BANK EXAMS

QUANTITATIVE APTITUDE

Number Series

Number series tests present numerical sequences that follow a logical rule which is based on elementary arithmetic. An initial sequence is given from which the rule is to be deduced. You are then asked to predict the next number or missing number that obeys the rule. Some times you need to find out the wrong number in that series which doesn't follow that rule. To find the rule the following tips will be helpful.

1. Try to identify numbers

They may be even numbers, odd numbers, prime numbers, squares, cubes etc., or some times they may be more / less than them

e.g.: 26, 37, 50, 65, 82, ...

Here the numbers in the series are $5^2 + 1$, $6^2 + 1$, $7^2 + 1$, $8^2 + 1$ and $9^2 + 1$. The next number will be $10^2 + 1 = 101$

2. Examine the difference between adjacent numbers.

The difference between two consecutive numbers may be constant, continuously increasing / decreasing, prime numbers, squares, or cubes etc

e.g.: 8, 13, 18, 23, 28, ...

Here difference between the adjacent numbers is 5. The next number is 28 + 5 = 33

e.g.: 25, 30, 37, 48, 61, ...

Here the differences between the adjacent numbers are 5, 7, 11, and 13 which are prime numbers. The next number will be 61 + 17 = 78

3. Observe whether there is a multiplication or division pattern between two adjacent numbers.

e.g.: 8, 16, 48, 192, 960, ...

Here the relation between the adjacent numbers is × 2, × 3, × 4 and × 5. The next number will be 960 × 6 = 5760

4. See if you can find a rule that involves using two or more basic arithmetic functions (+, –, ÷, ×). In the below series, the functions alternate in an orderly fashion.

e.g.: 5, 7, 21, 23, 69, 71, ...

Here the relation between the adjacent numbers is + 2, × 3, + 2, × 3 and + 2. The next number will be 71 × 3 = 213

5. Alternate Series

Some times two number series are given in a single sequence. In odd places one series and even places another series.

e.g.: 7, 5, 9, 15, 12, 45, 16, 135, ...

Here, Odd places numbers are 7, 9, 12, 16, ...

Differences between the numbers are 2, 3, and 4.

The next number will be 16 + 5 = 21

Even places numbers are 5, 15, 45, and 135

The relation between the numbers is × 3.

Exercise

Directions (Q.1 – 5): What should come in place of question mark (?) in the following number series questions?

1. 2 1 1 1.5 3 ?

1) 7.5 2) 6 3) 5 4) 4.5

5) 2.5

2. 51 66 83 102 123 ?
1) 127 2) 146 3) 171 4) 85
5) None of these

3. 4 24 84 264 804 ?
1) 2622 2) 2464 3) 2414 4) 2424
5) 2484

4. 24 36.2 30.4 33.6 32 ?
1) 32.8 2) 36.2 3) 34.6 4) 38.8
5) None of these

5. 6 9 13.5 20.25 30.375 ?
1) 45.7585 2) 46.7520 3) 28.7345 4) 45.5625
5) 49.7525

Directions (Q.6 – 10): In each of the following questions, a number series is given. One number is missing. What is that missing number?

6. 2 ? 19 45 99 209 431
1) 14 2) 7 3) 3 4) 12
5) 9

7. ? 4 6 12 30 90 315
1) 2 2) 3 3) 2.5 4) 4
5) None

8. 48 62 78 96 116 ? 162
1) 150 2) 124 3) 142 4) 138
5) None of these

9. 54 35 ? 3 –10 –21 –30
1) 18 2) 24 3) 28 4) 12
5) None

10. 11 12 20 43 ? 339.5 1194.25
1) 136 2) 124 3) 111.5 4) 225
5) None of these

Directions (Q.11 – 15): In each of the following number series questions a number is wrong. You have to identify that number.

11. 4 6 9 13.5 20 30.375
1) 13.5 2) 30.375 3) 9 4) 6
5) 20

12. 11 13 30 99 412 2085
1) 11 2) 30 3) 99 4) 2085
5) 13

13. 3 4 10 32 155 924
1) 32 2) 155 3) 924 4) 10
5) 4

14. 208 214 232 262 302 358
1) 358 2) 302 3) 262 4) 208
5) 232

15. 156 170 192 226 280 364

1) 280 2) 156 3) 192 4) 226

5) 364

Directions(Q.16 – 20): 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 original series and answer the questions that follow the series.

16. 3 732 1244 1587 1803 1928

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

What will come in place of (d)?

1) 1009 2) 1105 3) 990 4) 1805

5) None of these

17. 16 4 2 1.5 1.5 1.875

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

What will come in place of (b)?

1) 1 2) 0.5 3) 1.5 4) 8

5) None

18. 3 19 99 499 2499 12499

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

What will come in place of (c)?

1) 74 2) 14 3) 374 4) 1874

5) None of these

19. 14 19 12 23 10 27

11 (a) (b) (c) (d) (e)

What will come in place of (b)?

1) 19 2) 20 3) 29 4) 9

5) 24

20. 24 144 180 900 925 3700

17 (a) (b) (c) (d) (e)

What will come in place of (e)?

1) 2860 2) 138 3) 3820 4) 690

5) None of these

Directions (Q.21 – 25): In each of the following questions, a number is wrong. You have to identify that number.

21. 7.2 32 156 776 3876 19276

1) 32 2) 19276 3) 156 4) 7.2

5) 776

22. 328 340 360 412 508 700

1) 360 2) 700 3) 412 4) 328

5) 340

23. 12 18 45 156.5 708.75 3898.125

1) 708.75 2) 45 3) 12 4) 156.5

5) 18

24. 0.7 1.1 1.9 3.1 4.7 6.9

1) 6.9 2) 1.9 3) 3.1 4) 0.7

5) None of these

25. 3399 1131 375 125 39 11

1) 39 2) 11 3) 375 4) 125

5) 3399

KEY

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

Explanations

1. $2 \times 0.5 = 1$

$1 \times 1 = 1$

$1 \times 1.5 = 1.5$

$1.5 \times 2 = 3$

$3 \times 2.5 = 7.5$

2. $7^2 + 2 = 51$

$8^2 + 2 = 66$

$9^2 + 2 = 83$

$10^2 + 2 = 102$

$11^2 + 2 = 123$

$12^2 + 2 = 146$

3. $4 \times 3 + 12 = 24$

$24 \times 3 + 12 = 84$

$84 \times 3 + 12 = 264$

$264 \times 3 + 12 = 804$

$804 \times 3 + 12 = 2424$

4. $24 + 12.8 = 36.8$

$36.8 - 6.4 = 30.4$

$30.4 + 3.2 = 33.6$

$33.6 - 1.6 = 32$

$32 + 0.8 = 32.8$

5. $6 \times 3 \div 2 = 9$

$9 \times 3 \div 2 = 13.5$

$13.5 \times 3 \div 2 = 20.25$

$20.25 \times 3 \div 2 = 30.375$

$30.375 \times 3 \div 2 = 45.5625$

6. $2 \times 2 + 3 = 7$

$7 \times 2 + 5 = 19$

$19 \times 2 + 7 = 45$

$45 \times 2 + 9 = 99$

$99 \times 2 + 11 = 209$

$209 \times 2 + 13 = 431$

7. $4 \times 1 = 4$

$4 \times 1.5 = 6$

$6 \times 2 = 12$

$12 \times 2.5 = 30$

$30 \times 3 = 90$

$90 \times 3.5 = 315$

8. $7^2 - 1$, $8^2 - 2$, $9^2 - 3$, $10^2 - 4$, $11^2 - 5$, $12^2 - 6$, $13^2 - 7$

9. $54 - 19 = 35$

$35 - 17 = 18$

$18 - 15 = 3$

$3 - 13 = -10$

$-10 - 11 = -21$

$-21 - 9 = -30$

10. $11 \times 1 + 1 = 12$

$12 \times 1.5 + 2 = 20$

$20 \times 2 + 3 = 43$

$43 \times 2.5 + 4 = 111.5$

$111.5 \times 3 + 5 = 339.5$

$339.5 \times 3.5 + 6 = 1194.25$

11. $4 \times 1.5 = 6$

$6 \times 1.5 = 9$

$9 \times 1.5 = 13.5$

$13.5 \times 1.5 = 20.25$

$20.25 \times 1.5 = 30.375$

12. $12 \times 1 + 1 = 13$

$13 \times 2 + 4 = 30$

$30 \times 3 + 9 = 99$

$99 \times 4 + 16 = 412$

$412 \times 5 + 25 = 2085$

13. $3 \times 2 - 2 = 4$

$4 \times 3 - 3 = 9$

$9 \times 4 - 4 = 32$

$32 \times 5 - 5 = 155$

$155 \times 6 - 6 = 924$

14. $208 + 6 = 214$

$214 + 18 = 232$

$232 + 30 = 262$

$262 + 42 = 304$

$304 + 54 = 358$

15. $156 + 14 = 170$

$170 + 14 + 8 = 192$

$192 + 22 + 12 = 226$

$226 + 34 + 20 = 280$

$280 + 54 + 32 = 366$

16. The difference between the numbers are perfect cubes

$\therefore$ required number in (d) position is 1805

17. $16 \times 0.25 = 4$

$4 \times 0.5 = 2$

$2 \times 0.75 = 1.5$

$1.5 \times 1 = 1.5$

$1.5 \times 1.25 = 1.875$

Required nummber is

$4 \times 0.25 = 1$

$1 \times 0.5 = 0.5$

18. $3 \times 5 + 4 = 19$

$19 \times 5 + 4 = 99$

$99 \times 5 + 4 = 499$

$499 \times 5 + 4 = 2499$

$2499 \times 5 + 4 = 12499$

Required number is

$2 \times 5 + 4 = 14$

$14 \times 5 + 4 = 74$

$74 \times 5 + 4 = 374$

19. $14 + 5 = 19$

$19 - 7 = 12$

$12 + 11 = 23$

$23 - 13 = 10$

$10 + 17 = 27$

Required number is

$11 + 5 = 16$

$16 - 7 = 9$

Short cut: Vertical difference is always constant

20. $24 \times 6 = 144$

$144 + 6^2 = 180$

$180 \times 5 = 900$

$900 + 5^2 = 925$

$925 \times 4 = 3700$

Required number is

$17 \times 6 = 102$

$102 + 36 = 138$

$138 \times 5 = 690$

$690 + 25 = 715$

$715 \times 4 = 2860$

21. $7.2 \times 5 - 4 = 32$

$32 \times 5 - 4 = 156$

$156 \times 5 - 4 = 776$

$776 \times 5 - 4 = 3876$

$3876 \times 5 - 4 = 19376$

22. $328 + 12 = 340$

$340 + 24 = 364$

$364 + 48 = 412$

$412 + 96 = 508$

508 + 192 = 700

23. 12 × 1.5 = 18

18 × 2.5 = 45

45 × 3.5 = 157.5

157.5 × 4.5 = 708.75

708.75 × 5.5 = 3898.125

24. 0.7 + 0.4 = 1.1

1.1 + 0.8 = 1.9

1.9 + 1.2 = 3.1

3.1 + 1.6 = 4.7

4.7 + 2 = 6.7

25. 3399 ÷ 3 – 2 = 1131

1131 ÷ 3 – 2 = 375

375 ÷ 3 – 2 = 123

123 ÷ 3 – 2 = 39

39 ÷ 3 – 2 = 11

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