Master Guide: Number System, HCF–LCM & Decimal–Fraction Tricks

This guide covers all tricky word traps, identification clues, and quick formulas for aptitude chapters — Number System, HCF–LCM, and Decimal–Fraction — essential for government exams like SSC, Banking, and Railways.

■ Number System — Core Tricks & Traps

1. Divisibility Rules
2 → last digit even
3 → sum of digits divisible by 3
4 → last two digits divisible by 4
5 → last digit 0 or 5
6 → divisible by 2 and 3
8 → last three digits divisible by 8
9 → sum of digits divisible by 9
11 → difference of alternate sums divisible by 11

2. Same Remainder Trick
If a number leaves same remainder when divided by a, b, c → take pairwise differences → find HCF.
Example: Numbers 43, 91, 183 → Differences = 48, 92, 140 → HCF = 4.

3. Unit Digit / Last Digit Patterns
Only base's last digit matters.
For 3: pattern = 3, 9, 7, 1 (cycle of 4)
Example: 13^{66} → remainder of (66 ÷ 4) = 2 → 2nd digit = 9 → Unit digit = 9.

Common Cycles:
0→0, 1→1, 2→(2,4,8,6), 3→(3,9,7,1), 4→(4,6), 5→5, 6→6, 7→(7,9,3,1), 8→(8,4,2,6), 9→(9,1)

■ HCF & LCM — Identification Map

HCF (Highest Common Factor): Greatest number dividing all exactly.
LCM (Lowest Common Multiple): Smallest number divisible by all.

Identification Clues:
- "Greatest number dividing…" → HCF
- "Least number divisible by…" → LCM
- "Cut equally / arrange equally" → HCF
- "Buy / collect to make equal groups" → LCM
- "Same remainder" → HCF (take differences)
- "Add remainder" → LCM + remainder

Formula: HCF × LCM = Product of two numbers

■ Decimal & Fraction — Tricky Conversions

Common Fractions:
1/2=0.5, 1/4=0.25, 1/5=0.2, 1/8=0.125, 1/9=0.■1

Tricks:
- “What fraction of X is Y?” → Y/X
- “Recurring decimal” → (full – non-repeating)/(9s + 0s rule)
- “Increase 20% then decrease 20%” → net 4% decrease
- “How many times” → Divide
- “How much more” → Subtract
- “Round off to 2 decimal places” → Round, don’t truncate

Example: Ratio of (3/4) to (5/6) = (3/4 ÷ 5/6) = 9:10

■ Quick Master Table

| Keyword | Concept | Action | |----------|----------|--------| | Greatest number dividing | HCF | Divide existing things | | Least number divisible by | LCM | Common multiple | | Cut / arrange equally | HCF | Divide | | Bells, events repeat | LCM | Time intervals | | Buy / collect to equalize | LCM | Add up quantities | | Same remainder | HCF | Subtract & find HCF | | Add remainder | LCM | LCM + remainder | | What fraction of | Fraction | Part ÷ Whole | | How many times | Division | ÷ | | How much more | Subtraction | – | | Recurring decimal | Fraction | (full–non)/(9s0s rule) | | Round off | Decimal | To asked places |