SSC GD Constable Exam: Fundamental Arithmetical Operations Syllabus Summary

Overview:
The Fundamental Arithmetical Operations topic is a cornerstone of the Mathematics section in the SSC GD Constable Exam, contributing approximately 5–8 questions (10–16 marks out of 160 total marks) in the Computer-Based Examination (CBE). The syllabus focuses on performing and applying basic arithmetic operations—addition, subtraction, multiplication, and division—on whole numbers, fractions, and decimals, along with simplification and word problems. Questions test computational accuracy, speed, and application of arithmetic principles at a 10th-grade level. The exam includes 80 questions (2 marks each, 0.50 negative marking per wrong answer) to be completed in 60 minutes.

Key Topics in Fundamental Arithmetical Operations:

1. Basic Operations: Addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals.
2. Simplification: Simplifying numerical expressions using BODMAS (Bracket, Order, Division/Multiplication, Addition/Subtraction).
3. Properties of Operations: Commutative, associative, and distributive properties.
4. Fractions: Operations with proper, improper, and mixed fractions.
5. Decimals: Arithmetic operations and conversions involving decimals.
6. Word Problems: Real-world applications (e.g., cost, time, distance, sharing quantities).
7. Order of Operations: Applying BODMAS to ensure correct computation sequence.
8. Divisibility and Factors: Using divisibility rules and factors in arithmetic calculations.

Important Formula and Techniques:

1. Basic Arithmetic Operations:
   - Addition: a + b = Sum (e.g., 5 + 3 = 8).

- Subtraction: a − b = Difference (e.g., 5 − 3 = 2).
- Multiplication: a × b = Product (e.g., 5 × 3 = 15).
- Division: a ÷ b = Quotient (e.g., 15 ÷ 3 = 5; remainder = 0 if divisible).

2. BODMAS Rule:
- Order of operations: Bracket, Order (exponents), Division/Multiplication (left to right), Addition/Subtraction (left to right).
- Example: Simplify 2 + 3 × 4 − (5 ÷ 1) = 2 + 12 − 5 = 14 − 5 = 9.

3. Properties of Operations:
- Commutative Property:
  - Addition: a + b = b + a (e.g., 4 + 5 = 5 + 4 = 9).
  - Multiplication: a × b = b × a (e.g., 4 × 5 = 5 × 4 = 20).
- Associative Property:
  - Addition: (a + b) + c = a + (b + c) (e.g., (2 + 3) + 4 = 2 + (3 + 4) = 9).
  - Multiplication: (a × b) × c = a × (b × c) (e.g., (2 × 3) × 4 = 2 × (3 × 4) = 24).
- Distributive Property:
  - a × (b + c) = a × b + a × c (e.g., 2 × (3 + 4) = 2 × 3 + 2 × 4 = 14).
  - a × (b − c) = a × b − a × c (e.g., 2 × (5 − 3) = 2 × 5 − 2 × 3 = 4).
- Identity Elements:
  - Addition: a + 0 = a (0 is additive identity).
  - Multiplication: a × 1 = a (1 is multiplicative identity).
- Zero Property: a × 0 = 0.

4. Operations with Fractions:
- Addition/Subtraction (Like Fractions): Add/subtract numerators, keep denominator same.
  - Example: 2/5 + 3/5 = (2 + 3)/5 = 5/5 = 1.
- Addition/Subtraction (Unlike Fractions): Use LCM of denominators.
  - Example: 1/3 + 1/4 = (4 + 3)/(3 × 4) = 7/12 (LCM = 12).
- Multiplication: Multiply numerators and denominators, simplify.
  - Example: 2/3 × 3/5 = (2 × 3)/(3 × 5) = 6/15 = 2/5.
- Division: Multiply by reciprocal.
  - Example: 2/3 ÷ 1/4 = 2/3 × 4/1 = 8/3.

5. Operations with Decimals:
- Addition/Subtraction: Align decimal points, add/subtract as whole numbers.
  - Example: 2.34 + 1.6 = 2.34 + 1.60 = 3.94.
- Multiplication: Multiply as whole numbers, place decimal based on total decimal places.
  - Example: 2.5 × 1.2 = 25 × 12 = 300; 2 decimal places (1 + 1) = 3.00.
- Division: Shift decimal in divisor to whole number, adjust dividend, then divide.
  - Example: 5.76 ÷ 1.2 = 57.6 ÷ 12 = 4.8.

6. Divisibility Rules (for Simplification):
- Divisible by 2: Last digit is even (0, 2, 4, 6, 8).
- Divisible by 3: Sum of digits is divisible by 3.
- Divisible by 4: Last two digits form a number divisible by 4.
- Divisible by 5: Last digit is 0 or 5.
- Divisible by 9: Sum of digits is divisible by 9.
- Example: 45 is divisible by 3 (4 + 5 = 9) and 5 (last digit 5).

7. Simplification with HCF:
- Reduce fractions to lowest terms using HCF of numerator and denominator.
- Example: 12/18 = (12 ÷ 6)/(18 ÷ 6) = 2/3 (HCF = 6).

8. Word Problem Applications:
- Example (Cost): If 2/3 of a bill is ₹40, total bill = 40 ÷ (2/3) = 40 × 3/2 = ₹60.
- Example (Time): If 3 workers finish 1/4 of a task in 2 days, total time for task = 2 ÷ (1/4) × 3 = 8 × 3 = 24 days.

Key Points for SSC GD Preparation:
- Focus Areas: Arithmetic operations, simplification using BODMAS, fraction and decimal calculations, and word problems are frequently tested.

- Question Types: Direct calculations (e.g., 2.5 × 4), simplifications (e.g., 10 + 2 × 3), operations with fractions/decimals, and word problems (e.g., cost or time calculations).
- Difficulty Level: 10th-grade level, emphasizing quick and accurate arithmetic computations.
- Practice Tips: Master BODMAS rule, practice mental math for quick operations, memorize divisibility rules, and solve word problems from past SSC GD papers.

Disclaimer

This SSC GD Constable Exam Fundamental Arithmetical Operations Syllabus Summary is for educational purposes only and is not affiliated with or endorsed by the Staff Selection Commission (SSC). The content is based on the SSC GD syllabus and previous year question patterns. Users should refer to official SSC materials for comprehensive preparation. The creator is not liable for errors or exam outcomes.