

Clock Angles, Coincidence & Mirror / Water Images [Clocks & Time]**Core Rule / Shortcut:** $\theta = \left| \frac{60H - 11M}{2} \right|$, $\text{Mirror Time} = 11:60 - \text{Time}$

Angle between hour hand (moves 0.5 deg/min) and minute hand (moves 6 deg/min). Relative speed = 5.5 deg/min = 11/2 deg/min. Hands coincide 22 times in 24 hours (once every 65 5/11 minutes).

*Speed Trick: Angle at ratio 1:4 (e.g. 4:16) = Minute * 2 = 16 * 2 = 32 deg.***Calendar Day Calculation & Odd Days Method [Calendar & Odd Days]****Core Rule / Shortcut:** $\text{Odd Days in } y \text{ yrs} = 5, \text{ } 100 \text{ yrs} = 3, \text{ } 200 \text{ yrs} = 0, \text{ } 300 \text{ yrs} = 1$

Ordinary year = 365 days = 52 weeks + 1 Odd Day. Leap year = 366 days = 52 weeks + 2 Odd Days. Century years are leap only if divisible by 400 (e.g. 2000 is leap, 1900 is NOT).

*Speed Trick: Calendar repeats after: +6 years (if 1 yr after leap), +11 years (if 2/3 yrs after leap), +28 yrs***Alphabet Positions (EJOTY) & Reverse Opposite Letter Pairs [Coding-Decoding]****Core Rule / Shortcut:** EJOTY implies 5, 10, 15, 20, 25; $\text{Opposite Sum} = 27$ (A=1, Z=26)

Forward positions: E=5, J=10, O=15, T=20, Y=25. Reverse position = 27 - Forward position. Opposite pairs: A-Z (Azad), B-Y (BoY), C-X (CruX), D-W (DeW), E-V (Even), F-U (Full), G-T (GT road), H-S (High School),

*Speed Trick: CFILORUX = Multiples of 3 (3, 6, 9, 12, 15, 18, 21, 24).***Syllogism 100-50 / Venn Diagram Rules & Either-Or Conditions [Syllogisms & Deductive Logic]****Core Rule / Shortcut:** $\text{All A are B} \rightarrow 100 \text{ to } 50, \text{ } \text{No A is B} \rightarrow 100 \text{ to } 100, \text{ } \text{Some A are B} \rightarrow 50 \text{ to } 100$

Income-Expense Rule: A statement with 50 (Some) cannot yield a conclusion with 100 (All/No). Positive + Positive = Positive conclusion. Positive + Negative = Negative conclusion. Two Negatives = No definite

*Speed Trick: Either-Or Condition: 1) Both conclusions must be false individually. 2) Subject and Predicate must match***Standard Generation Tree Notation & Coded Relations [Blood Relations]****Core Rule / Shortcut:** $\text{Male} = (+) / []$, $\text{Female} = (-) / (\bigcirc)$, $\text{Spouse} = =$

Draw genealogical tree vertically across generations (Grandparents -> Parents -> Self/Siblings -> Children). Never assume gender from a person's name unless explicitly stated or determined by relation.

*Speed Trick: Elimination via Gender check: If question asks "How is A related to B where A is uncle", eliminate female options***Direction Shifts, Degrees of Rotation & Sun Shadows [Direction Sense & Displacement]****Core Rule / Shortcut:** $\text{Displacement } d = \sqrt{(\Delta x)^2 + (\Delta y)^2}$, $\text{Morning S} \rightarrow \text{Evening S}$

Standard coordinates: North (0 deg / +y), East (90 deg / +x), South (180 deg / -y), West (270 deg / -x).

Right turn = 90 deg clockwise; Left turn = 90 deg anticlockwise. Net angle = Sum of Clockwise - Sum of Anticlockwise

*Speed Trick: If initial direction is asked and final direction is given, reverse all turns (Right becomes Left)***Linear Order, Ranking & Interchanging Positions [Ranking & Ordering]****Core Rule / Shortcut:** $\text{Total } T = L + R - 1, \text{ } R = T - L + 1, \text{ } \text{Overlapping } T = L + R - 1$

When position of ONE person is given from both left (L) and right (R) ends, Total T = L + R - 1. When two persons interchange positions, New position of A = Old position of A + (Shift in B's position).

*Speed Trick: Simple non-overlapping case: Total = L + R + (Persons in between).***Standard vs Ordinary Dice & Painted Cube Formulas [Dice & Cubes]****Core Rule / Shortcut:** $\text{Total Small Cubes} = n^3, \text{ } \text{3-side} = 8, \text{ } \text{2-side} = 12(n-2)$

Standard Dice: Sum of opposite faces = 7 (1 6, 2 5, 3 4). Two dice positions with 1 common face: Write digits in CLOCKWISE order from common face to find opposite pairs. Open dice: Alternate boxes in straight line

*Speed Trick: 3-face painted cubes are ALWAYS 8 (located at the 8 corners), regardless of the size of the cube.***Circular & Linear Seating Logic Rules [Seating Arrangements & Puzzles]****Core Rule / Shortcut:** $\text{Circular Facing Center: Left} = \text{Clockwise}, \text{ } \text{Right} = \text{Anticlockwise}$

Facing INWARD (Center): Your right is their right (Anticlockwise), your left is their left (Clockwise).

Facing OUTWARD: Opposite (Left is Anticlockwise, Right is Clockwise). Linear row facing North: Left is West, Right is East

*Speed Trick: In a circle of N people, person opposite to K = (K + N/2) (when N is even).***Counting Triangles, Squares & Rectangles Shortcuts [Counting of Geometric Figures]****Core Rule / Shortcut:** $\text{Triangle in Triangle} = \frac{n(n+1)}{2}, \text{ } \text{Square with Diagonals} = n^2$

Triangle divided by vertical lines from vertex into n parts: Total triangles = n(n+1)/2. Square with diagonals divided into n sectors: Total triangles = 2n. Grid of m * n squares: Total squares = m * n + (m-1)*(n-1)

Speed Trick: Symmetric triangle of n horizontal layers (Formula for n <= 4): Total = [n(n+2)(2n+1)] / 8 (u)

5-Second Quadratic Equation Sign Shortcut Matrix [Banking Quadratic Inequalities]**Core Rule / Shortcut:** $(+, +)$ implies $(-, -)$, $(-, +)$ implies $(+, +)$, $(+, -)$ implies $(-, +)$,In $ax^2 + bx + c = 0$: 1. If (b, c) are (+, +), roots are both NEGATIVE. 2. If (b, c) are (-, +), roots are both POSITIVE. 3. If (b, c) are (+, -), roots are (-larger, +smaller). 4. If (b, c) are (-, -), roots are*Speed Trick: [TRICK] Double-Negative Constant Rule: If both equations have constant term with minus sign (e.g.***Euler & Fermat Remainder Theorems & Trailing Zeros [UPSC CSAT Number Theory & Remainders]****Core Rule / Shortcut:** $a^{p-1} \equiv 1 \pmod p$, $\text{Trailing Zeros in } n! = \sum$ Fermat's Little Theorem: If p is prime and $\gcd(a, p) = 1$, then $a^{(p-1)}$ divided by p leaves remainder 1.Trailing zeros in n! are determined exclusively by the exponent of 5 in prime factorization: $\text{count} =$ *Speed Trick: [TRICK] $2^{100} \bmod 101 = 1$ (Since 101 is prime, by Fermat's theorem).***Electricity, Optics & Motion Master Formulas [Railway General Science & Physics]****Core Rule / Shortcut:** $V = IR$, $P = \frac{V^2}{R} = I^2 R$, $\text{Mirror: } \frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ Ohm's Law: Potential difference $V = IR$. Electrical Power $P = VI = I^2 R = \frac{V^2}{R}$. Optics Sign Convention:

Focal length of Concave mirror/lens is negative (-f); Convex is positive (+f). Equivalent resistance in

*Speed Trick: [TRICK] Two resistors R_1 and R_2 in parallel: $R_{eq} = \frac{(R_1 R_2)}{(R_1 + R_2)}$.***Empirical Relationship, Variance & Coefficient of Variation [SSC Tier 2 Statistics & Measures of Dis]****Core Rule / Shortcut:** $\text{Mode} = 3 \times \text{Median} - 2 \times \text{Mean}$, $\text{Standard Deviation} = \sqrt{\text{Variance}}$ For moderately skewed distributions: $\text{Mode} = 3 \times \text{Median} - 2 \times \text{Mean}$. $\text{Variance} = \frac{\sum (x - \bar{x})^2}{N}$. Standard Deviation= $\sqrt{\text{Variance}}$. Coefficient of Variation (CV) measures relative consistency: lower CV indicates greater*Speed Trick: [TRICK] If Mean = 24 and Median = 25: $\text{Mode} = 3(25) - 2(24) = 75 - 48 = 27$ in 3 seconds!***Syllogism: "Only a Few" & "Only" Definitive Rules [Bank PO Syllogism]****Core Rule / Shortcut:** $\text{"Only a few A is B"} \iff (\text{Some A is B}) \wedge (\text{Some A is not B})$

"Only a few A are B" means two things simultaneously: Some A are B, AND Some A are NOT B. Therefore: "All A can be B" is ALWAYS FALSE (impossible). However, "All B can be A" is ALWAYS TRUE (a valid possibility).

*Speed Trick: [TRICK] "Only a few A is B" $\rightarrow$ All A can NEVER be B. But All B can be A.***Coded & Direct Inequalities: Magic Box Method [Bank PO Inequalities]****Core Rule / Shortcut:** $[> / <] > [\geq / \leq] > [=]$, Opposite Sign In linear inequality chains, prioritize strictly greater/less (>, <) over greater-than-or-equal ($\geq$, $\leq$),

which in turn take priority over equal (=). If two opposite signs encounter each other between two

*Speed Trick: [TRICK] Single Direction Gate: If path is open (e.g. $A > B \geq C = D$), $A > D$ is true because > has***Machine Input-Output: Shifting vs. Arranging & Pen-Free Prediction [Bank PO Machine Input-Output]****Core Rule / Shortcut:** $\text{Max Steps} \leq N - 1$, $\text{Auto-Arrangement occurs when next desir}$

In Bank PO Mains Input-Output, examine the final step to identify the sorting logic: usually alternating

words (alphabetical / length / vowels) and numbers (ascending / descending / sum of digits / prime

*Speed Trick: [TRICK] Pen-Free Numbering: Mark elements with L1, R1, L2, R2 above words/numbers in the input li***Linear Seating: "Thread / Open Line" Method for Facing North/South [Bank PO Seating Arrangement]****Core Rule / Shortcut:** $\text{Thread Method: Draw a single straight line; assign absolute left/right only}$

When people in a linear row face mixed directions (some North, some South), do NOT draw predefined arrows

first. Instead, place people relative to each other on a flexible thread line, and test the direction

*Speed Trick: [TRICK] Anchor on extreme end clues: "P sits 3rd from an extreme end" gives only 2 initial parall***Floor & Flat Matrix: 2-Variable Elimination Framework [Bank PO Floor & Flat Puzzles]****Core Rule / Shortcut:** $\text{Total Positions} = \text{Floors} \times \text{Flats}$, Imme

Multi-story building puzzles frequently feature Floors (e.g. 1 to 5) and Flats (e.g. Flat A and Flat B).

Key distinction in wording: "X lives on an even floor immediately above Y" means in the same flat unless

*Speed Trick: [TRICK] Always sketch a quick 2-column tabular grid: Floor (5, 4, 3, 2, 1) against Flat 1 and Fla***Coded Blood Relations: Generation Level & Gender Stripping [Bank PO Blood Relations]****Core Rule / Shortcut:** $\text{Generation Delta } \Delta G: \text{Parent} = +1, \text{Sibling/Spo}$

In Coded Blood Relations (e.g. P @ Q means P is father of Q), candidates can eliminate 3 out of 5 options

in 10 seconds using two quick checks: (1) Gender Check: If question asks for a female relation (e.g. "P is

Speed Trick: [TRICK] Last Person Gender Trap: In " $A + B - C * D$ ", the gender of the last person D is almost ne

Direction Sense: Coded Distance, Pythagoras & Shadow Logic [Bank PO Direction Sense]

Core Rule / Shortcut: $D = \sqrt{\Delta x^2 + \Delta y^2}$, $\text{Sunrise: Shadow falls West}$, $\text{Sunset: Shadow falls East}$

Direction puzzles in Bank PO Mains use coded syntax (e.g. P # Q 5m means P is North of Q at 5m or 10m). Calculate coordinates on an (x, y) Cartesian plane where North is +y, South is -y, East is +x, West is -x.

Speed Trick: [TRICK] 4 Right Turns = 0 deg change (back to original heading). 2 Right Turns = 180 deg opposite

Analytical & Critical Reasoning: Assumptions, Arguments & Course of Action [Bank PO Critical Reasoning]

Core Rule / Shortcut: $\text{Valid Assumption} = \text{Unstated premise without which the argument collapses}$

Critical reasoning accounts for 10-15 marks in Bank PO Mains. Key diagnostic rules: (1) Statement-Assumption: The assumption must be directly presupposed by the speaker; assumptions with words

Speed Trick: [TRICK] Assumption Negation Technique: Negate the assumption. If negating it destroys the validity of the argument, it is a valid assumption.