3)101
4)621 5) None of these

- 15 17 20 29 45
a b c d e
What no. should come in place of e?
1)35 2)39 3)47
4)69 5) None of these
- 20 41 78 153 304
a b c d e
What no. should come in place of d?
1)150 2)140 3)135
4)129 5) None of these
- 136 64 26 10 1
a b c d e
What no. should come in place of c?
1)10 2)0.75 3)5
4)0.5 5) None of these

Directions (Q. 11-15): In each of the following questions, a number series is given. After the series, below it, a number is given followed by a, b, c, d and e. You have to complete the series starting with the number given following the sequence of the given series. Then, answer the questions given below it.

- 24 12 12 18
18 a b c d e
What value should come in place of d?
1)13.5 2)15 3)21
4)24 5) None of these
- 7 7 13 33
13 a b c d e
What should replace e?
1)135 2)76 3)142
4)87 5) None of these
- 8 29 152 1073
12 a b c d e
What value should come in place of b?
1)186 2)198 3)204
4)212 5) None of these
- 9 22 50 110 236
5 a b c d e
What should come in place of d?
1)172 2)184 3)196
4)208 5) None of these
- 731 649 714 664
585 a b c d e
What value would replace e?
1)429 2)512 3)521
4)492 5) None of these

Directions (Q. 16-20): One number is wrong in each of the number series given in each of the follow-

ing questions. You have to identify that number and assuming that a new series starts with that number following the same logic as in the given series, which of the numbers given in 1, 2, 3, 4 and 5 given below each series will be the third number in the new series?

16. 2, 3, 6, 15, 46, 157.5, 630
 1) 240 2) 238 3) 345
 4) 138 5) 328
17. 2, 3, 8, 28, 112, 565
 1) 56 2) 60 3) 58
 4) 62 5) 70
18. 3, 6, 9, 17, 33, 65, 129
 1) 21 2) 22 3) 23
 4) 20 5) 18
19. 582, 605, 588, 611, 634, 617, 600
 1) 642 2) 632 3) 634
 4) 630 5) 640
20. 60, 121, 131, 260, 284, 572, 601
 1) 531 2) 542 3) 521
 4) 522 5) 540

Directions (Q. 21-25): In each of the following questions a number series is given based on a certain sequence. Below it a number is given followed by , , , . You have to follow the same sequence and answer the questions.

21. 5 -30 -210 1680
 3
 What should come in place of ?
 1) -126 2) 1008 3) 1224
 4) -676 5) 896
22. 1 5 14 30
 3
 What should come in place of ?
 1) 37 2) 45 3) 57
 4) 63 5) 71
23. 5 12 60 340
 7
 What should come in place of ?
 1) 172 2) 5044 3) 3012
 4) 20164 5) 9068
24. 7 10 24 88
 3
 What should come in place of ?
 1) 2 2) 0 3) 4

- 4) -2 5) 6
 25. 13 18 28 48
 9
 What should come in place of ?
 1) 74 2) 84 3) 76
 4) 96 5) 116

Directions (Q. 26-30): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and follow the same property as in the given no. series. Then answer the questions given below it.

26. 2 -3 -33 -178 -723
 -3 a b c d e
 What value should come in place of b?
 1) -178 2) -243 3) 178
 4) -263 5) None of these
27. 7 8 4 13 -3 22
 13 a b c d e
 What value should come in place of d?
 1) 3 2) -6 3) 22
 4) -42 5) None of these
28. 374 371 362 383 338 407 302
 235 231 a b c d e
 What is the value of b?
 1) 335 2) 312 3) 286
 4) 243 5) None of these
29. 0.75 2.5 7 17 38
 0.175 a b c d e
 What would be value of c?
 1) 10.5 2) 12.4 3) 14.5
 4) 15.7 5) None of these
30. 332 336 171 59 15.75
 226 a b c d e
 What value should come in place of c?
 1) 112 2) 68 3) 45
 4) 42.5 5) None of these

Directions (Q. 31-35): In each question a number series is given which contains a wrong term. Find the wrong no. B (say) and answer the question given below.

31. 6 7 10 20 46
 What will be the value of $(40 - B - 2)$?
 1) 4 2) 0 3) 7
 4) 5 5) None of these
32. 2.5 8 19 40 85
 What will be the value of $(B^2 - 3B)/37$?

- 1)25 2)30 3)35
4)40 5) None of these
33. 5 11 21 44 85 171
What will be the value of $(3B + 17)$?
1)40 2)70 3)149
4)261 5) None of these
34. 18 27 55 135 405 1417.5
What will be the value of $(3.5 B + 10)$?
1)202.5 2)73 3)10.45
4)482.5 5) None of these
35. 4 3 11 18 39 73
What will be the value of $(B^2 - 2B)$?
1)312 2)288 3)144
4)280 5) None of these

Directions (Q. 36-40): In each of the following series you have to find the wrong term. Now, taking wrong term as B, answer the following questions.

36. 2 5 19 39 122 243
What is the value of $3B + 8$?
1)42 2)41.75 3)144.25
4)45.75 5)127
37. -3 1 9 25 56 121
What is the value of 20% of $5B$?
1)121 2)56 3)25
4)9 5) None of these
38. 4 10 22 47 94 190
Starting from B, write the second term of the series which is based on the same logic.
1)224 2)94 3)194
4)296 5) None of these
39. 120 59 27 11.5 3.75
What is the value of $B \div 2 + 21$?
1)50.5 2)45.5 3)140.5
4)124.5 5) None of these
40. 4 14 38 114 460
Write the second term of a similar series starting with B.
1)114 2)48 3)104
4)96 5) None of these

Directions (Q. 41-45): In each of the following questions, a number series is given in which one number is wrong (say). You have to identify that number and answer the following questions.

41. 3 5.5 16.75 64 293.3125
What is 4^2 ?
1)3200 2)3400 3)3600
4)3800 5)4000

42. 12 12.25, 13.25, 15.25 19.50 25.75
What is 0.25 of 180%?
1)36 2)27 3)30
4)40 5)45
43. 356 397 447 503 570
What is 20% of 5 ?
1)444 2)440 3)450
4)480 5)447
44. 28 327 464 5120 6216
What is $\div 4$?
1)1280 2)2460 3)2560
4)630 5)780
45. 4 5 12 39 205 805
What is $^2 10 25$?
1)4000 2)40,000 3)48760
4)57680 5) None of these

Directions (Q. 46-50): In each of the following questions, a number series is given. Only one number is wrong in this series. Find out that wrong number, and taking this wrong number as the first term of the second series formed, following the same logic, find out the fourth term of the second series.

46. 80 20 24 45 180
1)18 2)13.5 3)17.5
4)22 5)24.50
47. 18 16 36 66 244 1190
1)202 2)224 3)174
4)176 5)182
48. 30 10 15 37.50 131.25
1)56.25 2)58.60 3)62.50
4)70.625 5)48.75
49. 583 511 450 413 383 363
1)290 2)380 3)250
4)280 5)230
50. 4374 729 234 162 216 576
1)13 2)9.66 3)12.50
4)7.86 5)8.66

Directions (Q. 51-55): In each of the following questions, a number series is given. Only one number is wrong in this series. Find out that wrong number, and taking this wrong number as the first term of the second series formed, following the same logic, find out the fourth term of the second series.

51. 1 5 17 53 113 229
1)566 2)589 3)661
4)680 5) None of these
52. 15 16 16 22 19 28

- 1)34 2)32 3)30
4)28 5) None of these
53. 664 617 537 464 418 337
1)454 2)490 3)504
4)512 5)520
54. 2 4 3 6 5 9 6.75
1)12.25 2)13.50 3)15.25
4)15 5)16.25
55. 16 16 18 20 8 28 -2
1)16 2)22 3)24
4)25 5) None of these

Directions (Q. 56-60): In each of the following questions, a number series is given. Only one number is wrong in this series. Find out that wrong number, and taking this wrong number as the first term of the second series formed, following the same logic, find out the fourth term of the second series.

56. 256 257 518 1560 6268
1)3124 2)9387 3)5864
4)6932 5) None of these
57. 10 1 0.3 1.5 0.105 0.0945
1)0.225 2)0.0450 3)0.0225
4)0.4976 5)2.250
58. 97 97 91 113 69
1)117 2)123 3)125
4)127 5)137
59. 2 10 72 363 1093 1098
1)678 2)768 3)468
4)568 5)758
60. 112 56 20 6 0
1)-4 2)-5 3)-7
4)-8 5)-1

Direction (Q. 61-65): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the position of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

61. 1 1.75 6.5 26.25 117 603.75

- 1) 2) 3) 4) 5)
62. 0 81 98 343 6705 1336
1) 2) 3) 4) 5)
63. 962 121 313 225 754 850
1) 2) 3) 4) 5)
64. 60 32 40 160 120 192
1) 2) 3) 4) 5)
65. 100 47 94 55 92 51
1) 2) 3) 4) 5)

Directions (Q. 66-70): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

66. 1 5 14 39 88 209
-13 (a) (b) (c) (d) (e)
What should come in place of (c)?
1)195 2)185 3)74
4)101 5)155
67. 2520 280 2240 320 1920 384
504 (a) (b) (c) (d) (e)
What should come in place of (c)?
1)448 2)384 3)74
4)120 5)64
68. 659 130 491 266 387 338
1009 (a) (b) (c) (d) (e)
What should come in place of (d)?
1)616 2)737 3)762
4)726 5) None of these
69. 12 13 -1 122 145 1454
92 (a) (b) (c) (d) (e)
What should come in place of (b)?
1)132 2)149 3)159
4)169 5)None of these
70. 67 82 69 80 71 78
123 (a) (b) (c) (d) (e)
What should come in place of (c)?
1)138 2)125 3)136
4)127 5)134

Directions (Q. 71-75): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to estab-

lish the series, give 5 as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

71. 1142 1144 1132 1148 1140 1164
(1) (2) (3) (4) (5)

72. -5 225 10 15 40 0
(1) (2) (3) (4) (5)

73. 389 100 269 188 212 213
(1) (2) (3) (4) (5)

74. -3 -2 0 3 28 705
(1) (2) (3) (4) (5)

75. 10395 945 8505 2025 6075 1215
(1) (2) (3) (4) (5)

Directions (Q. 76-80): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

76. -1 0 -4 -27 -448

15 (a) (b) (c) (d) (e)

What should come in place of (c)?

1) 531 2) 60 3) 549
4) 8768 5) None of these

77. 561 440 271 46 335 696
1341 (a) (b) (c) (d) (e)

What should come in place of (b)?

1) 1115 2) 1436 3) 1326
4) 1176 5) 1051

78. 60 10 50 54 51 25.5

90 (a) (b) (c) (d) (e)

What should come in place of (c)?

1) 79 2) 75 3) 69
4) 70 5) None of these

79. 5 42 297 1786 8935 35746
6 (a) (b) (c) (d) (e)

What will come in place of (d)?

1) 10615 2) 10610 3) 42460
4) 10722 5) None of these

80. 2 10 27 60 127 260

4 (a) (b) (c) (d) (e)

What should come in place of (d)?

1) 254 2) 259 3) 149
4) 159 5) None of these

Directions (Q. 81-85): In each of the following questions a number series is given. A number in the

series is suppressed by letter 'A'. You have to find out the number in the place of 'A' and use this number to find out the value in the place of the question mark in the equation following the series.

81. 300 A 240 16 160 32

12% of $A + 0.56 = ?$

1) 14.96 2) 15 3) 2
4) 2.36 5) 1

82. 41 42 23 72 A 115

? $3\frac{4}{5}$ of $1\frac{6}{19}$ A

1) 37 2) 27 3) 22
4) 17 5) 47

83. 2529 3058 3787 4748 5973 A

$A + 6 = ?$

1) 7500 2) 7367 3) 7600
4) 7486 5) None of these

84. 107 322 1287 A 38615

$A - 10 = ?$

1) 6436 2) 6446 3) 6416
4) 6410 5) None of these

85. $4 \ 6\frac{1}{3} \ 8\frac{2}{3} \ A \ 13\frac{1}{3} \ 15\frac{2}{3}$

30% of $(A^2 + 13^2) = ?$

1) 78.73 2) 87 3) 98.83
4) 172.80 5) None of these

Directions (Q. 86-90): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

86. 60 30 20 15 12 10

90 (a) (b) (c) (d) (e)

What should come in place of (d)?

1) 18 2) 22.5 3) 20
4) 15 5) None of these

87. 25 24 52 465 1876 46895

5 (a) (b) (c) (d) (e)

What should come in place of (c)?

1) 9379 2) 10895 3) 13375
4) 11795 5) None of these

88. 1567 1688 1607 1656 1631 1640

3687 (a) (b) (c) (d) (e)

What should come in place of (b)?

1) 3566 2) 3485 3) 3727
4) 3737 5) None of these

89. 100 110 121 133.10 146.41 161.051

60 (a) (b) (c) (d) (e)

What should come in place of (c)?

1) 72.60 2) 87.846 3) 79.86

- 4)75 5)65
 90. 687 869 713 845 735 825
 535 (a) (b) (c) (d) (e)
 What should come in place of (a)?
 1)560 2)692 3)716
 4)726 5) None of these

Directions (Q. 91-95): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the position of the numbers to establish the series, give 5 as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

91. 82 83 165 9916 1983 496
 1) 2) 3) 4) 5)
 92. 1200 40 1000 50 750 75
 1) 2) 3) 4) 5)
 93. 4 3 124 15 14 495
 1) 2) 3) 4) 5)
 94. -1 224 0 16 2 7104
 1) 2) 3) 4) 5)
 95. 1890 521 1482 641 809 1170
 1) 2) 3) 4) 5)

Directions (Q. 96-100): In each of the following questions a no. series is given. After the series a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the question below it.

96. 22 45 43 87 85 171
 37 (a) (b) (c) (d) (e)
 What should come in place of (c)?
 1)146 2)293 3)147
 4)291 5) None of these
 97. 8 9 22 75 316 1605
 23 (a) (b) (c) (d) (e)
 What should come in place of (d)?
 1)3405 2)576 3)624
 4)686 5) None of these
 98. 4.5 9.5 21 50 132 392
 22 (a) (b) (c) (d) (e)
 What should come in place of (c)?

- 1)44.5 2)412 3)190
 4)210 5) None of these
 99. -1 0 -8 3 -52 -135
 21 (a) (b) (c) (d) (e)
 What should come in place of (b)?
 1)116 2)36 3)25
 4)30 5) None of these
 100. 3000 191 2216 847 1688 959
 3435 (a) (b) (c) (d) (e)
 What should come in place of (a)?
 1)626 2)746 3)636
 4)596 5) None of these

Directions (Q. 101-105): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the position of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

101. 45 47 45 51 54 43
 1) 2) 3) 4) 5)
 102. 461 340 565 204 733 4
 1) 2) 3) 4) 5)
 103. 10395 1485 13365 1053 15795 1215
 1) 2) 3) 4) 5)
 104. 6 56 1 19 11 529
 1) 2) 3) 4) 5)
 105. 48 16 13 12 17 25.25
 1) 2) 3) 4) 5)

Directions (Q. 106-110): In each of the following questions a no. series is given. After the series a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

106. 480 480 960 320 1280 256
 120 a b c d e
 What should come in place of e?
 1)320 2)62 3)54
 4)60 5) None of these

107. 1 9 26 86 352 1768
-8 a b c d e
What should come in place of c?
1) 136 2) 8 3) 32
4) 24 5) None of these
108. 9405 5684 3083 1402 441 0
7843 a b c d e
What should come in place of b?
1) 2159 2) 1521 3) 0
4) -2123 5) None of these
109. 1 0 4 3 28 115
11 a b c d e
What should come in place of d?
1) 268 2) 63 3) 1315
4) 258 5) None of these
110. 0.25 1.25 -3 0 -64
45 a b c d e
What should come in place of b?
1) 1611 2) 176 3) 46
4) 56 5) None of these

Directions (Q. 111-115): In each of the following questions a number series is given. A number in the series is suppressed by letter 'A'. You have to find out the number in the place of 'A' and use this number to find out the value in the place of the question mark in the equation following the series.

111. 2880 A 96 24 8 4
10% of A = ?
1) 42 2) 46 3) 38
4) 58 5) None of these
112. 15 33 69 A 285 573
A + 9 = ?
1) 130 2) 140 3) 160
4) 150 5) None of these
113. 2 A 4 15 56 285
A of $1\frac{1}{3}$ 4 = ?
1) 3 2) 4 3) 1
4) $1/3$ 5) None of these
114. 49 56 64 A 81 90
15% of A + ? = 18.8
1) 10 2) 8 3) 10.80
4) 8.80 5) None of these
115. 25 45 26 44 A 90 153 267
A + 50 = ?
1) 100 2) 50 3) 94
4) 104 5) None of these

Directions (Q. 116-120): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions given below it.

116. -2 0 3 14 63 326
15 a b c d e
What should come in place of c?
1) 37 2) 116 3) 92
4) 106 5) None of these
117. -0.5 0.5 0 3 44 1105
1 a b c d e
What should come in place of d?
1) 88 2) 864 3) 908
4) 912 5) None of these
118. 374 310 454 198 598 22
234 a b c d e
What should come in place of c?
1) -118 2) 458 3) 108
4) 128 5) None of these
119. 45045 9009 63063 7007 77077 5929
1575 a b c d e
What should come in place b?
1) 3205 2) 2405 3) 2205
4) 1805 5) None of these
120. 12 14 29 31 63 65
942 a b c d e
What should come in place of b?
1) 1889 2) 944 3) 1989
4) 954 5) None of these

Direction (Q. 121-125): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the position of the numbers to establish the series, give 5 as your answer. Remember that when the series is established, the numbers change from left to right (ie from the unmarked number to the last marked number) in a specific order.

121. 4 0 -7 -45 -20 -94
1) 2) 3) 4) 5)

122. 6 772 28 130 10 5806

1) 2) 3) 4) 5)

123. 2 6 25 96 285 568

1) 2) 3) 4) 5)

124. 8544 1420 280 66 5 18

1) 2) 3) 4) 5)

125. 1 2 64 9 625 46656

1) 2) 3) 4) 5)

Directions (Q. 126-130): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

126. -4 2 10 96 6150

-10 a b c d e

What should come in place of d?

1) -198 2) 186 3) 132

4) -762 5) None of these

127. 4721 4611 4429 4219 3913 3571

871 a b c d e

What should come in place of c?

1) 63 2) 367 3) 579

4) 469 5) None of these

128. 96 144 288 720 2160 7560

18 a b c d e

What should come in place of e?

1) 1417.50 2) 945 3) 405

4) 927.50 5) None of these

129. 48 60 110 338 1346 6734

120 a b c d e

What should come in place of b?

1) 132 2) 254 3) 274

4) 248 5) None of these

130. 4 6 15 79 704 8480

12 a b c d e

What should come in place a?

1) 18 2) 24 3) 14

4) 26 5) None of these

Directions (Q. 131-135): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

131. 4 6 15 49 201 1011

15 a b c d e

What should come in place of d?

1) 115 2) 465 3) 455

4) 475 5) None of these

132. 0 1 0 9 32 825

4 a b c d e

What should come in place of c?

1) 279 2) 81 3) 269

4) 272 5) None of these

133. 2 -1 28 -9 86 -25

122 a b c d e

What should come in place of b?

1) 124 2) 328 3) 9

4) 228 5) None of these

134. 101 323 545 767 989 111011

34 a b c d e

What should come in place of a?

1) 56 2) 78 3) 43

4) 100 5) None of these

135. -1 0 10 65 345 1750

-2 a b c d e

What should come in place of e?

1) -1750 2) 1375 3) -1325

4) -1475 5) None of these

Direction (Q. 136-140): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (ie from the unmarked number to the last marked number) in a specific order.

136. 6 4 16 11 65 143166

1) 2) 3) 4) 5)

137. 829 436 661 300 557 508

1) 2) 3) 4) 5)

138. 3 27 61 125 295 191

1) 2) 3) 4) 5)

139. 2 5 26545 177 4424 44

1) 2) 3) 4) 5)

140. 1680 420 2100 306.25 2450 350

1) 2) 3) 4) 5)

Direction (Q. 141-145): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are in-

interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to establish the series, give 5 as your answer. Remember that when the series is established, the numbers change from left to right (ie from the unmarked number to the last marked number) in a specific order.

141. 1 0 2 -6 32 -190

1) 2) 3) 4) 5)

142. 4 548 717 65 675 838

1) 2) 3) 4) 5)

143. 4 127 9 34 7 646

1) 2) 3) 4) 5)

144. 10000 6875 6619 6583 6584 6592

1) 2) 3) 4) 5)

145. 12 26 102 60 80 42

1) 2) 3) 4) 5)

Directions (Q. 146-150): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

146. 3 5 18 69 350 2095

14 a b c d e

What should come in place of c?

1) 333 2) 84 3) 1670

4) 421 5) None of these

147. 1 9 61 369 1841 7369

15 a b c d e

What should come place of b?

1) 745 2) 845 3) 865

4) 885 5) None of these

148. 4 2 32 146 592 1774

8 a b c d e

What should come in place of c?

1) 3952 2) 200 3) 986

4) 990 5) None of these

149. 300 496 352 452 388 424

104 a b c d e

What should come in place of c?

1) 192 2) 256 3) 328

4) 228 5) None of these

150. 1.6 40000 8 14000 40 4900 200

4.05 200 a b c d e

What should come in place of b and e respectively?

1) 210, 507.25 2) 310, 506.25 3) 310, 505.25

4) 200, 505.25 5) None of these

Directions (Q. 151-155): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

151. 45 44 39 32 13 -8

100 a b c d e

What should come in place of e?

1) 58 2) 38 3) 46

4) 48 5) None of these

152. 840 560 420 336 280 240

180 a b c d e

What should come in place of c?

1) 60 2) 84 3) 90

4) 72 5) None of these

153. 1600 231 1320 479 1104 663

1380 a b c d e

What should come in place of d?

1) 443 2) 894 3) 884

4) 259 5) None of these

154. 1 9 41 169 841 3369

16 a b c d e

What should come in place of b?

1) 69 2) 341 3) 1369

4) 343 5) None of these

155. 120 60 180 45 225 37.50

576 a b c d e

What should come in place of c?

1) 216 2) 220 3) 864

4) 1080 5) None of these

Directions (Q. 156-160): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the position of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (ie from the unmarked number to the last marked number) in a specific order.

156. 7 1 14 47 242 1447

1) 2) 3) 4) 5)

157. 1 2 -95 3 -4 0
1) 2) 3) 4) 5)

158. 410 320 430 248 152 458
1) 2) 3) 4) 5)

159. 20 2430 90 405 30 18225
1) 2) 3) 4) 5)

160. 2000 996 494 54.75 117.50 243
1) 2) 3) 4) 5)

Directions (Q. 161-165): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (i.e. from the unmarked number to the last marked number) in a specific order.

161. 5 14 23 44 90 57
1) 2) 3) 4) 5)

162. 343 12 54 45 279 177
1) 2) 3) 4) 5)

163. 20160 5040 1440 96 192 480
1) 2) 3) 4) 5)

164. 2 3 1484 93 10 37105
1) 2) 3) 4) 5)

165. 1260 1190 1180 1150 1160 1140
1) 2) 3) 4) 5)

Directions (Q. 166-170): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

166. 4 2 16 146 2334 29175
6 a b c d e

What should come in place of c?

1) 228 2) 220 3) 218
4) 216 5) None of these

167. 2 11 57 225 679 1353
7 a b c d e

What should come in place of d?

1) 825 2) 2579 3) 2459
4) 2479 5) None of these

168. 1024 240 865 381 742 486
1328 a b c d e

What should come in place of c?

1) 685 2) 625 3) 544
4) 705 5) None of these

169. 1.50 2 6 22.5 98 502.50
10 a b c d e

What should come in place of b?

1) 21 2) 23 3) 73.50
4) 20 5) None of these

170. 18 12 9 18 6.75
30 a b c d e

What should come in place of d?

1) 30 2) 12.75 3) 11.75
4) 12 5) None of these

Directions (Q. 171-175): Find out the wrong number in the following given sequences.

171. 13 6 8 9 20 47.5 145.5

1) 47.5 2) 20 3) 6
4) 145.5 5) 8

172. 256 128 64 192 96 240 80

1) 128 2) 192 3) 560
4) 64 5) 480

173. 9 -1 1 -2 -11 -285 -10255

1) -1 2) -2 3) -10255
4) 1 5) -11

174. 40 39 33 37 16 35 -8

1) 39 2) -5 3) 38
4) 33 5) 17

175. 121 110 113 138 89 170 49

1) 89 2) 49 3) 110
4) 138 5) 170

Directions (Q. 176-180): In each of the following questions a no. series is given. After the series, a no. is given below it, followed by a, b, c, d and e. You have to complete the series starting with the no. given and following the same property as in the given no. series. Then answer the questions below it.

176. 0 1 0 9 32 185
15 a b c d e

What should come in place of c?

1) 99 2) 81 3) 34
4) 79 5) None of these

177. 2 3 10 39 196 1175

5 a b c d e

What should come in place of d?

1) 550 2) 556 3) 656
4) 603 5) None of these

178. 1680 840 560 420 336 280

720 a b c d e

What should come in place of c?

1) 144 2) 140 3) 240
4) 120 5) None of these

179. 250 106 206 142 178 162
232 a b c d e
What should come in place of c?
1) 251 2) 124 3) 135
4) 120 5) None of these
180. 132 145 117 167 90 200
326 a b c d e
What should come in place of b?
1) 340 2) 311 3) 261
4) 305 5) None of these

Directions (Q. 181-185): Find the wrong number in the following number series.

181. 2 5 4 45 168 4216 25272
1) 4 2) 2 3) 168
4) 25272 5) 4216
182. 4 5 1 7 -1 19 7
1) -1 2) 7 3) 19
4) 5 5) 4

183. 50 $\frac{25}{3}$ 25 29 24 4 28 36
1) 50 2) $\frac{25}{3}$ 3) 36
4) 29 5) 4

184. 1521 560 1785 264 2113 96 2505
1) 560 2) 2505 3) 96
4) 264 5) 2113
185. 1 3 9 82 1065 18106
1) 1065 2) 3 3) 82
4) 18106 5) 1

Directions (Q. 186-190): What will come in place of the question mark (?) in the following number series?

186. 3 ? 2 33 88 505 2940
1) 8 2) 1 3) -2
4) 6 5) None of these
187. 5 1 3 5 21 ? 607
1) 97 2) 109 3) 99
4) 103 5) None of these
188. 5 12 60 340 1648 ? 20164
1) 6724 2) 4046 3) 4036
4) 6512 5) None of these
189. 6 10.5 23 60 ? 644 2580
1) 163 2) 183 3) 202
4) 192 5) None of these
190. 5 ? 14 56 39.20 156.80 109.76
1) 20 2) 10 3) 15
4) 1 5) None of these

Directions (Q. 191-195): Find out the wrong number in the following number series.

191. 12 25 52 55 57 115 117

- 1) 55 2) 117 3) 25
4) 52 5) None of these
192. 2478 819 257 84 24 6 1
1) 257 2) 24 3) 6
4) 819 5) 1
193. 2 3 6 15 45 160 630
1) 45 2) 630 3) 6
4) 3 5) 160
194. 199 176 195 180 190 184 187
1) 180 2) 190 3) 184
4) 187 5) 199
195. 1 5 2 30 28 2620
1) 5 2) 2620 3) 28
4) 30 5) 2

Directions (Q. 196-200): Find the wrong number in the following number series:

196. 5 25 30 100 95 475
1) 25 2) 95 3) 30
4) 5 5) 475
197. 36 96 156 126 86
1) 36 2) 96 3) 156
4) 86 5) 126
198. 45 270 54 216 72 146
1) 146 2) 270 3) 216
4) 54 5) 45
199. 65 52 1040 832 16540 13312
1) 13312 2) 16540 3) 52
4) 1040 5) 832
200. 42 83 161 315 613 1209
1) 42 2) 315 3) 83
4) 1209 5) 161

Directions (Q. 201-205): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (ie from the unmarked number to the last marked number) in a specific order.

201. 4 60 12 4 420 3780
1) 2) 3) 4) 5)
202. 1020 420 840 652 724 568
1) 2) 3) 4) 5)
203. 1 4 5888 92 653 17
1) 2) 3) 4) 5)

204. 864 1728 576 2304 256 2048
 1) 2) 3) 4) 5)
 205. 7 4 6 21 1200 135
 1) 2) 3) 4) 5)

Directions (Q. 206-210): In each of the following questions, a number series is established if the positions of two out of the five marked numbers are interchanged. The position of the first unmarked number remains the same and it is the beginning of the series. The earlier of the two marked numbers whose positions are interchanged is the answer. For example, if an interchange of the number marked '1' and the number marked '4' is required to establish the series, your answer is '1'. If it is not necessary to interchange the positions of the numbers to establish the series, give '5' as your answer. Remember that when the series is established, the numbers change from left to right (ie from the unmarked number to the last marked number) in a specific order.

206. 120 240 160 480 768 192
 1) 2) 3) 4) 5)
 207. 295 46 343 118 407 174
 1) 2) 3) 4) 5)
 208. 4 6 15 139 561 14031
 1) 2) 3) 4) 5)
 209. 2 3 285 15 56 4
 1) 2) 3) 4) 5)
 210. 12 13 11 14 10 15
 1) 2) 3) 4) 5)

Directions (Q. 211-215): In each of the following questions, a number series is given. After the series a number is given followed by (a), (b), (c), (d) and (e). You have to complete the series starting with the number given following the sequence of the given series.

211. 10 10 15 30
 32 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (d)?
 1) 96 2) 120 3) 720
 4) 240 5) None of these
 212. 6 12 36 96 216
 5 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (e)?
 1) 225 2) 425 3) 525
 4) 575 5) None of these
 213. 7 13 78 83 415
 4 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (c)?
 1) 65 2) 60 3) 53

- 4) 48 5) None of these
 214. 8 4.5 5.5 9.75
 40 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (c)?
 1) 20.5 2) 31.5 3) 33.75
 4) 53.75 5) None of these
 215. 12 76 27 63
 136 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (e)?
 1) 187 2) 162 3) 168
 4) 178 5) None of these

Directions (Q. 216-220): Find the missing number (P) in the following series

216. 126 158 174 P 186 188
 1) 180 2) 182 3) 184
 4) 178 5) None of these
 217. 2.7 P 3.6 2.4 4.8 3.2
 1) 1.5 2) 1.8 3) 2.1
 4) 2.4 5) 2.5
 218. $15\frac{2}{3}$ $13\frac{1}{3}$ P $8\frac{2}{3}$ $6\frac{1}{3}$ 4
 1) 8 2) 9 3) 10
 4) 11 5) None of these
 219. P 58 84 114 146 182 220
 1) 28 2) 30 3) 32
 4) 34 5) 36
 220. 127 P 85 67 51 37 25
 1) 105 2) 100 3) 95
 4) 90 5) None of these

Directions (Q. 221-225): Find the missing number

221. 1 2 0 9 20 ?
 1) 80 2) 100 3) 125
 4) 180 5) 200
 222. 1 1 2 4 ? 16
 1) 6 2) 8 3) 10
 4) 12 5) None of these
 223. -1 0 7 26 63 ?
 1) 101 2) 310 3) 511
 4) 420 5) None of these
 224. 6 5 9 ? 103 514
 1) 12 2) 13 3) 14
 4) 16 5) 26
 225. 20 21 25 52 ?
 1) 100 2) 200 3) 308
 4) 400 5) None of these

Directions (Q. 226-230): Find the wrong number in the sequences given below:

226. 12 24 96 476 4608
(1) (2) (3) (4) (5)
227. 150 299 600 1197 2401 4793
(1) (2) (3) (4) (5)
228. 2 6 40 1606 2579242
(1) (2) (3) (4) (5)
229. 512 101 24 7 2
(1) (2) (3) (4) (5)
230. 6561 81 9 3 1
(1) (2) (3) (4) (5)

Directions (Q. 231-235): In each of these questions a number series is given. Only one number is wrong in each series. You have to find out the wrong number.

231. 3, 1.75, 2.75, 6.375, 16.65, 48.125
1) 1.75 2) 48.125 3) 2.75
4) 16.65 5) 6.375
232. 13, 84.5, 507, 2788, 13942.5, 62741.25
1) 2788 2) 84.5 3) 13942.5
4) 62741.25 5) 507
233. 17, 103, 523, 2119, 6423, 12967
1) 2119 2) 103 3) 12967
4) 523 5) 6423
234. 3, 6, 10, 18, 30, 53, 89
1) 53 2) 89 3) 30
4) 18 5) 10
235. 5, 12.5, 43.75, 196.875, 1080.8125, 7038.28125
1) 43.75 2) 12.5 3) 1080.8125
4) 7038.28125 5) 196.875

Directions (Q. 236-240): In each of the following questions a number series is given. After the series a number is given followed by (a), (b), (c), (d) and (e). You have to complete the series starting with the number given and following the sequence of the original series. Answer the questions that follow the series.

236. 7 16 12 30 23 56
11 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 38 2) 27 3) 16
4) 24 5) None of these
237. 6 3.5 4.5 8.25 18.5 48.75
3 (a) (b) (c) (d) (e)
What will come in place of (d)?
1) 14.25 2) 15 3) 16
4) 12 5) None of these
238. 5 10 23 48 89 150
6 (a) (b) (c) (d) (e)
What will be the value of (b) : (d)?
1) 3 : 8 2) 5 : 17 3) 4 : 17
4) 4 : 15 5) None of these
239. 4 4.5 11 37.5 158 802.5

- 7 (a) (b) (c) (d) (e)
What will come in place of (b)?
1) 14 2) 19 3) 17
4) 21 5) None of these
240. 732 371 660 435 604 483
821 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 583 2) 572 3) 693
4) 683 5) None of these

Directions (Q. 241-245): In each of the following number series, a wrong number is given. Find out the wrong number.

241. 2 6 13 26 54 100 197
1) 26 2) 54 3) 100
4) 197 5) 13
242. 56 57 48 73 24 105 -10
1) 57 2) 105 3) 73
4) -10 5) 24
243. 2 2 13 59 363 2519 20161
1) 13 2) 20161 3) 2519
4) 363 5) 59
244. 1 8 66 460 2758 13785 55146
1) 460 2) 2758 3) 66
4) 8 5) 55146
245. 3 1 3 0.7 3 0.6 3 0.5 3
1) 1 2) 0.7 3) 0.6
4) 0.5 5) 3

Directions (Q. 246-250): In each of the following questions a number series is given. After the series, a number is given followed by (a), (b), (c), (d) and (e). You have to complete the second series and answer the questions given below the series.

246. 54 56 62 74 94 124
175 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 196 2) 195 3) 175
4) 174 5) None of these
247. 6 3 3 4.5 9 22.5
8 (a) (b) (c) (d) (e)
What will come in place of (c)?
1) 24 2) 28 3) 275
4) 30 5) None of these
248. 11 13 10 40 8 14
16 (a) (b) (c) (d) (e)
What will come in place of (b)?
1) 15 2) 20 3) 18
4) 14 5) None of these
249. 0 3 14 77 548
-1 (a) (b) (c) (d) (e)
What will come in place of (d)?
1) 447 2) 443 3) 445
4) 438 5) None of these

250. 5 6 10 28 124 724
 12 (a) (b) (c) (d) (e)
 What will come in place of (b)?
 1) 24 2) 26 3) 52
 4) 17 5) None of these

Answers

(1-5):

1. 5; The series is $\times 5, +5, \times 6, +6$.
 $a = 8 \times 5 = 40, b = (40 + 5) = 45, c = (45 \times 6) = 270$
2. 3; The series is $\times 1 - 3, \times 2 - 5, \times 3 - 7, \times 4 - 9$
 $a = 9 \times 1 - 3 = 6, b = 6 \times 2 - 5 = 7, c = 7 \times 3 - 7 = 14, d = 14 \times 4 - 9 = 47$
3. 4; The differences of the two successive terms are 32, 22, 14, 8. The sequence of which is $6^2 - 4, 5^2 - 3, 4^2 - 2, 3^2 - 1$
4. 1; The differences are 4, 8, 16, 32.
5. 3; The series is $\times 3 - 2$, and $\times 2 - 3$ alternately
 $a = 4 \times 3 - 2 = 10, b = 10 \times 2 - 3 = 17, c = 17 \times 3 - 2 = 49$

(6-10):

6. 4; The series is $\times 2 + 1, \times 2 + 2, \times 2 + 3, \times 2 + 4, \dots$
 Wrong no. is 11.
7. 5; The series is, $1^2 - 1, 2^2 - 1, 5^2 - 1, \dots$
 So, the wrong no. is 10. Answer will be 10202.
8. 3; The series is $1^2, 2^2, 3^2, 4^2, \dots$
 The wrong no. is 17.
9. 4; The series is $\times 2 - 5, \times 2 - 4, \times 2 - 3, \times 2 - 2, \dots$
 The wrong no. is 20.
10. 4; The series is $+2 - 4, +2 - 4, \dots$ Wrong no. is 26.

(11-15):

11. 5; The series is $\times 0.5, \times 1.0, \times 1.5, \times 2, \dots$
12. 5; The series is, +
 $1^2 - 1, 3^2 - 3, 5^2 - 5, 7^2 - 7, \dots$
13. 4; The series is $\times 3 + 5, \times 5 + 7, \times 7 + 9, \dots$
14. 1; The series is $\times 2 + 4, \times 2 + 6, \times 2 + 10, \times 2 + 16, \times 2 + 24, \dots$
15. 5; The series is $-82, +65, -50, +37, -26$
 or, The series is $-(9^2 + 1), +(8^2 + 1), -(7^2 + 1), +(6^2 + 1), -(5^2 + 1)$
 So, value of e would be 529.

(16-20):

16. 4; The series is $\times 1.5, \times 2, \times 2.5, \times 3$ and so on. So, 46 is incorrect and new series starts from 46.
17. 2; The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \dots$

18. 1; The series is $\times 2 - 1, \times 2 - 1, \dots$
19. 5; The series is $+23, -17, +23, -17, \dots$
20. 1; The series is $\times 2 + 1, +10, \times 2 + 2, +20, \times 2 + 3, +30, \dots$

(21-25):

21. 2; The series is $\times (-6), \times 7, \times (-8), \dots$
22. 3; The series is $+2^2, +3^2, +4^2, \dots$
23. 1; The series is $\times 8 - 28, \times 7 - 24, \times 6 - 20, \dots$
24. 2; The series is $\times 2 - 4, \times 3 - 6, \times 4 - 8, \dots$
25. 2; The series is $+5, +10, +20$

(26-30):

26. 2; The series is $\times 7 - 17, \times 6 - 15, \times 5 - 13, \times 4 - 11, \dots$
27. 1; The series is $+1^2, -2^2, +3^2, -4^2, \dots$
28. 4; This is an alternate series. First is $-12, -24, -36$ and, second is $+12, +24, +36, \dots$
29. 2; The series is $\times 2 + 1, \times 2 + 2, \times 2 + 3, \times 2 + 4, \dots$
30. 5; The series is $+1 + 4, +2 + 3, +3 + 2, +4 + 1, \dots$

(31-35):

31. 2; The series is $\times 3 - 11, \times 3 - 11, \dots$
 So wrong term is 20
 $40 + 20 - 2 = 0$
32. 4; The series is $\times 2 + 3, \times 2 + 3, \dots$
 So wrong term is 40.

$$\frac{1600 - 120}{37} = 40$$
33. 3; The series is $\times 2 + 1, \times 2 - 1, \times 2 + 1, \times 2 - 1, \dots$
 So wrong term is 44
 $3 \times 44 + 17 = 149$.
34. 1; The series is $\times 1.5, \times 2, \times 2.5, \times 3, \dots$
 So wrong term is 55.
 $3.5 \times 55 + 10 = 202.5$
35. 2; The series is $\times 2 - 5, \times 2 + 5, \times 2 - 5, \times 2 + 5, \dots$
 So wrong term is 18.
 $324 - 36 = 288$.

(36-40):

36. 4; The series is:
 $2 \ 1^2, 3 \ 2^2, 2 \ 1^2, 3 \ 2^2, \dots$
 Wrong number = $122 = B$
 $3B \div 8 = 3 \times 122 \div 8 = 45.75$
37. 2; The series is $\times 2 + 7$
 wrong number = $56 = B$
 $20\% \text{ of } 5B = 20\% \text{ of } 5 \times 56 = 56$.
38. 3; The series is: $(x + 1) \times 2$
 wrong number = $47 = B$
 $2 \text{nd number} = (47 + 1) \times 2 = 96$
39. 1; The series is -4 followed by $+2$

- Wrong number = 59
 $B \div 2 + 21 = 59 \div 2 + 21 = 50.5$
- 40.2: The series is: $\times 1 + 10, \times 2 + 8, \times 3 + 6, \dots$
 So, wrong number is 38.
 2nd number = $(38 \times 1) + 10 = 48$
- (41-45):**
 41.3: The series is $\times 1.5 + 1, \times 2.5 + 3, \times 3.5 + 5 \dots$
 42.2: The series is $+0.5^2, +1^2, +1.5^2, +2^2, \dots$
 43.5: The series is $+41, +47, +59, +67, \dots$ (Alternate prime No.)
 44.1: First digit from the left of the series is 2, 3, 4; other digits of the series are $2^2=8, 3^3=27, 4^4=64, \dots$
 45.2: The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \times 4 + 4, \dots$
- (46-50):**
 46.2: The series is $\frac{1}{4}, 1^2, \frac{1}{4}, 2^2, \frac{1}{4}, 3^2, \dots$
 47.3: The series is $18 \times 1 - 1 \times 2 = 16 \times 2 - 2 \times 3 = 26 \times 3 - 3 \times 4 = 66 \times 4 - 4 \times 5 = 244 \times 5 - 5 \times 6, \dots$
 48.1: The series is $\times 0.5, \times 1.5, \times 2.5, \times 3.5, \dots$
 49.4: The series is $-(9^2-9), -(8^2-8), -(7^2-7), \dots$
 50.5: The series is $+6, +3, +1.5, \dots$
- (51-55):**
 51.3: The series is $\times 2 + 3, \times 3 + 2$ alternately.
 52.5: Ans = 27. The series is $+1^2, -0, +2^2, -1, +3^2, \dots$
 53.1: The series is $664 - 46 = 618 - 81 = 537 - 73 = 464 \dots$
- 54.4: The series is $\times 2, \times \frac{3}{4}, 2, \frac{3}{4}, \dots$
- 55.2: The series is $+(1^2-1), -(2^2-2), +(3^2-3) \dots$
- (56-60):**
 56.2: The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \dots$
 57.3: The series is $\times 0.1, \times 0.3, \times 0.5, \times 0.7 \dots$
 58.4: The series is $+(1^2-1), -(3^2-3), +(5^2-5), -(7^2-7) \dots$
 59.1: The series is $\times 9 + 1, \times 7 + 2, \times 5 + 3, \times 3 + 4 \dots$
- 60.5: The series is $\times \frac{1}{2} - 6, \times \frac{1}{2} - 5, \times \frac{1}{2} - 4, \times \frac{1}{2} - 3 \dots$
- (61-65):**
 61.5: The series is $\times 1 + 0.75 \times 1^2, \times 2 + 0.75 \times (2)^2, \dots$
 62.4: The series is $\times 1 + 9^2, \times 2 - 8^2, \times 3 + 7^2, \times 4 - 6^2 \dots$
 Replace (4) with (5).
 63.2: The series is $-29^2, +27^2, -25^2, +23^2 \dots$
 Replace (2) with (5).
 64.1: The series is $\times 2, +3, \times 4, +5 \dots$
- Replace (1) with (4).
 65.3: The series is $-53, +47, -43, +41 \dots$
 (descending prime numbers)
 Replace (3) with (5).
- (66-70):**
 66.1: The series is $+2^2, +3^2, +5^2 \dots$ (Consecutive prime numbers)
 67.5: The series is $+9, \times 8, -7, \times 6 \dots$
 68.2: The series is $-23^2, +19^2, -15^2, +11^2 \dots$
 69.3: The series is $\times 1 + 1^2, \times 2 - 3^2, \times 3 + 5^2, \times 4 - 7^2 \dots$
 70.5: The series is $+15, -13, +11, -9, +7 \dots$
- (71-75):**
 71.2: The series is $+2, (2)^2, (2)^3, (2)^4, \dots$
 Replace (2) with (4).
 72.1: The series is $\times 1 + 5, \times 2 + 10, \times 3 - 15, \times 4 - 20, \times 5 + 25, \dots$
 Replace (1) with (5).
 73.4: The series is $17^2, 13^2, 9^2, 5^2, 1^2, \dots$
 Replace (4) with (5).
 74.5: The series is:
 $1^2, 1, 2, 2^2, 3^2, 3, 4, 4^2, \dots$
- 75.3: The series is $11, 9, 7, 5, 3, \dots$
 Replace (3) with (5).
- (76-80):**
 76.3: The series is:
 $1^2, 1^2, 2^2, 2^2, 3^2, 3^2, 4^2, 4^2, \dots$
- 77.5: The series is:
 $11^2, 13^2, 15^2, 17^2, 19^2, 21^2, \dots$
- 78.1: The series is: $6, 5, 4, 3, 2, 1, \dots$
- 79.1: Here $5 \times 8 + 2 = 42$
 Similarly,
 $42 \times 7 + 3 = 297$
 $6 \times 8 + 2 = 50(a)$
 $297 \times 6 + 4 = 1786$
 $50 \times 7 + 3 = 353(b)$
 $1786 \times 5 + 5 = 8935$
 $353 \times 6 + 4 = 2122(c)$
 $8935 \times 4 + 6 = 35746$
 $2122 \times 5 + 5 = 10615(d)$
- 80.4: The series is $\times 2 + 6, \times 2 + 7, \times 2 + 6, \times 2 + 7, \dots$
- (81-85):**
 81.3: The series is $+25, \times 20, +15, \times 10 \dots$
 82.2: The series is $\times 1 + 1, +2 + 2, \times 3 + 3, +4 + 4 \dots$

83.1; The series is $+23^2, +27^2, +31^2, +35^2, \dots$

84.5; The series is $\times 3 + 1, \times 4 - 1, \times 5 + 1, \times 6 - 1, \dots$

85.2; The series is $2\frac{1}{3}$ in each terms.

(86-90):

86.1; The series is $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \dots$

87.2; The series is $\times 1^2 - 1, \times 2 + 2^2, \times 3^2 - 3, \times 4 + 4^2, \dots$

88.3; The series is $+11^2, -9^2, +7^2, -5^2, \dots$

89.3; The series is each next term is 10% more than the preceding term.

90.5; Ans = 717. The series is $+(13^2 + 13), -(12^2 + 12), +(11^2 + 11), -(10^2 + 10), \dots$

(91-95):

91.3; The series is $\times 1 + 1; \times 2 - 1; \times 3 + 1; \dots$

Replace (3) with (5).

92.5; The series is $\div 30, \times 25, \div 20, \times 15, \dots$

93.2; The series is $1 \ 1^2, \ 2 \ 2^2, \ 3 \ 3^2,$

$4 \ 4^2, \dots$

Replace (2) with (4).

94.1; The series is $2^1 \ 2^2, \ 2^2 \ 2^2, \ 2^3 \ 2^4,$

$2^4 \ 2^5, \dots$

Replace (1) with (4).

95.4; The series is $(37)^2, (31)^2, (29)^2,$

$(23)^2, \dots$

(Prime number)

Replace (4) with (5).

(96-100):

96.4; The series is $\times 2 + 1, \times 1 - 2$ alternately.

97.5; Ans = 676. The series is $1 \ 1^2, \ 2 \ 2^2,$

$3 \ 3^2, \ 4 \ 4^2, \dots$

98.3; The series is $\times 2 + 0.5, \times 2 + 2, \times 2 + 8, \times 2 + 32, \dots$

99.2; The series is $1 \ 1^2, \ 2 \ 2^2, \ 3 \ 3^2,$

$4 \ 4^2, \dots$

100.1; The series is $53^2, 45^2, 37^2, 29^2, \dots$

(101-105):

101.2; The series is $+2, \ 2^2, \ 2^2 + 3, \ 3^2, \ 3^2, \dots$

Replace (2) with (5).

102.5; The series is $11^2, 15^2, 19^2, 23^2, 27^2, \dots$

103.3; The series is $-7, \times 9, +11, \times 13, \dots$

Replace (3) with (5)

104.1; The series is $\times 1^2 + 5, \ 1^2 \ 10, \ 2^2 \ 15, \ 2^2 \ 20$

\dots

Replace (1) with (4).

105.2; The series is $\times 0.25 + 4, \times 0.5 + 4, \times 0.75 + 4, \times 1 + 4, \dots$

Replace (2) with (3).

(106-110):

106.5; Ans = 64. The series is $1, \times 2, \ 3, \times 4, \ 5, \dots$

Note: We find that first series is on pattern of multiplication or division only. In such case, each term of second series will be in the same ratio of the corresponding term of the first series.

$\therefore 480 \div 4 = 120$

So, $c = 256 \div 4 = 64$

107.3; The series is: $\times 1 + 8, \times 2 + 8, \times 3 + 8, \times 4 + 8, \dots$

108.2; The series is: $61^2, 51^2, 41^2, 31^2, \dots$

109.1; The series is:

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

110.2; The series is:

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

(111-115):

111.5; Ans = 48.

The series is $+6, +5, +4, +3, \dots$

112.4; The series is $\times 2 + 3, \times 2 + 3, \times 2 + 3, \dots$

113.3; The series is $\times 1 + 1, \times 2 - 2, \times 3 + 3,$

114.2; The series is $7^2, 7 \times 8, 8^2, 8 \times 9, 9^2,$

115.1; The series is an alternate series having two series:

$S_1 = 25 \ 26 \ A \ 153; \times 1 + 1, \times 2 - 2,$

$S_2 = 45 \ 44 \ 90 \ 267; \times 1 - 1, \times 2 + 2, \times 3 - 3, \dots$

$A = 50$

(116-120):

116.2; The series is: $\times 1 + 2, \times 2 + 3, \times 3 + 5$ (sum is consecutive prime nos.)

117.3; The series is: $\times 1^2 + 1, \times 2^2 - 2, \times 3^2 + 3, \dots$

118.1; The series is: $8^2, 12^2, 16^2, \dots$

119.3; The series is $\div 5, \times 7, \div 9, \times 11, \dots$

120.1; The series is $\times 1 + 2, \times 2 + 1$, alternately.

(121-125):

121.3; The series is $\times 2 - 8, \times 2 - 7, \times 2 - 6, \times 2 - 5, \dots$

Replace (3) with (4).

122. 1; The series is $\times 1.5 + 1, \times 3 - 2, \times 4.5 + 4, \times 6 - 8$
.....

Replace (1) with (4).

123. 5; The series is $\times 6 - 6, \times 5 - 5, \times 4 - 4, \times 3 - 3, \dots$

124. 4; The series is $\div 6 - 4, \div 5 - 4, \div 4 - 4, \dots$

Replace (4) with (5).

125. 2; The series is: $1^0, 2^1, 3^2, 4^3, 5^4, \dots$

Replace (2) with (3).

(126-130):

126. 4; The series is $\times 1^0 + 6, 2^1 6, 3^2 6,$
 $4^3 6 \dots$

127. 5; Ans = 369. The series is $11^2 11,$
 $13^2 13, 15^2 15, 17^2 17 \dots$

128. 1; The series is $\times 1.5, \times 2, \times 2.5, \times 3 \dots$

129. 2; The series is $\times 1 + 12, \times 2 - 10, \times 3 + 8, \times 4 - 6 \dots$

130. 3; The series is $2^2, 3^2, 4^2, 5^2 \dots$

(131-135):

131. 2; The series is $\times 1 + 2, \times 2 + 3, \times 3 + 4, \times 4 + 5 \dots$

132. 2; The series is $1^2 1^2, \times 2 - 2, 3^2 3^2, \times 4 - 4,$
.....

133. 4; The series is $1^2 1, 3 2^2, 5^2 3, 7 4^2,$
 $9^2 5, \dots$

Here, $2 = 1^2 - 1$. In the same way

$122 = 11^2 - 1$. Therefore $a = 13 2^2 - 9,$

$b = 15^2 - 3 228, c = 17 4^2 - 17 16 - 1,$
and so on.

134. 1; The series is: every digit of the no. increases
by 2 in each step.

135. 5; Ans = -1375. The series is $(+1) \times 5, (+2) \times 5,$
 $(+3) \times 5 \dots$

(136-140):

136. 5; The series is: $\div 2 + 1, \times 3 + 4, \div 4 + 7, \times 5 + 10 \dots$

137. 1; The series is: $23^2, 19^2, 15^2, 11^2, \dots$

Replace (1) with (3).

138. 4; The series is $2^2 1, 5^2 2, 8^2 3, 11^2 4 \dots$

Replace (4) with (5).

139. 2; The series is $\times 2 + 1, 3^2 1, \times 4 + 1, 5^2 1, \dots$

Replace (2) with (5).

140. 3; The series is: $\div 4, \times 5, \div 6, \times 7 \dots$

Replace (3) with (5).

(141-145):

141. 5; The series is $\times (-2) + 2, \times (-3) + 2, \times (-4) + 2 \dots$

142. 2; The series consists of two series:

$$S_1 = -4 \ 65 \ 675; \ 10 \ 5^2$$

$$S_2 = -548 \ 717 \ 838; \ 13^2, 11^2, 9^2 \dots$$

Replace (2) with (3).

143. 1; The series is $\times 1 + 3, \times 2 - 5, \times 3 + 7, \times 4 - 9, \dots$

Replace (1) with (4).

144. 3; The series is: $5^3, 4^4, 3^3, 2^2, \dots$

Replace (3) with (5).

145. 2; The series is

$$1^2 \ 11, 2^2 \ 22, 3^2 \ 33, 4^2 \ 44 \dots$$

Replace (2) with (5).

(146-150):

146. 1; The series is $\times 2 - 1, \times 3 + 3, \times 4 - 3, \times 5 + 5, \times 5 -$
 $5 \dots$

147. 2; The series is $\times 8 + 1, \times 7 - 2, \times 6 + 3, \times 5 - 4, \dots$

148. 3; The series is $\times 7 - 26, \times 6 + 20, \times 5 - 14, \times 4 + 8, \dots$

149. 4; The series is

$$14^2, 12^2, 10^2, 8^2, \dots$$

150. 5; The series is $\times 5$ and $\frac{7}{20}$ alternately.

(151-155):

151. 5; Ans = 47. The series is

$$0 \ 1^2, \ 1 \ 2^2, \ 2 \ 3^2, \ 3 \ 4^2, \dots$$

Note: Once you find the pattern in which only addition and subtraction is used, then you don't need to find each term of the second series. Find the difference of first terms of the two series, i.e. $100 - 45 = 55$.

$$\text{Now, } e - (-8) = 55 \quad e = 47$$

152. 4; The series is $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6} \dots$

153. 3; The series is $37^2, 33^2, 29^2, 25^2, \dots$

154. 2; The series is $2^2 \ 5, \ 5 \ 2^2$ alternately.

155. 1; The series is $\div 2, \times 3, \div 4, \dots$

(156-160):

156. 5; The series is $\times 2 - 13, \times 3 + 11, \times 4 - 9, \dots$

157. 2; The series is

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

Replace (2) with (5).

158.4; The series is

$$9^2 \ 9, \ 11^2 \ 11, \ 13^2 \ 13, \ 15^2 \ 15, \dots$$

Replace (4) with (5).

159.1; The series is $\times 1.5, \times 3, \times 4.5, \times 6, \dots$

Replace (1) with (4).

160.3; The series is $\div 2 - 4$ in each term.

Replace (3) with (5).

(161-165):

161.4; The series is

$$1^2 \ 2^2 \ 0, 2^2 \ 3^2 \ 1, 3^2 \ 4^2 \ 2, 4^2 \ 5^2 \ 3, \dots$$

Replace (4) with (5).

162.5; The series is an alternate series having

$$S_1 = 343 \ 54 \ 279; \text{ property is}$$

$$17^2, \ 15^2, \ 13^2, \dots$$

$$S_2 = 1245 \ 177; \text{ property is } 2^2 \ 3.$$

163.3; The series is $\frac{2}{8}, \frac{2}{7}, \frac{2}{6}, \frac{2}{5}, \frac{2}{4}, \dots$

Replace (3) with (5).

164.2; The series is

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

Replace (2) with (4).

165.1; The series is

$$9^2 \ 1^2, \ 8 \ 2, \ 7^2 \ 3^2, \ 6 \ 4, \dots$$

Replace (1) with (2).

(166-170):

166.3; The series is

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

167.4; The series is $\times 6 - 1, \times 5 + 2, \times 4 - 3, \times 3 + 4, \dots$

168.1; The series is $28^2, \ 25^2, \ 22^2, \ 19^2$

169.2; The series is

$$1 \ 0.5 \ 1^2, \ 2 \ 0.5 \ 2^2, \ 3 \ 0.5 \ 3^2, \dots$$

170.5; Ans = 11.25. The series is $\frac{3}{2}, \frac{3}{4}, \frac{3}{6}, \frac{3}{8}$

(171-175):

171.5; The series is $\times \frac{1}{2} - \frac{1}{2}, \times 1 + 1, \times \frac{1}{2} - 1 \frac{1}{2}, \times 2 + 2, \dots$

172.4; The series is $\times \frac{1}{2}, \div 1, \times \frac{3}{2}, \div 2, \dots$

173.2; The series is

$$1^2 \ 10, \ 2^2 \ 5, \ 3^2 \ 10, \ 4^2 \ 5, \dots$$

174.4; The series is $+ 1^2 \ 2, - 2^2 \ 3, + 3^2 \ 4, -$

$$4^2 \ 5, \dots$$

175.3; The series is $1^2, \ 3^2, \ 5^2, \ 7^2, \dots$

(176-180):

176.1; The series is

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

177.2; The series is $\times 2 - 1, \times 3 + 1, \times 4 - 1, \times 5 + 1, \times 6 - 1, \dots$

178.4; The series is $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \dots$

179.2; The series is $12^2, \ 10^2, \ 8^2, \ 6^2, \dots$

180.2; The series is $1^2 \ 2^2 \ 3^2, \ 2^2 \ 3^2 \ 4^2,$

$$3^2 \ 4^2 \ 5^2, \ 4^2 \ 5^2 \ 6^2, \dots$$

(181-185):

181.5; The series is

$$1^2 \ 3, \ 2 \ 6, \ 3^2 \ 9, \ 4 \ 12, \dots$$

182.5; The series is

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

183.1; The series is $\div 2, \times 3, \div 4, - 5, \div 6, \dots$

184.3; The series is $31^2, \ 35^2, \ 39^2, \ 43^2, \dots$

185.2; The series is $\times 1 + 1, \times 5 - 1, \times 9 + 1, \times 13 - 1, \dots$

(186-190):

186.1; The series is $\times 1 + 1 \times 5, \times 2 - 2 \times 7, \times 3 + 3 \times 9, \times 4 - 4 \times 11, \dots$

187.5; Ans = 101. The series is $1 \ 2^2, \ 2 \ 1^2,$

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

188.1; The series is $\times 8 - 28, \times 7 - 24, \times 6 - 20, \times 5 - 16,$

189.2; The series is $\times 1.5 + 1.5, \times 2 + 2, \times 2.5 + 2.5, \times 3 + 3, \dots$

190.1; The series is $\times 4$ and $\frac{7}{10}$ alternately.

(191-195):

191.4; The series is $\times 2 + 1, \times 1 + 2$ alternately.

192.1; The series is $+3 - 7, +3 - 6, +3 - 5, \dots$

193.5; The series is $\times 1.5, \times 2, \times 2.5, \times 3, \dots$

194.2; The series is $-23, +19, -15, +11, -7, +3, \dots$

195.3; The series is

$$1^2 \quad 4, \quad 2 \quad 8, \quad 3^2 \quad 12, \quad 4 \quad 16, \dots$$

(196-200):

196.3; The series is $\times 5$ and -5 alternately.

197.4; The ten's and hundred's (if present) digits of successive numbers are sum of digits of previous number while unit's digit is constant, i.e. 6, in all the numbers in the given series.

For example: $36 - 6 + 3/6 = 96$;

$9 + 6/6 = 156$; $1 + 5 + 6/6 = 126$

198.1; The series is $\times 6, +5, \times 4, +3, \dots$

199.2; The series is $+5 \times 4$ and $\times 5 \times 4$ alternately.

200.2; The series is $\times 2 - 1, \times 2 - 5, \times 2 - 9, \dots$

(201-205):

201.1; The series is $\times 1, \times 3, \times 5, \times 7, \times 9, \times 11, \dots$

Replace (1) with (2).

202.3; The series is based on the following pattern:

$$1020 - 600 (\quad 25^2 \quad 25) \quad 420$$

$$420 + 420 (\quad 21^2 \quad 21) \quad 840$$

$$840 - 272 (\quad 17^2 \quad 17) \quad 568$$

$$568 + 156 (\quad 13^2 \quad 13) \quad 724$$

$$724 - 72 (\quad 9^2 \quad 9) \quad 652$$

Replace (3) with (5)

203.2; The series is $\times 1 + 3, \times 3 + 5, \times 5 + 7, \times 7 + 9, \dots$

Replace (2) with (5).

204.5; The series is $\times 2, +3, (2)^2, (3)^2, \dots$

205.4; The series is $\times 1 - 3, \times 3 - 6, \times 5 - 9, \dots$

Replace (4) with (5).

(206-210):

206.4; The series is $\times 2, +1.5, \times 3, +2.5, \dots$

Replace (4) with (5).

207.1; The series is $11^2, 13^2, 15^2, 17^2, \dots$

Replace (1) with (5).

208.5; The series is $1^2 \quad 2 \quad 2 \quad 3, \quad 3^2 \quad 4 \quad 4 \quad 5$

209.2; The series is $\times 1 + 1, \times 2 - 2, \times 3 + 3, \times 4 - 4, \dots$

Replace (2) with (5).

210.5; The series is $+1, -2, +3, -4, \dots$

(211-215):

211.4; The series is $\times 1, \times 1.5, \times 2.0, \times 2.5, \dots$

212.2; The series is $2^2 \quad 2, \quad 3^2 \quad 3, \quad 4^2 \quad 4, \quad 5^2 \quad 5, \dots$

213.1; The series is $+6, \times 6, +5, \times 5, \dots$

214.3; The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5, \times 2 + 2, \dots$

215.4; The series is $8^2, 7^2, 6^2, 5^2, \dots$

(216-220):

216.2; The logic of the sequence is:

$$2^2, \quad 2^4, \quad 2^3, \quad 2^2, \quad 2^1$$

217.2; The logic of the sequence is: $+1.5, \times 2$ alternately.

218.4; The logic of the sequence is: $2 \frac{1}{3}$

219.4; The logic of the sequence is: $+24, +26, +30, +32, +36, +38$

220.1; The logic of the sequence is $-22, -20, -18, -16, -14, -12$

(221-225):

221.3; The logic is $1 \quad 1^2, \quad 2 \quad 2^2, \quad 3 \quad 3^2, \quad 4 \quad 4^2, \quad 5 \quad 5^2$

222.2; Every term is the sum of all previous terms.

223.5; The terms of the series are $0^3 \quad 1, 1^3 \quad 1, 2^3 \quad 1, 3^3 \quad 1, 4^3 \quad 1, 5^3 \quad 1$.

224.5; The logic of the series is $\times 1 - 1, \times 2 - 1, \times 3 - 1, \times 4 - 1, \times 5 - 1$

225.3; The difference of the terms are 1, 4, 27, 256 or $1^1, 2^2, 3^3, 4^4$.

(226-230):

226.4; The logic is $\times 2, \times 4, \times 6, \times 8$

227.2; The logic is $\times 2 - 1, \times 2 + 3, \times 2 - 5, \times 2 + 7, \times 2 - 9$.

228.5; $6 \quad 2^2 \quad 2, \quad 40 \quad 6^2 \quad 4 \quad 1606 \quad 40^2 \quad 6$
 $2579244 \quad 1606^2 \quad 8$

229.5; The logic is $-7 \div 5, -5 \div 4, -3 \div 3, -1 \div 2$

230.5; Every term is the square root of its previous term.

(231-235):

231.4; The series is $+0.5 \times 0.5, +1 \times 1, +1.5 \times 1.5, +2 \times 2, \dots$

[Note: First add and then multiply.]

232. 1; The series is: $\times 6.5, \times 6, \times 5.5, \times 5, \dots$

233. 5; The series is:

$$6 \ 1^3, \ 5 \ 2^3, \ 4 \ 3^3, \ 3 \ 4^3, \dots$$

234. 3; The series is: $3+6+1=10, 6+10+2=18, 10+18+3=31, \dots$ 235. 3; The series is: $\times 2.5, \times 3.5, \times 4.5, \times 5.5, \dots$ **(236-240):**236. 1; The series is $\times 2+2, +2+4, \times 2+6, +2+8, \dots$ 237. 5; Ans = 14. The series is $\times 0.5+0.5, \times 1+1, \times 1.5+1.5, \times 2+2 \dots$

238. 4; The series is:

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

$$b=24, d=90 \quad \text{ratio} = 4:15$$

239. 3; The series is:

$$\times 1+0.5 \times 1^2, \times 2+0.5 \times 2^2, \times 3+0.5 \times 3^2, \dots$$

240. 2; The series is: $19^2, 17^2, 15^2, 13^2, \dots$ **(241-245):**241. 2; 2 6 13 26 **54** 100 197

$$\text{Here } 2 \times 2 + 2 = 6; 6 \times 2 + 1 = 13;$$

$$13 \times 2 + 0 = 26; 26 \times 2 - 1 = 51;$$

$$51 \times 2 - 2 = 100; 100 \times 2 - 3 = 197$$

242. 4; 56 57 48 73 24 105 **-10**

$$\text{Here } 56 \ 1^2 \ 57;$$

$$57 \ 3^2 \ 48; 48 \ 5^2 \ 73; 73 \ 7^2 \ 24;$$

$$24 \ 9^2 \ 105; 105 \ 11^2 \ 16$$

243. 4; 2 2 13 59 **363** 2519 20161

$$\text{Here } 2 \times 3 - 4 = 2; 2 \times 4 + 5 = 13;$$

$$13 \times 5 - 6 = 59; 59 \times 6 + 7 = 361;$$

$$361 \times 7 - 8 = 2519; 2519 \times 8 + 9 = 20161$$

244. 1; 1 8 66 **460** 2758 13785 55146

$$\text{Here } 1 \times 9 - 1 = 8; 8 \times 8 + 2 = 66; 66 \times 7 - 3 = 459;$$

$$459 \times 6 + 4 = 2758; 2758 \times 5 - 5 = 13785; 13785$$

$$\times 4 + 6 = 55146$$

245. 2; 3 1 3, **0.7** 3 0.6 3

$$\text{Here } 3 \ \frac{1}{3} \ 1; 1 \times 3 = 3; 3 \ \frac{1}{4} \ 0.75;$$

$$0.75 \times 4 = 3; 3 \ \frac{1}{5} \ 0.6; 0.6 \times 5 = 3$$

$$3 \ \frac{1}{6} \ 0.5; 0.5 \ 6 \ 3$$

(246-250):246. 2; $1^2 \ 1, \ 2^2 \ 2, \ 3^2 \ 3, \ 4^2 \ 4 \dots$ 247. 4; $\frac{1}{2}, 1, \frac{3}{2}, 2, \frac{5}{2}$ 248. 1; $+2, -3, \times 4, +5, +6 \dots$ 249. 2; $\times 1+3, \times 3+5, \times 5+7, \times 7+9, \times 9+11, \dots$ 250. 3; $\times 2-4, \times 3-8, \times 4-12, \times 5-16, \times 6-20, \dots$ 