

# APTITUDE NOTES (EXAM-ORIENTED) — PART 1

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## 1. NUMBER SYSTEM

**What it tests:** Basic math logic, number manipulation, and speed.

### Key Concepts

- Types of numbers: natural, whole, integers, rational, irrational
- Prime numbers, factors, multiples
- LCM & HCF
- Divisibility rules (2, 3, 5, 7, 9, 11)
- Decimal and fraction conversions

### Exam Tips

- Memorize divisibility rules for fast solving
  - Use LCM/HCF to solve ratio and time work problems
  - Practice fast fraction to decimal conversion
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## 2. PERCENTAGES

**What it tests:** Real-life financial logic and proportional reasoning.

### Key Concepts

- Percentage formula:  $(\text{part/whole}) \times 100$
- Increase & decrease
- Profit/Loss using %
- Discounts
- Simple interest basics

### Exam Tips

- Always identify base value (whole) first
  - Use approximation for quick checks
  - Learn 10%, 20%, 25%, 50% shortcuts
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## 3. RATIO & PROPORTION

**What it tests:** Division of quantities, mixture problems, and proportional thinking.

## Key Concepts

- Ratio definition (a:b)
- Proportion:  $a/b = c/d$
- Alligation method (mixture problems)
- Direct and inverse proportion

## Exam Tips

- Solve mixture problems using alligation
  - Use proportion formula for scaling problems
  - Keep ratio values simple by dividing by gcd
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## 4. AVERAGES

**What it tests:** Central value understanding and quick computations.

### Key Concepts

- Average formula: total sum / number of items
- Weighted average
- Missing value in average
- Combined average

### Exam Tips

- Use total sum method for combined averages
  - Convert average problems into equations
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## 5. TIME & WORK

**What it tests:** Efficiency, speed, and team work logic.

### Key Concepts

- Work rate: Work/Time
- Man-day concept
- Work done by multiple people
- Pipes and cisterns (water flow problems)

### Exam Tips

- Convert everything into “work per day”
- Use LCM for combined work
- Avoid confusion between “time taken” and “work done”

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## 6. TIME, SPEED & DISTANCE

**What it tests:** Speed logic, distance coverage, and real-life motion.

### Key Concepts

- Speed = Distance / Time
- Relative speed (same direction vs opposite direction)
- Average speed vs simple speed
- Train crossing and meeting problems

### Exam Tips

- Use relative speed for moving objects
  - Always convert units (km/h to m/s)
  - Keep formulas in mind: distance = speed × time
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## 7. SIMPLE & COMPOUND INTEREST

**What it tests:** Financial calculations and compounding logic.

### Key Concepts

- Simple Interest (SI) =  $P \times R \times T / 100$
- Compound Interest (CI) = Amount - Principal
- CI formula:  $A = P(1 + r/100)^n$
- Difference between SI and CI

### Exam Tips

- Use shortcut formulas for yearly compounding
  - Use approximation for faster calculation
  - Learn basic compound interest table
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## 8. PROFIT & LOSS

**What it tests:** Business logic and percentage applications.

### Key Concepts

- Profit = Selling Price - Cost Price
- Loss = Cost Price - Selling Price
- Profit % =  $(\text{Profit}/\text{CP}) \times 100$

- Discount & Marked Price

### Exam Tips

- Always identify CP and SP clearly
  - Use ratio method for multiple transactions
  - Convert discount to effective profit/loss
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## 9. ALCHEMY (MIXTURE & ALLIGATION)

**What it tests:** Logical mixing and ratio application.

### Key Concepts

- Mixing two quantities with different values
- Alligation rule
- Mean value calculation

### Exam Tips

- Use alligation chart for fast answers
  - Always check total quantity
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## 10. PROBABILITY

**What it tests:** Chance, outcomes, and counting logic.

### Key Concepts

- Probability = favourable outcomes / total outcomes
- Independent events
- Conditional probability
- Basic combinations/permutations

### Exam Tips

- Always define the sample space clearly
  - Use counting methods to reduce errors
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## 11. PERMUTATION & COMBINATION (BASIC)

**What it tests:** Arrangement logic and counting accuracy.

## Key Concepts

- Permutation: order matters
- Combination: order doesn't matter
- $nCr$ ,  $nPr$  formulas

## Exam Tips

- Identify if order matters or not
  - Use factorial simplification
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## 12. LOGICAL REASONING (BASIC)

**What it tests:** Structured thinking and analysis.

### Key Concepts

- Series & Patterns
- Blood relations
- Direction sense
- Seating arrangement
- Syllogisms
- Data interpretation

### Exam Tips

- Draw diagrams for puzzles
  - Avoid assumptions; use only given data
  - Use elimination method
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## 13. VERBAL ABILITY (BASIC)

**What it tests:** Communication clarity and grammar logic.

### Key Concepts

- Reading comprehension
- Error spotting
- Sentence correction
- Vocabulary in context

### Exam Tips

- Read questions first then passage
- Eliminate wrong grammar options

- Understand meaning, not just words