

How to use this sheet. Write the three-slot pattern in the margin before you look at the string — the item you are counting always sits in the middle slot. Circle the word “and” in the question: it decides whether you check one neighbour or two. Counting runs left to right only, and the first and last elements can never satisfy a two-sided condition. Mark up the strings directly on this page.

Quick reference — Vowels: A E I O U (Y is a consonant) · Single-digit squares: 1, 4, 9 · Single-digit primes: 2, 3, 5, 7 · Even: 2, 4, 6, 8 · Odd: 1, 3, 5, 7, 9

Section A · Multiple choice questions

Six of these appeared in real AAI ATC Junior Executive papers.

- Which three-slot pattern describes “consonants immediately preceded by a vowel and immediately followed by a vowel”?
 (1) [vowel] [vowel] [consonant] (2) [vowel] [consonant] [vowel]
 (3) [consonant] [vowel] [consonant] (4) [vowel] [consonant] [consonant]
- In a sequence of 20 elements, how many positions could possibly satisfy a condition that requires both a preceding and a following element?
 (1) 20 (2) 19 (3) 18 (4) 17
- A condition reads “immediately preceded by a letter and also immediately followed by another symbol”. What does the word “another” tell you?
 (1) The two symbols must be identical (2) The following element may be a letter
 (3) The condition applies from right to left (4) The element being counted is itself a symbol
- Which element of a sequence can never satisfy a condition requiring something immediately after it?
 (1) The first (2) The last (3) The middle (4) None of them
- How many consonants are immediately preceded by a vowel and immediately followed by a vowel?

(LEFT) A B E C I D O (RIGHT)

- (1) Two (2) Three (3) One (4) Four

- How many such consonants are there, each of which is immediately preceded by a vowel and also immediately followed by a vowel? [PYQ 2025 · Shift 1]

(LEFT) S I N G L E R O F I H T P Q D U B W N M J A K E V G P (RIGHT)

- (1) Two (2) Three (3) Four (4) One

- How many letters are there that are not vowels and are immediately preceded by an even number? [PYQ 2021 · Shift 2]

(LEFT) D 22 A G 3 B 62 O 2 N 7 M 12 L Q K 10 E 43 T 23 F 5 (RIGHT)

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

- How many vowels are immediately preceded by a consonant and immediately followed by a consonant?

(LEFT) S I N G L E R O F I H T P Q D U B W N M J A K E V G P (RIGHT)

(1) Five (2) Six (3) Seven (4) Eight

9. How many odd digits are immediately preceded by an even digit?

(LEFT) 2 4 7 6 9 3 8 1 5 (RIGHT)

(1) Two (2) Four (3) Three (4) One

10. Taking 1 as a perfect square, how many perfect squares are immediately preceded by an even digit and immediately followed by an odd digit? [PYQ 2025 · Shift 1]

(LEFT) 1 4 2 3 9 4 8 1 5 7 9 7 2 5 1 3 4 6 7 8 2 9 5 6 3 6 8 (RIGHT)

(1) Three (2) Two (3) One (4) None

11. How many prime digits are immediately preceded by an even digit and immediately followed by an even digit?

(LEFT) 3 8 5 2 7 4 9 6 1 8 3 (RIGHT)

(1) Three (2) One (3) None (4) Two

12. Taking 1 as a perfect square, how many perfect squares are immediately followed by an even digit?

(LEFT) 1 4 2 3 9 4 8 1 5 7 9 7 2 5 1 3 4 6 7 8 2 9 5 6 3 6 8 (RIGHT)

(1) Three (2) Four (3) Five (4) Six

13. In a run of four consecutive symbols preceded by a letter, how many of those symbols are immediately preceded by a letter?

(1) Four (2) Two (3) One (4) Three

14. How many such symbols are there, each of which is immediately preceded by a letter and also immediately followed by another symbol? (The paper printed a rupee sign where this sheet shows \$.) [PYQ 2025 · Shift 2]

(LEFT) N + @ # A \$ M S T E % R & A K G W < O = P Z D ^ U * Q B F (RIGHT)

(1) Three (2) Two (3) None (4) One

15. All numbers are single digits. How many such symbols are there, each of which is immediately preceded by a number and immediately followed by another symbol? [PYQ 2025 · Shift 2]

(LEFT) 2 # ! 3 4 @ * \$ 5 1 = + > 8 9 & \$ (RIGHT)

(1) Three (2) Two (3) One (4) Four

16. How many such symbols are there, each of which is immediately preceded by a letter and also immediately followed by another symbol? [PYQ 2025 · Shift 1]

(LEFT) L # ? M ! / + O K @ N & A % E * \$ J = P { (RIGHT)

(1) One (2) Two (3) Three (4) Four

17. Using the same string as the previous question, how many symbols are immediately preceded by a letter, ignoring what follows them?

(1) Eight (2) Three (3) Five (4) Six

18. How many numbers are immediately preceded by a symbol and immediately followed by a number?

(LEFT) 2 # ! 3 4 @ * \$ 5 1 = + > 8 9 & \$ (RIGHT)

(1) One (2) Two (3) Three (4) None

Section B · Assertion and reason

For each pair mark (a) both true and the reason explains the assertion, (b) both true but the reason does not explain it, (c) the assertion is true and the reason false, (d) the assertion is false and the reason true.

19. **Assertion:** In a run of consecutive symbols, only the first can be immediately preceded by a letter.

Reason: Every symbol after the first has another symbol immediately before it.

20. **Assertion:** The first element of a sequence can satisfy a condition that requires a preceding element.

Reason: Counting is done from left to right only.

21. **Assertion:** Adding “and immediately followed by” usually reduces the count.

Reason: A two-sided condition is satisfied by fewer positions than a one-sided one.

22. **Assertion:** The 2025 paper's note that 1 is a perfect square was decorative.

Reason: No qualifying element in that question was the digit 1.

23. **Assertion:** Marking every vowel before scanning speeds up a letter-sequence question.

Reason: Once vowels are marked, the scan becomes a search for single-letter gaps between marks.

24. **Assertion:** A sequence of 27 elements has 25 positions that can satisfy a two-sided condition.

Reason: The first and last elements are excluded because each is missing one neighbour.

25. **Assertion:** In a single-digit string, the perfect squares are 1, 4 and 9.

Reason: A perfect square is any number that can be written as an integer multiplied by itself.

26. **Assertion:** The digit 1 is both a perfect square and a prime number.

Reason: One divides evenly into every whole number.

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