SSC GD Constable Exam: Decimals Syllabus Summary

Overview:
The Decimals topic is a key component of the Mathematics section in the SSC GD Constable Exam, contributing approximately 2–4 questions (4–8 marks out of 160 total marks) in the Computer-Based Examination (CBE). The syllabus focuses on understanding and performing arithmetic operations with decimal numbers, their conversions, and applications in problem-solving. Questions test computational accuracy, simplification skills, and practical applications 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 Decimals:

1. Understanding Decimals: Definition, place value (tenths, hundredths, thousandths), and types (terminating, recurring).
2. Arithmetic Operations: Addition, subtraction, multiplication, and division of decimals.
3. Conversion: Converting fractions to decimals and vice versa, handling recurring decimals.
4. Simplification: Simplifying decimal expressions using BODMAS (Bracket, Order, Division/Multiplication, Addition/Subtraction).
5. Comparison: Comparing and ordering decimal numbers.
6. Word Problems: Real-world applications involving decimals (e.g., money, measurements, percentages).
7. Recurring Decimals: Converting recurring decimals to fractions.
8. Rounding Off: Rounding decimals to specified places (e.g., nearest whole number, tenths).

Important Formula and Theorems:

1. Place Value of Decimals:
   - A decimal number is written as a.bcd..., where a is the whole number part, and b, c, d are digits in tenths (10^{-1}), hundredths (10^{-2}), thousandths (10^{-3}), etc.

- Example: In 5.234, 2 is in tenths place (2/10), 3 is in hundredths (3/100), 4 is in thousandths (4/1000).

2. Arithmetic Operations with Decimals:
- Addition/Subtraction: Align decimal points and add/subtract as whole numbers, then place the decimal point in the result.
  - Example: 2.34 + 1.6 = 2.34 + 1.60 = 3.94.
- Multiplication: Multiply as whole numbers, then place the decimal point by summing the decimal places in the factors.
  - Example: 2.5 × 1.2 = 25 × 12 = 300; result has 2 decimal places (1+1), so 3.00.
- Division: Shift the decimal point in the divisor to make it a whole number, adjust the dividend similarly, then divide.
  - Example: 5.76 ÷ 1.2 = 57.6 ÷ 12 = 4.8.

3. Conversion of Fraction to Decimal:
- Divide numerator by denominator.
- Example: 3/4 = 3 ÷ 4 = 0.75.
- For recurring decimals: Divide to identify the repeating pattern.
  - Example: 1/3 = 0.333... (recurring).

4. Conversion of Recurring Decimal to Fraction:
- For a decimal 0.xyxy... (repeating block of length n):
  - Fraction = (Repeating digits) / (10^n − 1).
  - Example: 0.333... = 3 / (10^1 − 1) = 3/9 = 1/3.
- For 0.abcxyzxyz... (non-repeating abc, repeating xyz):
  - Let x = decimal, multiply to align repeating parts, subtract, and solve.
  - Example: 0.1666... (1 non-repeating, 6 repeating), x = 0.1666..., 10x = 1.666..., 100x = 16.666..., then 100x − 10x = 16.666... − 1.666..., 90x = 15, x = 15/90 = 1/6.

5. BODMAS Rule:
- Order of operations: Bracket, Order (exponents), Division/Multiplication (left to right), Addition/Subtraction (left to right).

- Example: Simplify 2.5 + 3.2 × 1.5 = 2.5 + 4.8 = 7.3 (multiply first, then add).

6. Comparing Decimals:
- Compare digits step-by-step:
  - If whole number parts differ, compare them.
  - If equal, compare decimal digits one-by-one.
- Example: 3.45 vs. 3.456: Whole part same (3), compare decimals: 4 = 4, 5 < 5.6, so 3.45 < 3.456.

7. Rounding Decimals:
- To round to n decimal places, check the (n+1)th digit:
  - If ≥ 5, increase nth digit by 1.
  - If < 5, keep nth digit unchanged.
- Example: 2.346 to 2 decimal places: 3rd digit (6) ≥ 5, so 2.35.

8. Percentage Conversion:
- Decimal to percentage: Multiply by 100 and add %.
  - Example: 0.75 = 75%.
- Percentage to decimal: Divide by 100.
  - Example: 25% = 25/100 = 0.25.

Key Points for SSC GD Preparation:

- Focus Areas: Arithmetic operations, fraction-decimal conversions, simplification, and word problems involving decimals (e.g., cost calculations, measurements).
- Question Types: Direct computations (e.g., 2.34 × 1.5), conversions (e.g., 1/3 to decimal), simplification using BODMAS, and word problems (e.g., total price with decimals).
- Difficulty Level: 10th-grade level, requiring quick and accurate calculations with decimals.
- Practice Tips: Master decimal operations, memorize conversion techniques for recurring decimals, practice BODMAS-based simplifications, and solve word problems from past SSC GD papers.

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