

Last-Hour Cheat Sheet

Read this once before the test. Do not try to learn new theory now.

Aptitude

- Net successive percent change: $a + b + \frac{ab}{100}$ for two increases; $a - b - \frac{ab}{100}$ for increase then decrease.
- Average = total/count. Rebuild total after adding/removing a value.
- Work: add rates, not days.
- Equal-distance average speed = $\frac{2xy}{x+y}$.
- Train: convert km/h to m/s using 5/18.
- Probability: at least one = $1 - \text{none}$.
- Unit digits repeat in cycles.
- Neither/either usually take singular verb in standard tests.
- Use a/an by sound: a university, an honest person.
- Syllogism: never reverse "All A are B."

Technical

- Queue FIFO, stack LIFO, hash lookup average $O(1)$.
- BFS queue/unweighted shortest path; DFS stack/recursion.
- Binary search needs sorted input.
- Merge sort $O(n \log n)$, stable; quicksort worst $O(n^2)$.
- Process own memory; thread shares process memory.
- Page fault = page absent from RAM.
- Deadlock: mutual exclusion, hold-wait, no preemption, circular wait.
- TCP reliable; UDP connectionless.
- DNS 53, HTTP 80, HTTPS 443, SSH 22, DHCP 67/68.
- $/27 = 30$ traditional usable hosts.
- ARP IP to MAC; DNS name to IP; DHCP IP settings.
- ADC analogue to digital; watchdog resets hang; I2C two-wire.
- Waterfall sequential; Agile iterative; sprint = time box.
- Regression = old features after a change; retesting = confirm particular fix.

Pseudocode

- Write a variable table.
- MOD = remainder; DIV = integer quotient.
- WHILE can run zero times; REPEAT runs at least once.

- Update values line by line in order.
- ELSE goes to nearest unmatched IF.
- State recursion base case.
- Loop doubling/halving is $O(\log n)$.

Coding

- Read constraints first.
- Secure the easiest problem first.
- Test $n=0/1$ if allowed, duplicates, negatives, extremes.
- Sum/max/count: one scan.
- Frequency/pair: hash map.
- Sorted pair/palindrome: two pointers.
- Balanced brackets: stack.
- Shortest unweighted grid: BFS.

Games

- Tutorial first; no random clicking.
- Motion: plan path backward from target.
- Grid: chunk locations/order.
- Switch: use feedback to eliminate possibilities.
- Digit: estimate, then calculate.

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