CHAPTER

NUMBER SERIES

NUMBER SERIES

Number Series tests are a type of numerical aptitude test which require you to find the missing or wrong number in a sequence. This missing or wrong number may be at the beginning or middle or at the end of sequence.

In these questions a number series is given and candidates are asked to either insert a missing number or find the one that does not follow the pattern of the series. The only thing to understand for solving these questions is the pattern on which a number series is written. A number series can be framed by using various methods. Therefore, it is advisable for the students to practice as many questions as possible.

Type of Questions

Type I <u>Find the Missing Number</u>

ILLUSTRATION 1: What should come in place of the question mark (?) in the following number series?

Sol. 0 3 12 30 60 105 168

$$+3 +9 +18 +30 +45 +63$$

 $+6 +9 +12 +15 +18$

ILLUSTRATION 2 : What should come in place of the question mark (?) in the following number series?

2 9 30 105 ? 2195

Sol. The series is as follows starting from the second number denote the previous number in the series by x.

$$\begin{array}{c} x\times1+1\times7, x\times2+2\times6, x\times3+3\times5, x\times4+4\times4, x\times5+5\\ \times3\end{array}$$

So the missing number ? = 436

ILLUSTRATION 3: What should come in place of the question mark (?) in the following number series?

3 4 12 45 ? 1005

- Sol. The series is as follows starting from second number $x \times 1 + 1^2$, $x \times 2 + 2^2$, $x \times 3 + 3^2$, $x \times 4 + 4^2$, $x \times 5 + 5^2$ (*x* denotes the previous number in the series) $\therefore ?=x \times 4 + 4^2 = 45 \times 4 + 16 = 196$
- ► Type II <u>Find the Next Number</u>

ILLUSTRATION 4: What should be the next number in the following number series?

Sol.
$$\begin{bmatrix} 48 & 32 & 24 & 20 \\ 16 & -16 & -8 & -4 & -2 \end{bmatrix}$$

ILLUSTRATION 5: What should be the next number in the following number series?

198, 194, 185, 169,

ILLUSTRATION 6: What should be the next number in the following number series?

6, 9, 7, 10, 8, 11,

Sol. The series is as follows

ILLUSTRATION 7: What should be the next number in the following number series?

► Type III <u>Find the Wrong Number</u>

ILLUSTRATION 8 : In the following number series, a wrong number is given. Find out that wrong number.

9, 15, 24, 34, 51, 69, 90

Sol. 9 15 24 34 51 69 90
$$+6 +9 +12 +15 +18 +21$$

ILLUSTRATION 9: In the following number series, a wrong number is given. Find out that wrong number.

10 15 24 35 54 75 100

Sol. The series is as follows

+5, +9, +13, +17difference of two consecutive terms (9 -5 = 13 - 9 = 17 - 13) is 4.

Hence, 35 is wrong number in the series. It should be 37.

ILLUSTRATION 10 : In the following number series, a wrong number is given. Find out that wrong number.

1 3 4 7 11 18 27 47

Sol. Third number is the sum of first two numbers Hence 27 is wrong number in the series. It should be 29. **SOLVED EXAMPLES**

EXAMPLE 1 : What should come in place of the question mark (?) in the following number series?

- 18 38 120 ? 2480 14910
- (a) 394 (b) 450
- (d) 486 (c) 492
- (e) None of these
- Sol. (c) The given number series is based on the following pattern:

 $18 \times 2 + 2 \times 1 = 38$

 $38 \times 3 + 3 \times 2 = 120$

 $120 \times 4 + 4 \times 3 = 492$

 $492 \times 5 + 5 \times 4 = 2480$

$$2480 \times 6 + 6 \times 5 = 14910$$

Hence, 492 will come in place of the question mark.

EXAMPLE 2 : What should come in place of the question mark (?) in the following number series?

| 1 | 3 | 9 | 31 | ? | 651 |
|---|---|---|----|---|-----|
| | | | | | |

- (a) 97 (b) 127
- (c) 129 (d) 109
- (e) None of these

Sol. (c) The series is as follows $\times 1 + 2, \times 2 + 3, \times 3 + 4, \dots$

EXAMPLE 3 : What should come in place of the question mark (?) in the following number series?

| _ | • | | | 1 7 | |
|----------|---|---|----|-----|--|
| <u> </u> | ~ | 4 | | • • | 45 |
| ~ 7 | | - | // | • • | – , <i>1</i> |

| (a) | 3.5 | (b) 3 |
|------------|-----|--------------|
| (c) | 2.5 | (d) 2 |

| (\mathbf{v}) | _ 10 | , |
|----------------|---------------|---|
| (e) | None of these | |

Sol. (b) The series is as follows

 $\times 0.5 + 0.5, \times 1 + 1, + 1.5 + 1.5, \dots$

EXAMPLE 4 : What should come in place of the question mark (?) in the following number series?

| 13 30 . 40 0 40 | | 15 | 30 | ? | 40 | 8 | 48 | |
|-----------------|--|----|----|---|----|---|----|--|
|-----------------|--|----|----|---|----|---|----|--|

| (a) | 10 | (b) | 20 |
|------------|----|-----|----|
| (c) | 18 | (b) | 12 |

- (c) 18
- (e) None of these
- Sol. (a) The series is as follows

$$\times 2, \times \frac{1}{3}, \times 4, \times \frac{1}{5}, \dots$$

EXAMPLE 5 : In the following number series one of the numbers is wrong. Find out the wrong number.

- 14 28 112 672 5374 53760
- (b) 672 (a) 112
- (c) 5374 (d) 28
- (e) None of these

Sol. (c) The sequence is \times 2, \times 4, \times 6, \times 8, \times 10 5374 should be 5376

EXAMPLE 6 : In the following number series one of the numbers is wrong. Find out the wrong number.

- 3 2 3 6 12 37.5 115.5
- (a) 37.5 (b) 3
- (d) 2 (c) 6
- (e) 12
- Sol. (e) The series is as follows $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5 \dots$ Hence, 12 is wrong number in the seies, it should be 14.

EXAMPLE 7 : What should be the next number in the following number series?

| | | 6 | 42 | 294 | 2058 | 14406 ? |
|------------|--------|---|----|-----|------|---------|
| (a) | 100842 | | | | (b) | 72030 |
| (c) | 86436 | | | | (d) | 115248 |
| (0) | 120654 | | | | | |

- (e) 129654
- **Sol. (a)** $6 \times 7 = 42$ $42 \times 7 = 294$ $294 \times 7 = 2058$ $2058 \times 7 = 14406$
 - $14406 \times 7 = 100842$

EXAMPLE 8 : What should be the next number in the following number series?

| | | 20 | 33 | 50 | 69 | 92 ? |
|-----|-----|----|----|----|-----|------|
| (a) | 196 | | | (| (b) | 100 |
| | | | | | | |

| (c) | 169 | (d) | 144 |
|-----|-----|-----|-----|
| | | | |

(e) 121 TT.

| 901. | (e) | Here, | | | | | |
|-------------|-----|--------------|--|--|--|--|--|
| | | 20 + 13 = 33 | | | | | |

| 20 | 15 | 55 |
|------|------|-----|
| 33 + | 17 = | 50 |
| 50 + | 19 = | 69 |
| 69 + | 23 = | 92 |
| 92 + | 29 = | 121 |

EXAMPLE 9 : What should be the next number in the following number series?

- 5, 6, 8, 9, 11, (a) 15 (b) 12 (d) 20 (c) 17
- (e) None of these

| Sol. (b) | 5 L | 6 11 | 8 | 9 | | 12 |
|----------|--------|---------|-------|-------|----|----|
| | +1 | + | -2 | +1 | +2 | +1 |

EXAMPLE 10 : What should be the next number in the following number series?

- 35, 30, 25, 20, 15, 10,
- (a) 15 (b) 10 (d) 2
- (c) 5
- (e) None of these
- Sol. (c) Series is in descending order of 5.

EXERCISE

| 1 | What should come in place | re of the question mark (?) in the | 10 | 12 12 10 45 100 1170 2 |
|-----|---|---|-----|---------------------------|
| 1. | following number series? | te of the question mark (1) in the | 10. | 12 12 18 43 180 11/0 ? |
| | 3 3 12 108 2 43200 | | | (a) 13485 |
| | (a) 2700 | (b) 1728 | | (c) 15890 |
| | (c) 972 | (d) 432 | | (e) 12285 |
| | (e) None of these | (u) 152 | 11. | 22 23 27 36 52 77? |
| 2 | What should come in place | p_{2} of the question mark (2) in the | | (a) 111 |
| 2. | following number series? | te of the question mark (?) in the | | (c) 113 |
| | 8 20 50 125 ° | 7 781 25 | | (e) 115 |
| | (a) 300 | (b) 295 5 | 12. | 16 14 24 66 256 1270? |
| | (a) 300 (c) 315 | (d) 312.5 | | (a) 8564 |
| | (e) None of these | | | (c) 4561 |
| Dir | ections (Q. 3-7) : In the fo | llowing number series, a wrong | | (e) 6340 |
| nur | nber is given. Find out tha | at wrong number. | 13. | 6417, 5704, 4991, 4278, 2 |
| 3. | 2 11 38 197 1172 82 | 227 65806 | | (a) 2408 |
| | (a) 11 | (b) 38 | | (c) 7310 |
| | (c) 197 | (d) 1172 | | (e) 2139 |
| | (e) 8227 | | 14. | 3 7 13 ? 31 43 |
| 4. | 16 19 21 30 46 71 | 107 | | (a) 18 |
| | (a) 19 | (b) 21 | | (c) 23 |
| | (c) 30 | (d) 46 | | (e) None of these |
| | (e) 71 | | 15. | 250, 100, 40 ? 6.4, 2.56 |
| 5. | 7 9 16 25 41 68 10 | 7 173 | | (a) 16 |
| | (a) 107 | (b) 16 | | (c) 24 |
| | (c) 41 | (d) 68 | | (e) None of these |
| 6 | (e) 25 | 0.105 | 16. | 13 20 14 19 15 ? |
| 6. | 4 2 3.5 7.5 26.25 11 (a) 118 125 | .8.125 (b) 26.25 | | (a) 16 |
| | (a) 118.123 (c) 35 | (b) 26.25 (d) 2 | | (c) 21 |
| | (e) 7.5 | (u) 2 | | (e) 20 |
| 7. | 16 4 2 1.5 1.75 1.87 | 75 | 17 | 9 27 36 63 99 ? |
| | (a) 1.875 | (b) 1.75 | | (a) 151 |
| | (c) 1.5 | (d) 2 | | (a) 151 (c) 152 |
| | (e) 4 | | | (e) 152 (e) 157 |
| Dir | ections (Q. 8-28) :What she | ould come in place of the question | 18 | 7 26 63 124 215 2 |
| ma | rk (?) in the following nur $12 (5, 75, 12, 75, 27, 5)$ | nber series. | 10. | / 20 03 124 215 ? |
| 8. | 12 6.5 7.5 12.75 27.5 | /1.25 ? | | (a) 330 |
| | (a) 225.75 (c) 209.75 | (b) 216.75 (d) 236.75 | | (c) 342 |
| | (c) 209.75 (e) 249.75 | (u) 250.75 | 10 | (e) 339 |
| 9. | 16 24 36 54 81 121.5 | ? | 19. | /413 /422 7440 |
| | (a) 182.25 | (b) 174.85 | | (a) 7/464 |
| | (c) 190.65 | (d) 166.55 | | (c) /466 |
| | (e) 158.95 | | | (e) None of these |

| (a) | 13485 | (b) | 14675 |
|------|-------------------------|-------|-----------|
| (c) | 15890 | (d) | 16756 |
| (e) | 12285 | | |
| 22 2 | 23 27 36 52 77? | | |
| (a) | 111 | (b) | 109 |
| (c) | 113 | (d) | 117 |
| (e) | 115 | | |
| 16 1 | 4 24 66 256 1270? | | |
| (a) | 8564 | (b) | 5672 |
| (c) | 4561 | (d) | 7608 |
| (e) | 6340 | | |
| 641 | 7, 5704, 4991, 4278, 35 | 65, 2 | 2852? |
| (a) | 2408 | (b) | 2426 |
| (c) | 7310 | (d) | 7130 |
| (e) | 2139 | | |
| 3 7 | 7 13 ? 31 43 | | |
| (a) | 18 | (b) | 19 |
| (c) | 23 | (d) | 21 |
| (e) | None of these | | |
| 250, | 100,40?6.4,2.56 | | |
| (a) | 16 | (b) | 20 |
| (c) | 24 | (d) | 12 |
| (e) | None of these | | |
| 13 2 | 20 14 19 15 ? | | |
| (a) | 16 | (b) | 18 |
| (c) | 21 | (d) | 17 |
| (e) | 20 | | |
| 9 27 | 7 36 63 99 ? | | |
| (a) | 151 | (b) | 167 |
| (c) | 152 | (d) | 162 |
| (e) | 157 | | |
| 7 26 | 5 63 124 215 ? | | |
| (a) | 330 | (b) | 321 |
| (c) | 342 | (d) | 356 |
| (e) | 339 | | |
| 7413 | 3 7422 7440 | ? | 7503 7548 |
| (a) | 7464 | (b) | 7456 |
| (c) | 7466 | (d) | 7477 |
| () | NI C.(1 | | |

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| 20. | 4 16 36 64 100 ? | |
|-----|-----------------------------|----------------------------------|
| | (a) 120 | (b) 180 |
| | (c) 136 | (d) 144 |
| | (e) None of these | |
| 21. | 12 33 96 ? 852 2553 | |
| | (a) 285 | (b) 288 |
| | (c) 250 | (d) 384 |
| | (e) None of these | |
| 22. | 70000 14000 2800 ? 11 | 2 22.4 |
| | (a) 640 | (b) 420 |
| | (c) 560 | (d) 540 |
| | (e) None of these | |
| 23. | 102 104 99 97 106 ? | |
| | (a) 96 | (b) 95 |
| | (c) 100 | (d) 94 |
| | (e) None of these | |
| 24. | 0 5 18 43 84 | 145 ? |
| | (a) 220 | (b) 240 |
| | (c) 260 | (d) 280 |
| | (e) None of these | |
| 25. | 10 17 48 165 688 | 3475 ? |
| | (a) 27584 | (b) 25670 |
| | (c) 21369 | (d) 20892 |
| | (e) None of these | |
| 26. | 1 3 24 360 8640 30 | 2400 ? |
| | (a) 14525100 | |
| | (b) 154152000 | |
| | (c) 14515200 | |
| | (d) 15425100 | |
| | (e) None of these | |
| 27. | 12 14 32 102 416 2 | 090 ? |
| | (a) 15522 | (b) 12552 |
| | (c) 13525 | (d) 17552 |
| | (e) None of these | |
| 28. | 10 25 50 75 75 | 37.5 ? |
| | (a) 4.375 | (b) 3.2375 |
| | (c) 4.6275 | (d) 3.575 |
| | (e) None of these | |
| Dir | ections (Q. 29-33) : In the | following number series only one |
| nun | nber is wrong. Find out the | wrong number. |
| 29. | 4 6 18 49 201 101 | 1 |

| (a) | 1011 | (b) | 201 |
|-----|---------------|-----|-----|
| (c) | 18 | (d) | 49 |
| (e) | None of these | | |

| 30. | 48 72 108 162 243 | 366 | |
|-----|--------------------|-----|------|
| | (a) 72 | (b) | 108 |
| | (c) 162 | (d) | 243 |
| | (e) None of these | | |
| 31. | 2 54 300 1220 3674 | 735 | 0 |
| | (a) 3674 | (b) | 1220 |
| | (c) 300 | (d) | 54 |
| | (e) None of these | | |
| 32. | 8 27 64 125 218 34 | 13 | |
| | (a) 27 | (b) | 218 |
| | (c) 125 | (d) | 343 |
| | (e) None of these | | |
| 33. | 19 68 102 129 145 | 154 | |
| | (a) 154 | (b) | 129 |
| | (c) 145 | (d) | 102 |
| | (e) None of these | | |
| | | | |

Directions (Q. 34-53): What should come in place of the question mark (?) in the following number series?

| 34. | 10 14 | 4 25 | 55 14 | 0 (?) | | |
|---|--|--|--|---|---|--|
| | (a) 3 | 86 | | (| b) | 398 |
| | (c) 3 | 88 | | (| d) | 396 |
| | (e) N | lone of | these | | | |
| 35. | 119 | 131 1: | 55 191 | 239 | (?) | |
| | (a) 2 | 89 | | (| b) | 290 |
| | (c) 2 | 79 | | (| d) | 280 |
| | (e) N | lone of | these | | | |
| 36. | 11 57 | 7 149 | 333 | 701 (2 | ?) | |
| | (a) 1 | 447 | | (| b) | 1347 |
| | (c) 1 | 368 | | (| d) | 1437 |
| | (e) N | lone of | these | | | |
| | | | | | (2) | |
| 37. | 697 5 | 553 43 | 53 389 | 353 | (?) | |
| 37. | 697 ± | 553 4: 28 | 53 389 |) 353 (| (?) b) | 337 |
| 37. | 697 3 (a) 3 (c) 3 | 553 4: 28 62 | 53 389 |) 353 ((| (?) b) d) | 337 338 |
| 37. | 697 3 (a) 3 (c) 3 (e) N | 553 4: 28 62 None of | 53 389 ?these |) 353 ((| (?) b) d) | 337 338 |
| 37. 38. | 697 4 (a) 3 (c) 3 (e) N 336 2 | 553 4: 28 62 Jone of 224 10 | 53 389 These 58 140 |) 353 ((((| (?) b) d) (?) | 337 338 |
| 37. 38. | 697 (2) (a) 3 (c) 3 (e) N 336 2 (a) 1 | 553 4: 28 62 Vone of 224 10 19 | 53 389 Sthese 58 140 |) 353 ((() 126 ((| (?) b) d) (?) b) | 337338118 |
| 37. 38. | 697 4 (a) 3 (c) 3 (e) N 336 2 (a) 1 (c) 1 | 553 4: 28 62 None of 224 10 19 16 | 53 389 `these 58 140 |) 353 ((() 126 ((| (?) b) d) (?) b) d) | 337338118121 |
| 37. 38. | 697 (a) 3 (c) 3 (e) N 336 (a) 1 (c) 1 (e) N | 553 4: 28 62 Jone of 224 10 19 16 Jone of | 53 389 [°] these 58 140 [°] these |) 353 ((() 126 () (| (?) b) d) (?) b) d) | 337338118121 |
| 37.38.39. | 697 5 (a) 3 (c) 3 (e) N 336 2 (a) 1 (c) 1 (e) N 588 58 | 553 4: 28 62 Jone of 224 10 19 16 Jone of 87 583 | 53 389 these 58 140 these 574 55 |) 353 ((() 126 ((; ; ; ; ; ; ; ; ; ; ; ; ; ; | (?) b) d) (?) b) d) 7 | 337338118121 |
| 37.38.39. | 697 (a) 3 (c) 3 (e) N 336 (a) 1 (c) 1 (e) N 588 58 (a) 5 | 553 4: 28 62 Jone of 224 10 19 16 Jone of 87 583 45 | 53 389 5 these 58 140 5 these 574 55 |) 353 ((() 126 ((;8 ? 49 () | (?) b) d) (?) b) d) 7 b) | 337338118121543 |
| 37.38.39. | 697 697 697 60 7 60 7 7 60 7 7<td>553 4: 28 62 None of 224 10 19 16 None of 87 583 45 51</td><td>53 389 these 58 140 these 574 55</td><td>) 353 ((() 126 ((;8 ? 49) (((</td><td>(?) b) d) (?) b) d) 7 b) d)</td><td> 337 338 118 121 543 557 </td> | 553 4: 28 62 None of 224 10 19 16 None of 87 583 45 51 | 53 389 these 58 140 these 574 55 |) 353 ((() 126 ((;8 ? 49) (((| (?) b) d) (?) b) d) 7 b) d) | 337 338 118 121 543 557 |

| Numb | er serie | es — | | | | | | |
|------|------------|--------------|-------|-------|-------|------|-------|----------|
| 40. | 64 | 54 | 69 | 49 | 74 | 44 | ? | |
| | (a) | 89 | | | | | (b) | 69 |
| | (c) | 59 | | | | | (d) | 99 |
| | (e) | No | ne o | f the | se | | | |
| 41. | 400 | 0 20 | 08 1 | 012 | ? 26 | 5 14 | 0.5 7 | 78.25 |
| | (a) | 506 | | | | | (b) | 514 |
| | (c) | 520 |) | | | | (d) | 512 |
| | (e) | No | ne o | f the | se | | | |
| 42. | 55 | 15 | 75 | ? 4 | 725 | 519 | 75 | |
| | (a) | 520 |) | | | | (b) | 450 |
| | (c) | 525 | | | | | (d) | 300 |
| | (e) | No | ne o | f the | se | | | |
| 43. | 52 | 26 | 26 | 39 | 78 | ? | 585 | |
| | (a) | 195 | | | | | (b) | 156 |
| | (c) | 234 | | | | | (d) | 117 |
| | (e) | No | ne o | f the | se | | | |
| 44. | 29,2 | 23, ?, | , 17, | 13, 1 | 1,7 | | | |
| | (a) | 19 | | | | | (b) 2 | 21 |
| | (c) | 23 | | | | | (d) 2 | 27 |
| | (e) | No | ne o | f the | se | | | |
| 45. | 8, 1: | 5,28 | , 53, | ? | | | | |
| | (a) | 106 | | | | | (b) 9 | 98 |
| | (c) | 100 |) | 0.1 | | | (d) 1 | 02 |
| 10 | (e) | No: | ne o | f the | se | 50 | | |
| 46. | 24,4 | 49, ?, 51 | ,94, | 15, 3 | 1, 59 | , 38 | | 2 |
| | (a) | 31 77 | | | | | (0) |)5)5 |
| | (e) (e) | No | ne o | f the | se | | (u) 2 | , , |
| | (-) | 1.0 | | | | | | |

| 47. | 5, 10, 13, 26, 29, 58, ?, 122 | | |
|-----|-------------------------------|-------|----|
| | (a) 60 | (b) 6 | 51 |
| | (c) 111 | (d) 9 | 91 |
| | (e) None of these | | |
| 48. | 2, 3, 10, 15, 26, ?, 55 | | |
| | (a) 32 | (b) 3 | 3 |
| | (c) 34 | (d) 3 | 35 |
| | (e) None of these | | |
| 49. | 2, 4, ?, 16, 32 | | |
| | (a) 6 | (b) | 10 |
| | (c) 8 | (d) | 12 |
| | (e) None of these | | |
| 50. | 0, 7, 26, ?, 124, 215 | | |
| | (a) 37 | (b) | 51 |
| | (c) 63 | (d) | 88 |
| | (e) None of these | | |
| 51. | 4, 15, 16, ?, 36, 63, 64 | | |
| | (a) 25 | (b) 3 | 80 |
| | (c) 32 | (d) | 35 |
| | (e) None of these | | |
| 52. | 1, 8, 9, ?, 25, 216, 49 | | |
| | (a) 60 | (b) | 64 |
| | (c) 70 | (d) | 75 |
| | (e) None of these | | |
| 53. | 336, 210, 120, ?, 24, 6, 0 | | |
| | (a) 40 | (b) | 50 |
| | (c) 60 | (d) | 70 |
| | (e) None of these | | |
| | | | |

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| Answer Key | | | | | | | | | |
|------------|-----|----|-----|----|-----|----|-----|----|-----|
| 1 | (b) | 12 | (d) | 23 | (b) | 34 | (c) | 45 | (d) |
| 2 | (d) | 13 | (e) | 24 | (e) | 35 | (e) | 46 | (d) |
| 3 | (d) | 14 | (d) | 25 | (d) | 36 | (d) | 47 | (b) |
| 4 | (a) | 15 | (a) | 26 | (c) | 37 | (b) | 48 | (d) |
| 5 | (d) | 16 | (b) | 27 | (b) | 38 | (a) | 49 | (c) |
| 6 | (c) | 17 | (d) | 28 | (e) | 39 | (e) | 50 | (c) |
| 7 | (b) | 18 | (c) | 29 | (c) | 40 | (e) | 51 | (d) |
| 8 | (b) | 19 | (e) | 30 | (e) | 41 | (b) | 52 | (b) |
| 9 | (a) | 20 | (d) | 31 | (a) | 42 | (c) | 53 | (c) |
| 10 | (e) | 21 | (a) | 32 | (b) | 43 | (a) | | |
| 11 | (c) | 22 | (c) | 33 | (d) | 44 | (a) | | |

ANSWERS & EXPLANATIONS

- 1. (b) The pattern of the series is as follows $\times 1^2$, $\times 2^2$, $\times 3^2$, $\times 4^2$, $\times 5^2$ Hence, required number = 1728.
- (d) The pattern of the series is as follows : 2. $8 \times 2.5 = 20$
 - $20 \times 2.5 = 50$
 - $50 \times 2.5 = 125$
 - \therefore ? = 125 × 2.5 = 312.5
- (d) The series is based on the following pattern: 3. $2 \times 3 + 5 = 11$

$$11 \times 4 - 6 = 38$$

- $38 \times 5 + 7 = 197$
- $197 \times 6 8 = 1174$; not 1172 $1174 \times 7 + 9 = 8227$ $8227 \times 8 - 10 = 65806$ Clearly, 1172 is the wrong number and it should be 8. (b) The given number series is based on the following replaced by 1174.
- (a) The series is based on the following pattern : 4.
 - $16 + 1^2 = 17$; not 19 $17 + 2^2 = 21$ $21 + 3^2 = 30$ $30 + 4^2 = 46$ $46 + 5^2 = 71$ $71 + 6^2 = 107$ Clearly, 19 should replaced by 17. (d) The series is based on the following pattern : 7 + 9 = 16
 - 9 + 16 = 2516 + 25 = 4125 + 41 = 66; 68

5.

- 41 + 66 = 107
- 66 + 107 = 173
- Clearly, 68 should be replaced by 66

- 6 (c) The series is based on the following pattern $4 \times .5 = 2$ $2 \times 1.5 = 3$; not 3.5
 - $3 \times 2.5 = 7.5$ $7.5 \times 3.5 = 26.25$ $26.25 \times 4.5 = 118.125$ Clearly, 3.5 should be replaced by 3.
- 7. (b) The series is based on the following pattern: $16 \times 0.25 = 4$ $4 \times 0.50 = 2$ $2 \times 0.75 = 1.5$ $1.5 \times 1.00 = 1.5$; not 1.75 $1.5 \times 1.25 = 1.875$ Clearly, 1.75 should be replaced by 1.5.
 - pattern: $12 \times 0.5 + 0.5 = 6.5$ $6.5 \times 1 + 1 = 7.5$ $7.5 \times 1.5 + 1.5 = 12.75$ $12.75 \times 2 + 2 = 27.5$ $27.5 \times 2.5 + 2.5 = 71.25$ \therefore ? = 71.25 × 3 + 3 = 213.75 + 3 = 216.75Hence, 216.75 will replace the question mark.
- 9. (a) The given number series is based on the following pattern:

$$16 \times \frac{3}{2} = 8 \times 3 = 24$$
$$24 \times \frac{3}{2} = 12 \times 3 = 36$$
$$36 \times \frac{3}{2} = 18 \times 3 = 54$$

$$54 \times \frac{3}{2} = 81$$

 $81 \times \frac{3}{2} = 121.5$

$$\therefore$$
? = 121.5 $\times \frac{3}{2}$ = 182.25

Hence, the number 182.25 will replace the question mark.

10. (e) The pattern of series is as follows :

 $12 \times 1 = 12,$ $12 \times 1.5 = 18, [0.5 + 1 = 1.5]$ $18 \times 2.5 = 45, [1 + 1.5 = 2.5]$ $45 \times 4 = 180, [1.5 + 2.5 = 4]$ $180 \times 6.5 = 1170, [2.5 + 4 = 6.5]$ $\therefore ? = 1170 \times 10.5 = 12285$ Hence, 12285 will replace the question mark.

11. (c) The given number series is based on the following pattern:

$$22 + 1^{2} = 22 + 1 = 23$$

$$23 + 2^{2} = 23 + 4 = 27$$

$$27 + 3^{2} = 27 + 9 = 36$$

$$36 + 4^{2} = 36 + 16 = 52$$

$$52 + 5^{2} = 52 + 25 = 77$$

$$\therefore ? = 77 + 6^{2}$$

$$= 77 + 36 = 113$$

- 12. (d) The given number series is based on the following pattern:
 - $16 \times 1 2 = 14$ $14 \times 2 - 4 = 24$ $24 \times 3 - 6 = 66$ $66 \times 4 - 8 = 256$ $256 \times 5 - 10 = 1270$ $\therefore ? = 1270 \times 6 - 12$ = 7620 - 12 = 7608

Hence, 7608 will replace the question mark. 13. (e) The given number series is based on the following

> pattern: 6417 - 713 = 5704 5704 - 713 = 4991 4991 - 713 = 4278 4278 - 713 = 3565 3565 - 713 = 2852 ? = 2852 - 713 = 2139

Hence, 2139 will replace the question mark.

- 14. (d) The given number series is based on the following pattern: 7 + 6 = 13
 -

13 + 8 = 21

- 21 + 10 = 31
- 31 + 12 = 43

Hence, the number 21 will replace the question mark.

15. (a) The given number series is based on the following pattern:

 $250_{\div 2.5}$ $100_{\div 2.5}$ $40_{\div 2.5}$ $16_{\div 2.5}$ $6.4_{\div 2.5}$ 2.56Hence, the number 16 will replace the question mark. 16. (b) 13 20 14 19 15 ?

Hence, question mark (?) should be replaced by 18.

17. (d) Here,

9+27=36 27+36=63 36+63=9963+99=162.

- 18. (c) $7 = 2^{3} 1$ $26 = 3^{3} - 1$ $63 = 4^{3} - 1$ $124 = 5^{3} - 1$ $215 = 6^{3} - 1$ $2 = 7^{3} - 1 = 342$
- 19. (e) The series is as follows + 9, + 18, + 27, +36, + 45 Hence, ? = 7440 + 27 = 7467
- 20. (d) The series is as follows $(2)^2, (4)^2, (6)^2, (8)^2, (10)^2, (12)^2$ Hence, $? = (12)^2 = 144$
- 21. (a) The series is as follows: $\times 3 3$ Hence, $? = 96 \times 3 - 3 = 285$

23. (b) The series is as follows

24. (e)

$$0 \underbrace{5}_{+5} \underbrace{18}_{+8} \underbrace{43}_{+25} \underbrace{84}_{+41} \underbrace{145}_{+61} \underbrace{230}_{+85} \\ \underbrace{+8}_{+12} \underbrace{+16}_{+16} \underbrace{+20}_{+24} \underbrace{+24}_{+24} \\ \end{array}$$

- 25. (d) The series is as follows $\times 1 + (7 \times 1), \times 2 + (7 \times 2), \times 3 + (7 \times 3), \times 4 + (7 \times 4),$ $\times 5 + (7 \times 5), \times 6 + (7 \times 6)...$ Hence, ? = 3475 × 6 + (7 × 6) = 20892
- 26. (c) The series is as follows $\times 3, \times 8, \times 15, \times 24, \times 35, \times 48$ Hence, ? = 302400 × 48 = 14515200
- 27. (b) The series is as follows $\times 1 + 2, \times 2 + 4, \times 3 + 6, \times 4 + 8, \times 5 + 10, \times 6 + 12...$ Hence, $? = 2090 \times 6 + 12 = 12552$
- 28. (e) The series is as follows $\times 2.5, \times 2, \times 1.5, \times 1, \times 0.5, \times 0$ Hence, $? = 37.5 \times 0 = 0$
- 29. (c) The series is $\times 1 + 2, \times 2 + 3, \times 3 + 4, \times 4 + 5, \times 5 + 6$ The wrong number is 18. It should be $6 \times 2 + 3 = 15$

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30. (e) The series is $\times 1.5$ The wrong number is 366 It should be $243 \times 1.5 = 364.5$ The series is 31. (a) $\times 6 + 42, \times 5 + 30, \times 4 + 20, \times 3 + 12, \times 2 + 6,$ The wrong number is 3674 It should be $1220 \times 3 + 12 = 3672$ 32. (b) The series is $(2)^3$, $(3)^3$, $(4)^3$, $(5)^3$, $(6)^3$, $(7)^3$, The wrong number is 218 It should be $(6)^3 = 216$ 33. (d) The series is $+(7)^2$, $+(6)^2$, $+(5)^2$, $+(4)^2$, $+(3)^2$ The wrong number is 102. It should be $68 + (6)^2 = 104$ 34. (c) The series is as follows: $\times 3 - 16, \times 3 - 17, \times 3 - 20, \times 3 - 25, \times 3 - 32$ Hence, $? = 140 \times 3 - 32 = 388$ 35. (e) The series is as follows: $+(12 \times 1), +(12 \times 2), +(12 \times 3), +(12 \times 4), +(12 \times 5)$ Hence, $? = 239 + (12 \times 5) = 299$ 36. (d) The series is as follows: $\times 2 + 35$ Hence, $? = 701 \times 2 + 35 = 1437$ 37. (b) The series is as follows: -12^2 , -10^2 , -8^2 , -6^2 , -4^2 Hence, $? = 353 - 4^2 = 337$ 38. (a) The series is as follows: -112, -56, -28, -14, -7Hence, ? = 126 - 7 = 11939. (e) The series is as follows: -1^2 , -2^2 , -3^2 , -4^2 , -5^2 , -6^2 Hence, $? = 558 - 5^2 = 533$ 40. (e) The series is as follows:

$$64 + 5 = 69;$$

$$69 + 5 = 74;$$

$$74 + 5 = 79$$

$$54 - 5 = 49;$$

49 - 5 = 44

- 41. (b) The series is as follows: ÷ 2 + 8 Hence, ? = 1012 ÷ 2 + 8 = 514
 42. (c) The series is as follows:
 - (c) The series is as follows: $\times 1, \times 3, \times 5, \times 7, \times 9, \times 11$ Hence, ? = 75 × 7 = 525
- 43. (a) The series is as follows:

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

Hence, ? = 78 × $2\frac{1}{2}$ = 195

- 44. (a) This is a series of prime numbers :
- 45. (d) Let x = 8then 15 = 2x - 1 = y28 = 2y - 2 = z53 = 2z - 3 = mNext term in the pattern should be $2m - 4 = 2 \times 53 - 4$ = 102
- 46. (d) It is a combination of two series, namely 24, 49, ?, 94; and 15, 31, 59, 58 The two series correspond to x, (2x+1), (4x-1), (4x-2)Hence the missing term is 4x 24-1=95
- 47. (b) Add 3 after doubling the previous number.
- 48. (d) The series exhibits the pattern of $n^2 + 1$, $n^2 1$, alternatively, *n* taking values 1, 2.....1
- 49. (c) The terms exhibit the pattern 2^1 , 2^2 , 2^3 and so on.
- 50. (c) Try the pattern $n^3 1$. n = 1, 2,
- 51. (d) Pattern is 2^2 , $4^2 1$, 4^2 , $6^2 1$, 6^2 and so on.
- 52. (b) Can you see that the pattern is $1^2, 2^3, 3^2, 4^3, 5^2, 6^3, 7^2$
- 53. (c) Note that
 - $0 = 1^{3} 1$ $6 = 2^{3} - 2$ $24 = 3^{3} - 3$
