

APTITUDE NOTES – SECTION 2: LOGICAL REASONING

1 Number Series

Key Concepts:

- A **series** is a sequence of numbers following a definite pattern or rule.
- Common types:
 - **Arithmetic Progression (AP)** → constant difference (e.g., 2, 4, 6, 8...)
 - **Geometric Progression (GP)** → constant ratio (e.g., 3, 6, 12, 24...)
 - **Mixed/Complex Patterns** → alternation, squares, primes, etc.

Example:

Find the missing term: 2, 4, 8, 16, ? → $\times 2$ pattern → 32.

Tips:

- Look for $+/-$, \times/\div patterns, squares, cubes, or alternating sequences.
 - In exams, write differences between consecutive terms.
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2 Letter Series

Key Concepts:

- Letters follow a **sequence based on alphabetical order**.
- Identify pattern → forward or backward jumps.

Example:

A, C, F, J, O, ?

Positions: 1, 3, 6, 10, 15 → +2, +3, +4, +5 → Next = +6 → U.

Tip:

Convert letters to positions (A=1, B=2,..., Z=26).

3 Analogy

Key Concepts:

- Relationship between pairs of words/numbers/figures.
- Identify relation between the first pair → apply to second.

Example:

Dog : Puppy :: Cat : ? → Kitten.

Tip:

Common types → functional, opposites, quantity, sequence, cause-effect.

4 Blood Relations

Key Concepts:

- Questions based on family relations.
- Types:
 - **Paternal** (father's side), **Maternal** (mother's side)
 - **Direct/Indirect relationships**

Example:

A is B's father. C is A's sister. D is C's son. How is D related to B?
→ D is B's cousin.

Tips:

- Draw a **family tree** for clarity.
 - Remember gender cues (brother, sister, uncle, aunt).
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5 Direction Sense

Key Concepts:

- Four main directions → N, S, E, W.
- Right turn = 90° clockwise; Left = 90° anticlockwise.
- Opposite directions differ by 180° .

Example:

A faces East, turns right → faces South; then left → faces East again.

Tips:

- Use arrows on paper to avoid confusion.

- Distance and direction questions often combine.
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6 Coding–Decoding

Key Concepts:

- A word or number is **coded with a pattern**.
- Identify transformation logic (position, shift, reverse, ASCII, etc.).

Example:

If CAT = DBU, then DOG = ?
→ +1 to each letter → EPH.

Tips:

- Watch for reverse order, +/- shifts, or letter mapping.
 - In complex cases, break into parts.
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7 Syllogism

Key Concepts:

- Based on logical deduction using **premises and conclusions**.
- Keywords: *All, Some, No, Some not*.

Example:

Premises:

1. All dogs are animals.
2. All animals are living things.
→ Conclusion: All dogs are living things .

Tips:

- Use **Venn diagrams** for clarity.
 - Be careful with "Some" and "No" statements.
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8 Puzzles

Key Concepts:

- Logical arrangement problems → people, objects, places, days, etc.
- Types: Linear arrangement, Circular, Floor-based, Tabular.

Example:

5 friends sit in a row. A is left of B but right of C. Who is in the middle?
→ Arrange stepwise → C, A, B,...

Tips:

- Create a **table or diagram**.
 - Fix definite information first, then add uncertain ones.
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9 Seating Arrangement

Key Concepts:

- **Linear** (row), **Circular**, or **Rectangular** arrangements.
- Direction awareness important (facing center vs outward).

Example:

In a circle, A is left of B and right of C (facing center).
→ Order = C, A, B (clockwise).

Tips:

- Clockwise/anticlockwise determines position logic.
 - Write all given clues before solving.
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10 Data Sufficiency

Key Concepts:

- Determine if given statements are **enough to answer a question**.
- Don't solve completely — check sufficiency only.

Example:

Q: What is the value of x ?

- (1) $x + 2y = 10$
(2) $y = 3$

→ Substitute (2) into (1): $x + 6 = 10 \rightarrow x=4 \rightarrow$ Both statements together are sufficient.

Tips:

- Statement (1) alone, (2) alone, both, or neither — pick minimal sufficiency.
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11 Statement–Assumption / Conclusion

Key Concepts:

- Based on **verbal logic reasoning**.
- **Assumption** → something implied but not stated.
- **Conclusion** → something derived logically from the statement.

Example:

Statement: "Government should promote electric vehicles."

Assumption: People are open to using electric vehicles.

Tips:

- Avoid personal bias — stick to logical inference.
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12 Cause & Effect

Key Concepts:

- Two statements given; decide which one causes the other.

Example:

1. Heavy rains in city.
2. Waterlogging on roads.
→ (1) is cause, (2) is effect.

Tip:

- Cause always precedes effect chronologically.
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13 Logical Deductions

Key Concepts:

- Use logical operators:
 - **AND** → both true
 - **OR** → either
 - **IF–THEN** → conditional

- o **IFF (If and only if)** → both must occur

Example:

If $A \rightarrow B$, and $B \rightarrow C$, then $A \rightarrow C$ (Transitive property).

Tips:

- Symbolize statements (\rightarrow , \wedge , \vee) for clarity.
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14 Input–Output Reasoning

Key Concepts:

- Sequence of inputs transformed by a pattern.
- Identify rule applied at each step.

Example:

Input: 4, 2, 8, 6 → Output: 2, 4, 6, 8 → ascending order.

Tip:

- Compare steps line by line — what's changing? order? words? positions?