

REASONING - ANALYTICAL & LOGICAL

Master SSC CGL Examination Notes

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1. ANALOGY & CLASSIFICATION - COMPLETE GUIDE

Analogy - Fundamental Concepts

Analogy means finding a similar relationship between two pairs of words/numbers/figures. It tests the ability to establish logical relationships.

Basic Pattern: A : B :: C : ?

Meaning: A is to B as C is to ?

Key: Find the relationship between A and B, then apply same to C

Types of Analogies

Type	Description	Example	Relationship
Synonym	Same meaning words	Big : Large :: Small : Tiny	Similar meaning
Antonym	Opposite meaning	Hot : Cold :: Light : Dark	Opposite meaning
Part-Whole	Component to complete	Chapter : Book :: Wheel : Car	Part to whole
Worker-Tool	Professional and instrument	Writer : Pen :: Carpenter : Hammer	Professional & tool
Cause-Effect	Reason and result	Virus : Disease :: Study : Success	Cause and effect
Degree	Intensity variation	Warm : Hot :: Cool : Cold	Increasing intensity

Number & Letter Analogies

Q1: 4 : 20 :: 6 : ?

Solution:

- Pattern: $n : n \times 5$
- $4 \times 5 = 20, 6 \times 5 = 30$
- **Answer: 30**

Q2: ACE : BDF :: GIK : ?

Solution:

- Pattern: $A(+1)=B, C(+1)=D, E(+1)=F$
- $G(+1)=H, I(+1)=J, K(+1)=L$
- **Answer: HJL**

2. CLASSIFICATION - ODD ONE OUT

Classification Types

Classification involves identifying the word/number that doesn't belong to the same group as others based on certain characteristics.

Basis of Classification	Example	Odd One	Reason
Meaning	Apple, Mango, Orange, Potato	Potato	Not a fruit
Number Pattern	8, 27, 64, 100	100	Not a perfect cube
Letter Pattern	B, E, H, K, M	M	Not +3 pattern
Word Category	Rose, Lotus, Marigold, Banyan	Banyan	Not a flower
Synonyms	Big, Large, Huge, Small	Small	Antonym

Practice Problems

Q1: Find odd one: 6, 9, 15, 21, 24, 28

Solution:

- $6 = 2 \times 3$, $9 = 3 \times 3$, $15 = 3 \times 5$, $21 = 3 \times 7$, $24 = 3 \times 8$, $28 = 4 \times 7$
- All except 28 are multiples of 3
- **Answer: 28**

Q2: Find odd one: Delhi, Mumbai, Chennai, Kolkata, Bengaluru

Solution:

- Delhi, Mumbai, Chennai, Kolkata are metro cities
- Bengaluru is not officially a metro city

- **Answer: Bengaluru**

3. SERIES COMPLETION - NUMBER & LETTER

Number Series Patterns

Common Patterns:

- Arithmetic Progression: $+d, +2d, +3d$
- Geometric Progression: $\times r, \times r^2, \times r^3$
- Prime Numbers: 2, 3, 5, 7, 11, 13...
- Squares/Cubes: 1, 4, 9, 16, 25... or 1, 8, 27, 64...
- Alternate Patterns: Two different patterns alternating
- Combination: Arithmetic + Geometric mixed

Letter Series Patterns

Common Patterns:

- Forward Series: A, B, C, D, E... (+1 pattern)
- Backward Series: Z, Y, X, W, V... (-1 pattern)
- Skip Pattern: A, C, E, G, I... (+2 pattern)
- Reverse Order: Z, X, V, T, R... (-2 pattern)
- Group Pattern: AB, CD, EF, GH...
- Mixed Pattern: A1, B2, C3, D4...

Series Problems with Solutions

Q1: 2, 6, 12, 20, 30, ?

Solution:

- Pattern: +4, +6, +8, +10, +12
- Differences: 4, 6, 8, 10, 12
- Next: $30 + 12 = 42$

Q2: A, C, F, J, O, ?

Solution:

- Pattern: $A(+2)=C, C(+3)=F, F(+4)=J, J(+5)=O, O(+6)=U$
- Increasing difference: +2, +3, +4, +5, +6

• **Answer: U**

4. CODING-DECODING - ADVANCED TECHNIQUES

Coding Types

Type	Description	Example
Letter Coding	Letters replaced by other letters	APPLE = BQQMF
Number Coding	Letters replaced by numbers	A=1, B=2, C=3...
Mixed Coding	Letters and numbers mixed	A=26, B=25, C=24...
Symbol Coding	Symbols represent letters/words	@=A, #=B, \$=C...
Sentence Coding	Whole sentences coded	"I am good" = "J bn hppe"

Coding-Decoding Problems

Example: If "MAN" is coded as "NBO", how is "WOMAN" coded?

Step-by-Step Solution:

M → N (+1)

A → B (+1)

N → O (+1)

Pattern: Each letter moves forward by 1 position

WOMAN coded as:

W → X (+1)

O → P (+1)

M → N (+1)

A → B (+1)

N → O (+1)

Answer: XPONB

Advanced Coding Patterns

Q: If "TRAIN" = 39 and "BUS" = 12, then "CAR" = ?

Solution:

- TRAIN: $T(20)+R(18)+A(1)+I(9)+N(14) = 62 \neq 39$
- Try position from end: $T(7)+R(9)+A(26)+I(18)+N(13) = 73 \neq 39$
- Try: Sum of positions and then divide?
- TRAIN: $20+18+1+9+14 = 62, 62-23=39$
- BUS: $2+21+19 = 42, 42-30=12$
- Pattern: Sum of positions - (some number)
- CAR: $3+1+18 = 22, 22-? = ?$
- Need to find the subtraction pattern...

5. BLOOD RELATIONS - COMPLETE FAMILY TREE

Basic Relations Chart

Immediate Family:

- Father's father = Grandfather
- Father's mother = Grandmother
- Mother's father = Maternal Grandfather
- Mother's mother = Maternal Grandmother
- Father's brother = Uncle
- Father's sister = Aunt
- Mother's brother = Maternal Uncle
- Mother's sister = Maternal Aunt

Generation Relations:

- Brother's son = Nephew
- Sister's son = Nephew
- Brother's daughter = Niece
- Sister's daughter = Niece
- Son's wife = Daughter-in-law
- Daughter's husband = Son-in-law

Complex Relation Problems

Q: A man says, "This girl is the wife of the grandson of my mother." How is the girl related to the man?

Step-by-Step Solution:

- My mother's grandson = My sister's son or my son
- Since he says "grandson of my mother" - this could be his son or his sister's son
- If it's his son: Girl is his daughter-in-law
- If it's his sister's son: Girl is his niece-in-law
- **Most common interpretation: Daughter-in-law**

Q: Pointing to a woman, a man said, "Her mother is the only daughter of my mother." How is the man related to the woman?

Solution:

- Only daughter of my mother = Myself (if male) or my sister

- Since he's referring to "only daughter" and he's male, it must be his sister
- Her mother is my sister
- Therefore, I am her maternal uncle
- **Answer: Maternal Uncle**

6. DIRECTION SENSE - COMPASS MASTERY

Direction Fundamentals

Basic Directions:

↑ North
← West → East
↓ South

Cardinal Directions:

North-East (NE), North-West (NW)
South-East (SE), South-West (SW)

Direction Problems

Q: A man walks 5km North, turns right and walks 3km, then turns right and walks 5km. Where is he from starting point?

Solution:

- Start at point O
- 5km North to point A
- Right turn = East, 3km to point B
- Right turn = South, 5km to point C
- From O to C: 3km East
- **Answer: 3km East of starting point**

Q: A is to the North of B, C is to the East of B, D is to the South of C. What is direction of A from D?

Solution:

- Draw diagram: B in center
- A North of B
- C East of B
- D South of C
- A is North-West of D
- **Answer: North-West**

7. VENN DIAGRAMS & SYLLOGISMS

Venn Diagram Basics

Types of Statements:

1. **All A are B** - A completely inside B
2. **No A is B** - Two separate circles
3. **Some A are B** - Overlapping circles
4. **Some A are not B** - Part of A outside B

Syllogism Rules

Key Rules:

- All + All = All
- All + No = No
- All + Some = No conclusion
- Some + All = Some
- Some + Some = No conclusion
- No + No = No conclusion
- No + All = Some not (reversed)

Syllogism Problems

Statements: 1. All cats are animals. 2. Some animals are wild.

Conclusions:

- I. Some cats are wild.
- II. Some wild are cats.

Solution:

- From statement 1: $\text{Cats} \subset \text{Animals}$
- From statement 2: $\text{Animals} \cap \text{Wild} \neq \emptyset$
- But we don't know if cats intersect with wild
- Both conclusions may or may not be true
- **Answer: Neither conclusion follows**

8. SSC CGL REASONING STRATEGY

Previous Year Analysis

Topic	2022	2021	2020	Weightage
Analogy	3-4	3-4	2-3	15%
Classification	2-3	2-3	2-3	10%
Series	3-4	3-4	2-3	15%
Coding	3-4	3-4	2-3	15%
Blood Relations	2-3	2-3	1-2	10%
Direction	1-2	1-2	1-2	5%
Syllogism	2-3	2-3	2-3	10%
Miscellaneous	4-5	4-5	5-6	20%

Time Management Strategy

Total Questions: 25

Time Available: 20-25 minutes

Target: 20+ correct answers

Priority Order:

1. Analogy & Classification (Easy, Quick)
2. Series Completion (Pattern-based)
3. Coding-Decoding (Systematic)
4. Blood Relations (Diagram-based)
5. Direction Sense (Visualization)
6. Syllogism (Rule-based)
7. Miscellaneous (Leave for end)

Quick Solving Techniques

Analogy: Find relationship in given pair first

Classification: Look for odd pattern immediately

Series: Check differences/multiples first

Coding: Write alphabet positions quickly

Blood Relations: Draw family tree for complex ones

Direction: Draw rough compass always

Syllogism: Use Venn diagrams mentally

Reasoning - Analytical & Logical - SSC CGL Master Notes

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