

Based on the C-CAT syllabus for **Section A**, here is a compiled cheat sheet of formulas, short tricks, and tips divided by subject.

1. Quantitative Aptitude (The "Maths" Section)

Target: Speed and Accuracy. Do not solve step-by-step like in college; use ratios and multipliers.

A. Time, Speed & Distance

- **Basic Formula:** $\text{Distance} = \text{Speed} \times \text{Time}$
- **Conversion:**
 - km/hr \rightarrow m/s: Multiply by $\frac{5}{18}$
 - m/s \rightarrow km/hr: Multiply by $\frac{18}{5}$
- **Relative Speed:**
 - Same Direction: $S_{\text{relative}} = S_1 - S_2$
 - Opposite Direction: $S_{\text{relative}} = S_1 + S_2$
- **Average Speed (for equal distances):** $\frac{2xy}{x+y}$ (where x and y are two speeds)
- **Train Trick:** Time to cross a pole = Length of Train / Speed.
- Time to cross a platform = Length of Train + Length of Platform / Speed

B. Time & Work

- **The LCM Trick (Don't use fractions):**
 - If A takes 10 days and B takes 15 days, assume Total Work = LCM(10, 15) = 30 units.
 - A's efficiency = $30/10 = 3$ units/day.
 - B's efficiency = $30/15 = 2$ units/day.
 - Together = $3+2=5$ units/day \rightarrow Time taken = $30/5 = 6$ days.
- **Chain Rule:** $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$
 - (M =Men, D =Days, H =Hours, W =Work done).

C. Percentages, Profit & Loss

- **Profit %:** $\frac{\text{Profit}}{CP} \times 100$
- **Discount:** Always calculated on **Marked Price (MP)**.
- **Successive Discount:** For two discounts $a\%$ and $b\%$, effective discount = $a + b - \frac{a \times b}{100}$
- **A is what % of B?** $\frac{A}{B} \times 100$
- **Standard Fractions (Memorize these):**
 - $\frac{1}{2} = 50\%$, $\frac{1}{3} = 33.33\%$, $\frac{1}{4} = 25\%$
 - $\frac{1}{5} = 20\%$, $\frac{1}{6} = 16.66\%$, $\frac{1}{8} = 12.5\%$
 - $\frac{1}{11} = 9.09\%$

D. Number Systems & Series

- **Sum of first n natural numbers:** $\frac{n(n+1)}{2}$

- **Sum of squares:** $\frac{n(n+1)(2n+1)}{6}$
- **Divisibility Rule of 3:** Sum of digits is divisible by 3.
- **Divisibility Rule of 11:** Difference between (sum of odd place digits) and (sum of even place digits) is 0 or 11.

2. Logical Reasoning (The "Brain" Section)

Target: Pattern recognition. Don't overthink; usually, the simplest pattern is the right one.

A. Clocks

- **Angle Formula:** The angle θ between hour and minute hand at time $H:M$ is:

$$\theta = |30H - 5.5M|$$
- **Coincide (0°):** Hands coincide every $65 \frac{5}{11}$ minutes.
- **Straight Line (180°):** Happens once every hour, but 11 times in 12 hours (skip 6-7).

B. Calendars

- **Odd Days:**
 - Ordinary Year (365 days) = 1 odd day.
 - Leap Year (366 days) = 2 odd days.
- **Trick:** The calendar repeats if:
 - Leap Year + 1 \rightarrow Repeat after 6 years.
 - Leap Year + 2 or 3 \rightarrow Repeat after 11 years.
 - Leap Year \rightarrow Repeat after 28 years.

C. Coding-Decoding (Alphabet Series)

- **EJOTY Rule:** Memorize positions of multiples of 5:
 - E=5, J=10, O=15, T=20, Y=25.
- **Opposite Pairs:** A-Z (Azad), B-Y (Boy), C-X (Crux), D-W (Dew)... M-N (Man).

D. Blood Relations

- **Draw the Tree:** Never solve in your head.
 - Use Squares for Males, Circles for Females.
 - Horizontal line for siblings ($\$-\$$); Double line for spouses ($\$=\$$).
 - Vertical line for generations ($\$|\$$).

3. English / Verbal Ability

Target: Elimination. Usually, 2 options are obviously wrong. Fight the remaining 2.

A. Reading Comprehension (RC)

- **Strategy:** Read the **questions first**, then the passage. This gives you keywords to scan for.

- **Tone of Passage:** Identify if the author is Critical, Descriptive, Sarcastic, or Neutral.
- **Trap:** Avoid options that use "Always," "Never," or "All" unless explicitly stated in the text.

B. Vocabulary (Synonyms/Antonyms)

- **Root Words Method:**
 - *Mal* = Bad (e.g., Malicious, Malnutrition).
 - *Bene* = Good (e.g., Benefit, Benevolent).
 - *Ambi* = Both (e.g., Ambidextrous).
- **Context Clues:** If you don't know the word, read the whole sentence. Is the sentence positive or negative? Pick the option that matches that "vibe."

C. Spotting Errors (Grammar Rules)

- **Subject-Verb Agreement:** "The list of items **is** on the desk" (Subject is 'List', not 'items').
- **Parallelism:** "He likes swimming, running, and **to hike**" \rightarrow Incorrect. It should be "hiking".
- **Tenses:** If the sentence starts in the past, it usually stays in the past.

Quick Tips for Exam Day

1. **Skip and Come Back:** If a Logical puzzle (like seating arrangement) takes more than 3 minutes, **skip it**. It's a trap to kill your time.
2. **Options are Friends:** In Quants, try putting the options into the question (Back-Solving) instead of solving the equation.
3. **Negative Marking:** C-CAT usually has negative marking (+3, -1). Do not guess wildly. If you can eliminate 2 options, take a calculated guess.