

SERIES

Teacher's Note • IQ / Reasoning for Officer Cadet Entrance

A series is a sequence of letters, numbers, or both arranged according to a definite rule.

The main skill is to observe the relationship between consecutive terms and identify the rule.

For Officer Cadet entrance preparation, series questions test quick observation, calculation, pattern recognition, and logical thinking.

TEACHER TIP

Check simple operations first: $+$, $-$, $\times$, $\div$. If the pattern is not constant, check whether the differences or operations are increasing.

4, 8, 12, 16, ?

+4 each time

Answer: 20

5, 7, 11, 17, 25, ?

+2, +4, +6, +8, +10

Answer: 35

NUMBER SERIES

1. Finding the Missing Number

A number series contains one missing term. Students must discover the pattern

and place the correct number in the missing position.

STEP 1 Write the differences between consecutive terms.

STEP 2 Check whether the difference is constant or changing.

STEP 3 Test multiplication, division, squares, cubes, or alternating rules if needed.

STEP 4 Verify the rule across the whole series before choosing the answer.

12, 17, 22, 27, ?

same addition: +5

Answer: 32

3, 6, 12, 24, ?

same multiplication: $\times 2$

Answer: 48

COMMON NUMBER PATTERNS

Addition, subtraction, multiplication and mixed operations

1. Same-number addition: the same number is added each time.
2. Increasing addition: the added numbers increase step by step.
3. Same-number subtraction: the same number is subtracted each time.
4. Increasing subtraction: the subtracted numbers increase step by step.
5. Same-number multiplication: each term is multiplied by the same number.
6. Mixed operation: multiplication and addition/subtraction may be combined.

Write the operation above the arrows. This makes the pattern visible and reduces mistakes.

7, 10, 14, 19, 25, ?

+3, +4, +5, +6, +7

Answer: 32

50, 45, 39, 32, 24, ?

-5, -6, -7, -8, -9

Answer: 15

SPECIAL NUMBER SERIES

Squares, cubes and alternating patterns

Some series are based on familiar number forms.

SQUARE SERIES $\Rightarrow$ 1, 4, 9, 16, 25, ...

CUBE SERIES $\Rightarrow$ 1, 8, 27, 64, 125, ...

For difficult questions, split the series into odd and even positions.

Sometimes two simple sequences are interwoven to make one series.

TEACHER TIP

Ask students to separate odd-position and even-position terms when one simple rule does not fit the whole sequence.

1, 4, 9, 16, 25, ?

$1^2, 2^2, 3^2, 4^2, 5^2, 6^2$

Answer: 36

2, 5, 10, 17, 26, ?

$1^2+1, 2^2+1, 3^2+1, \dots$

Answer: 37

FINDING THE WRONG NUMBER

When one term breaks the rule

In a wrong-number series, all terms follow a pattern except one term.

The task is to identify the term that does not belong.

METHOD

- Find a likely rule using differences or operations.
- Test the rule from the beginning.
- Locate the first term that breaks the pattern.
- Recheck the corrected sequence.

Do not choose a number only because its size looks unusual. Use a clear rule.

5, 10, 15, 20, 26, 30

+5 each time

Answer: 26 is wrong; it should be 25

3, 6, 12, 24, 50, 96

×2 each time

Answer: 50 is wrong; it should be 48

LETTER & ALPHANUMERIC SERIES

Type 2: Letter Series • Type 3: Alpha-Numeric Series

LETTER SERIES

Letters may move forward or backward through the alphabet.

Example: A, C, E, G, ... $\boxtimes$ +2 letters each time.

ALPHANUMERIC SERIES

Letters and numbers appear together. Treat the letter pattern and number

pattern separately whenever possible.

MIXED SERIES

A series may contain more than one part. Odd and even positions can form

separate sub-series.

FREQUENCY / CAPITAL-SMALL LETTER SERIES

Some questions depend on letter frequency, position, or a repeating

capital/small-letter arrangement.

A, D, G, J, ?

move +3 letters

Answer: M

A1, C3, E5, G7, ?

letters +2; numbers +2

Answer: I9

QUICK SOLVING CHECKLIST

A routine for Officer Cadet IQ practice

1. Compare consecutive terms.
2. Check + or - first.
3. Check $\times$ or $\div$ next.
4. If differences change, inspect the differences again.
5. Look for squares, cubes, primes, or alternating patterns.
6. For letters, use A=1, B=2, ... Z=26.
7. For alpha-numeric series, solve letter and number patterns separately.
8. Verify the rule across every visible term.
9. In the entrance exam, avoid spending too long on one difficult series.

Mini Practice A

6, 11, 16, 21, ?

Answer: 26

Mini Practice B

2, 6, 18, 54, ?

Answer: 162

Mini Practice C

1, 4, 9, 16, ?

Answer: 25

Mini Practice D

B, E, H, K, ?

Answer: N