



UPSC HUB

CSAT · PRELIMS PAPER-II

CSAT: 50 Most Important Topics

Comprehension, reasoning, decision making & basic numeracy — strategies, tables, tips and FAQs to clear the 33% qualifying bar

FREE PDF NOTES

100% original exam-oriented notes • UPSC Prelims & Mains

Table of Contents

Part I: Reading Comprehension

1	1. Types of Comprehension Passages	6
2	2. Main Idea & Central Theme Questions	7
3	3. Inference & Implication Questions	7
4	4. Tone, Attitude & Style Questions	8
5	5. Title & Summary Questions	8
6	6. Vocabulary-in-Context Questions	9
7	7. Specific Detail & Fact Questions	9
8	8. Assumption & Strengthening/Weakening Questions	10
9	9. The Elimination Technique	11
10	10. Speed vs Accuracy: Reading Strategy	11
11	11. Critical Reasoning in Passages	12
12	12. Answering "According to the Passage" Precisely	12

Part II: Logical Reasoning & Analytical Ability

13	13. Number & Alphabet Series	13
14	14. Coding-Decoding	13
15	15. Blood Relations	14
16	16. Direction Sense Test	14

17	17. Syllogisms	15
18	18. Statements & Conclusions	15
19	19. Statements & Assumptions	16
20	20. Statements & Arguments	16
21	21. Analogies & Classification	17
22	22. Seating Arrangement	17
23	23. Puzzles: Floor, Box & Schedule	18
24	24. Ranking & Order	18
25	25. Data Sufficiency	19
26	26. Decision Making & Problem Solving	19
27	27. Clocks	20
28	28. Calendars	21

Part III: Basic Numeracy & Data Interpretation

29	29. Number System Basics	21
30	30. HCF & LCM	22
31	31. Percentages	22
32	32. Ratio & Proportion	23
33	33. Averages	23
34	34. Simple & Compound Interest	24
35	35. Profit & Loss	24
36	36. Time, Speed & Distance	25

37	37. Time & Work	25
38	38. Basic Algebra: Equations & Inequalities	26
39	39. Sets & Venn Diagrams	26
40	40. Permutations & Combinations Basics	27
41	41. Probability Basics	27
42	42. Mensuration Basics (2D & 3D)	28
43	43. Data Interpretation: Tables	28
44	44. Data Interpretation: Bar Graphs	29
45	45. Data Interpretation: Line Graphs	29
46	46. Data Interpretation: Pie Charts	30
47	47. Data Interpretation: Caselets & Mixed Sets	30
48	48. Approximation & Simplification	31
49	49. The 33% Rule: Question Selection Strategy	31
50	50. Mock Strategy & Time Management	32

CSAT 2027: 50 Most Important Topics for UPSC Prelims Paper-II

CSAT is the paper aspirants respect the least and fear the most — often in the same week. Officially it is General Studies Paper-II of the Prelims: 80 questions, 2 hours, 200 marks, and qualifying in nature. You need just 33% — about 67 marks — to clear it. Your score does not add to the Prelims merit. And yet, every year, thousands of candidates who sailed through GS Paper-I watch their entire attempt collapse because they treated this paper as an afterthought.

Since 2015, when CSAT was made qualifying, the paper has quietly become the great filter of the Prelims. Engineers assume their background is enough and stop practising. Humanities and arts graduates assume the maths will sink them and either over-prepare the wrong things or freeze on exam day. Both groups make the same mistake: they prepare for CSAT's reputation instead of

its reality. The reality is a paper built from Class-10 maths, everyday reasoning, and English passages that reward calm reading more than vocabulary.

These 50 topics cover the complete CSAT skill set in three parts — reading comprehension, logical reasoning, and basic numeracy with data interpretation. Every topic has a quick-revision table plus exam-oriented notes: the concept, how to solve it, where aspirants typically slip, and exactly how UPSC tests it. Work through them in order, and by the end you will have a repeatable method for every question type this paper throws at you.



Table of Contents

Part I: Reading Comprehension

1. [Types of Comprehension Passages](#)
2. [Main Idea & Central Theme Questions](#)
3. [Inference & Implication Questions](#)
4. [Tone, Attitude & Style Questions](#)
5. [Title & Summary Questions](#)
6. [Vocabulary-in-Context Questions](#)
7. [Specific Detail & Fact Questions](#)
8. [Assumption & Strengthening/Weakening Questions](#)
9. [The Elimination Technique](#)
10. [Speed vs Accuracy: Reading Strategy](#)
11. [Critical Reasoning in Passages](#)
12. [Answering "According to the Passage" Precisely](#)

Part II: Logical Reasoning & Analytical Ability

1. [Number & Alphabet Series](#)
2. [Coding-Decoding](#)
3. [Blood Relations](#)
4. [Direction Sense Test](#)
5. [Syllogisms](#)
6. [Statements & Conclusions](#)
7. [Statements & Assumptions](#)
8. [Statements & Arguments](#)
9. [Analogies & Classification](#)
10. [Seating Arrangement](#)
11. [Puzzles: Floor, Box & Schedule](#)
12. [Ranking & Order](#)
13. [Data Sufficiency](#)

14. [Decision Making & Problem Solving](#)
15. [Clocks](#)
16. [Calendars](#)

Part III: Basic Numeracy & Data Interpretation

1. [Number System Basics](#)
2. [HCF & LCM](#)
3. [Percentages](#)
4. [Ratio & Proportion](#)
5. [Averages](#)
6. [Simple & Compound Interest](#)
7. [Profit & Loss](#)
8. [Time, Speed & Distance](#)
9. [Time & Work](#)
10. [Basic Algebra: Equations & Inequalities](#)
11. [Sets & Venn Diagrams](#)
12. [Permutations & Combinations Basics](#)
13. [Probability Basics](#)
14. [Mensuration Basics \(2D & 3D\)](#)
15. [Data Interpretation: Tables](#)
16. [Data Interpretation: Bar Graphs](#)
17. [Data Interpretation: Line Graphs](#)
18. [Data Interpretation: Pie Charts](#)
19. [Data Interpretation: Caselets & Mixed Sets](#)
20. [Approximation & Simplification](#)
21. [The 33% Rule: Question Selection Strategy](#)
22. [Mock Strategy & Time Management](#)

Part I: Reading Comprehension

1. 1. Types of Comprehension Passages

Key fact	Detail
Passage themes	Economics, polity, environment, philosophy, science, social issues — usually adapted from editorials and academic writing
Length	Typically 300–600 words; longer passages usually carry 3–4 questions
	Comprehension makes up roughly 25–30 of the 80 questions

Question density	
Skill tested	Reading for argument, not vocabulary — you rarely need the dictionary meaning of a hard word

The concept: CSAT passages are not random. They fall into a few families: argumentative (the author takes a stand), expository (the author explains a phenomenon), and narrative-illustrative (a story or example carries the point). Spotting which family you are reading changes how you read — argumentative passages demand that you track the author's claim and evidence, while expository ones demand that you track definitions and cause-effect chains.

How to solve it: Read the first question before the passage so your eyes know what to hunt for. Then read actively: underline the author's verdict sentence (often in the first or last paragraph) and bracket every "however / but / yet" — the argument usually pivots there. Answer from the passage's logic, not your own knowledge of the topic.

Where aspirants slip: Many read every passage like a novel, absorbing detail they will never be asked about, then run out of time. Others bring outside knowledge — if you know a lot about climate policy, you may mark what is true in real life rather than what the passage claims. The passage is a closed universe; your degree stays outside it.

How UPSC tests it: Expect 5–8 passages per paper with 3–4 questions each. UPSC loves passages where the author's position is qualified rather than extreme — "X helps, but only under conditions Y." Questions then probe whether you caught the qualification.

2. 2. Main Idea & Central Theme Questions

Key fact	Detail
Question stems	"The central idea of the passage is...", "The author primarily argues that..."
Best strategy	The main idea = the author's verdict, not the topic
Elimination clue	Options that are true but too narrow are the classic trap
Time budget	Worth 60–90 seconds; never re-read the whole passage for this

The concept: The main idea is the single claim the whole passage exists to support. It is not the topic (say, "urbanisation") but the author's take on it ("urbanisation without planning deepens inequality"). Everything in the passage — examples, data, counterpoints — is scaffolding around this one sentence.

How to solve it: After reading, cover the options and state the main idea in your own words in under 15 words. Then pick the option that matches your sentence. If two options look close, choose the broader one — the correct answer usually survives at the passage's level of generality, while traps stay stuck on one paragraph's detail.

Where aspirants slip: The favourite trap is the "true but partial" option — a statement the passage genuinely supports, but only as one supporting point. Another is the extreme option that goes further than the author did ("X is the only solution" when the author merely said X helps). Match the author's degree of certainty, not just the direction.

How UPSC tests it: Nearly every passage carries one main-idea question. UPSC phrases options so that three of them describe something the passage mentions and only one describes what the passage is about. The distinction between "mentioned" and "about" is the whole game.

3. 3. Inference & Implication Questions

Key fact	Detail
Question stems	"It can be inferred that...", "Which of the following follows from the passage?"
Rule	An inference must be forced by the passage — not merely consistent with it

Safe zone	One logical step from the text; two steps is usually too far
Red flag	Options introducing new entities the passage never mentions

The concept: An inference is a conclusion the passage does not state outright but makes unavoidable. If the passage says a policy raised school enrolment but learning outcomes fell, the inference is that enrolment alone does not guarantee learning — the text forces it. What the text merely allows ("maybe the policy was badly implemented") is speculation, not inference.

How to solve it: Treat each option as a mini-argument and ask: "Does the passage leave me any room to deny this?" If yes, reject it. The correct inference is the one you cannot reject without contradicting the passage. Work backwards from the options to the supporting lines — the lines should be findable, even if the conclusion is not written there.

Where aspirants slip: Over-inference is the classic error — chaining two or three logical steps ("A implies B, B implies C, so the answer is C") when the passage only supports the first step. Under-inference is the opposite: picking an option that simply restates a passage line and calling it an inference. UPSC wants exactly one step beyond the text.

How UPSC tests it: Inference questions are the single most common comprehension type. The distractors are engineered: one option too strong, one too weak, one contradicting the passage, one the forced conclusion. Learning to feel the "one step" distance is the highest-yield comprehension skill.

4. 4. Tone, Attitude & Style Questions

Key fact	Detail
Question stems	"The tone of the passage is...", "The author's attitude towards X can be described as..."
Common correct tones	Analytical, critical, cautiously optimistic, concerned, dispassionate
Common trap tones	Sarcastic, hostile, indifferent, euphoric — almost never the answer
Evidence	Adjectives and verbs of judgment carry the tone, not the facts

The concept: Tone is the author's emotional temperature toward the subject. A passage can present grim facts in a neutral tone or mild facts in an alarmed tone — the facts and the tone are separate channels. UPSC tests whether you can read the second channel: the choice of words like "regrettably", "commendably", or "merely" is the author telling you how to feel.

How to solve it: Scan for evaluative language — adjectives, adverbs, and verbs of approval or disapproval. Then match the overall temperature: does the author criticise, praise, warn, or simply explain? Eliminate extreme tones first (UPSC authors are rarely furious or ecstatic), then choose between the remaining moderate options by checking whether the author leans positive or negative.

Where aspirants slip: Many confuse the passage's subject with its tone — a passage about corruption is not automatically "angry in tone"; it may be coldly analytical. Others pick tones that describe one paragraph rather than the whole passage. Always ask: how does the author sound in the concluding paragraph? That is usually the settled tone.

How UPSC tests it: Tone questions appear in 1–2 passages per paper. The options are deliberately close ("critical" vs "concerned" vs "disapproving"), so the deciding evidence is usually one or two loaded words. Building a mental list of tone adjectives and their exact shades pays off here.

5. 5. Title & Summary Questions

Key fact	Detail
Question stems	"Which title best fits the passage?", "The passage can be best summarised as..."

Good title test	Covers the whole passage, not just the opening example
Good summary test	Captures the argument's direction, not every detail
Trap pattern	Catchy titles built on a single striking detail

The concept: A title is the main idea compressed into a phrase; a summary is the main idea expanded into two or three sentences. Both test the same underlying skill as main-idea questions — separating the passage's skeleton from its flesh. If you can state the argument in one line, titles and summaries answer themselves.

How to solve it: For titles, reject anything built on an example, anecdote, or statistic from a single paragraph — the title must fit the last paragraph as well as the first. For summaries, check the direction of the argument: does the passage end on a hopeful note, a warning, or a call to action? The correct summary ends the same way. Length is a hint too: UPSC's correct summaries are usually the mid-length option, detailed enough to be accurate, short enough to be a summary.

Where aspirants slip: The attractive trap is the dramatic title — "The Death of Indian Agriculture" for a passage that merely discusses farm distress with nuance. Drama sells, but UPSC rewards precision. Another slip: choosing a summary that adds a recommendation the author never made.

How UPSC tests it: Title questions are less frequent than inference or main-idea questions, but they appear regularly. Summary questions test whether you tracked the argument's arc — beginning, complication, resolution — rather than its individual facts.

6. 6. Vocabulary-in-Context Questions

Key fact	Detail
Question stems	"In the passage, the word 'X' most nearly means..."
Key rule	Answer from the sentence, not the dictionary
Technique	Replace the word with each option and re-read the sentence
Frequency	1–2 per paper; cheap marks if you use context

The concept: These questions do not test your vocabulary — they test whether you can extract meaning from context. The tested word often has a secondary or passage-specific sense that differs from its everyday meaning. "The policy's salutary effects" does not mean the policy was healthy in a medical sense; in context it means beneficial.

How to solve it: Read the full sentence containing the word, then the sentence before and after. Substitute each option into the original sentence and pick the one that keeps the sentence's logic intact. Pay special attention to the word's charge — positive, negative, or neutral — because two options often share a dictionary meaning but differ in charge, and only one matches the sentence's mood.

Where aspirants slip: Reaching for the most common dictionary meaning instead of the contextual one is the standard error. Another is ignoring collocations: "a parsimonious explanation" means economical in the sense of simple, not stingy — the surrounding academic context decides. When stuck, the sentence's overall direction (praise or criticism) eliminates half the options.

How UPSC tests it: UPSC picks words whose everyday sense misleads — "equivocal", "tendentious", "sanguine", "redoubtable". The correct option is the one a careful reader would infer without ever having seen the word before. These are among the fastest marks in the paper if you trust context over memory.

7. 7. Specific Detail & Fact Questions

Key fact	Detail
----------	--------

Question stems	"According to the passage, which of the following is true?", "The passage mentions X in order to..."
Method	Locate, don't memorise — scan for keywords
Trap	Options that flip a detail (dates, numbers, "all" vs "some")
Speed tip	Answer these first within a passage set; they need no deep reading

The concept: Detail questions ask what the passage explicitly states — a figure, a date, a name, a causal claim. They are retrieval tasks, not reasoning tasks. The skill is locating the right lines fast and reading them literally, resisting the urge to interpret.

How to solve it: Pick the distinctive keyword from the question (a name, number, or unusual term) and scan the passage for it — your eyes find proper nouns and digits far faster than they find ideas. Read the two sentences around the hit and match the option word-for-word in meaning. If an option changes "most" to "all" or shifts a date by a year, it is wrong no matter how plausible it sounds.

Where aspirants slip: The standard trap is the near-miss detail — an option that reproduces the passage's sentence but swaps one critical word. Another is answering from memory of the topic instead of the passage's lines. Slow down for exactly the ten seconds it takes to verify the line; detail questions punish haste and reward pedantry.

How UPSC tests it: Every passage set includes at least one detail question, and they are the easiest marks in comprehension — if you locate rather than recall. UPSC's favourite distortion is quantifier-flipping: the passage says "some economists argue", the option says "economists agree".

8. 8. Assumption & Strengthening/Weakening Questions

Key fact	Detail
Question stems	"Which assumption underlies the argument?", "Which would most weaken/strengthen the claim?"
Assumption test	Negate the option — if the argument collapses, it was the assumption
Strengthen test	New evidence that makes the conclusion more likely
Weaken test	An alternative cause or a broken link in the chain

The concept: An assumption is the unstated bridge between the passage's evidence and its conclusion. If a passage argues that banning plastic bags reduced litter because bag use fell after the ban, it assumes nothing else changed in that period. Strengthening adds a pillar to the bridge; weakening knocks one out — usually by offering an alternative explanation for the same evidence.

How to solve it: For assumptions, use the negation test: flip each option to its opposite and see which flip destroys the argument. The option whose denial makes the conclusion impossible is the load-bearing assumption. For strengthen/weaken, identify the conclusion first, then ask of each option: "Does this make the conclusion more or less believable?" Ignore options that are true but irrelevant to the conclusion.

Where aspirants slip: Many pick an option that is true and related to the topic but does no work for the specific conclusion — relevance to the topic is not relevance to the argument. In weaken questions, people also confuse "the conclusion is false" with "the argument is weak": you are attacking the reasoning, not necessarily the final claim.

How UPSC tests it: These appear both inside passage sets and as standalone logical-reasoning items. UPSC's weaken options often introduce a rival cause ("litter fell because of a cleanup drive, not the ban") — spotting the rival cause is the pattern to learn.

9. 9. The Elimination Technique

Key fact	Detail
Core idea	Finding three wrong options is easier than finding one right one
Kill signals	Extreme words, scope shifts, half-truths, opposite charge
Maths	Eliminating two options turns a guess into a 50-50 with positive expected value
Applies to	Every question type, but most powerfully in comprehension

The concept: Elimination is the discipline of proving options wrong instead of proving one right. In a four-option question, you rarely need certainty about the answer — certainty about three rejections gets you the same mark. This matters because UPSC writes distractors with detectable flaws: absolute words ("always", "never", "only"), claims broader than the passage, statements true in real life but absent from the text.

How to solve it: Run every option through four filters in order: (1) Does it contradict the passage? Kill it. (2) Does it go beyond what the passage says? Kill it. (3) Is it true but irrelevant to the question asked? Kill it. (4) Does it carry the wrong charge (praise where the author criticises)? Kill it. Whatever survives — even if it feels bland — is your answer. Mark eliminated options with a slash so you never re-read them.

Where aspirants slip: The failure mode is half-elimination: rejecting one obvious wrong option, then picking between the remaining three by gut feel. Commit to killing at least two with stated reasons before choosing. The other failure is falling in love with an option early and reading the passage to confirm it — elimination works backwards from the options, not forwards from your hunch.

How UPSC tests it: UPSC's option sets are built for elimination — typically one absurd option, one subtle trap, one near-miss, and the answer. Candidates who hunt the answer directly wrestle with the near-miss; candidates who eliminate first let the flaws do the work.

10. 10. Speed vs Accuracy: Reading Strategy

Key fact	Detail
Budget	Roughly 1.5 minutes per mark — a 4-question passage deserves ~6 minutes total
Target pace	200-250 words per minute with questions in mind
Rule of thumb	One careful read beats two rushed reads
Skip trigger	If a passage feels opaque after one read, mark it and move on

The concept: Comprehension is a time-management problem disguised as a reading problem. With 80 questions in 120 minutes, every passage set is a small investment decision: the marks per minute must justify the time. A dense philosophy passage that yields 2 of 4 questions is a worse investment than a clear polity passage that yields 4 of 4 — and recognising the difference mid-paper is a learnable skill.

How to solve it: Give each passage one focused read (questions previewed first), answer what you can, and move on — never re-read an entire passage for a single doubtful question. Attempt passages in your personal order of comfort: most toppers do their strongest theme first to bank marks and confidence. Keep a hard stopwatch discipline in mocks until the pacing becomes instinct.

Where aspirants slip: Perfectionism is the killer — spending 12 minutes to squeeze the fourth mark out of a hard passage while two easy reasoning questions go unattempted. The reverse error is rushing: skimming so fast that you misread the question stem and answer a question that was not asked. Speed without a question-first approach is just expensive guessing.

How UPSC tests it: UPSC deliberately varies passage difficulty within a paper — two or three passages are straightforward, one or two are genuinely dense. The paper rewards candidates who harvest the easy ones fully and ration time on the hard ones. Your mock analysis should track marks-per-minute by passage, not just total score.

11. 11. Critical Reasoning in Passages

Key fact	Detail
What it is	Evaluating the argument's structure: claim, evidence, hidden premises
Question stems	"The argument would be most weakened if...", "The flaw in the reasoning is..."
Common flaws	Hasty generalisation, false cause, straw man, circular reasoning
Overlap	Same skill as standalone logical reasoning, inside a passage

The concept: Some comprehension questions stop asking what the passage says and start asking whether its reasoning holds. These are critical-reasoning questions wearing passage clothes. They want you to dissect the argument: what is claimed, what evidence is offered, and does the evidence actually support the claim — or does it merely sit next to it looking supportive?

How to solve it: Compress the argument into "because [evidence], therefore [conclusion]". Then attack the "because-to-therefore" link: could the evidence be true and the conclusion false? If yes, you have found the gap, and the correct option will name or exploit it. Learn the five classic flaws by name — UPSC recycles them — so you can label the gap instead of just feeling it.

Where aspirants slip: People evaluate whether the conclusion is true in real life instead of whether the reasoning is valid. A conclusion can be true and still be badly argued — and the question asks about the argument. Keep the two judgments separate: "Is the logic sound?" is a different question from "Do I agree?"

How UPSC tests it: Expect 2–4 such questions per paper, often attached to the more argumentative passages. The flaw options are phrased abstractly ("confuses correlation with causation"), so the skill is translating the passage's concrete argument into the abstract flaw label.

12. 12. Answering "According to the Passage" Precisely

Key fact	Detail
The phrase	"According to the passage" = the passage is your only evidence
Discipline	Every marked answer should be traceable to specific lines
Common violation	Marking what you know is true instead of what the passage states
Self-check	"Which lines support my answer?" — if none, change it

The concept: This phrase is UPSC's way of fencing you inside the text. It appears in most comprehension stems, and it carries a strict rule: your outside knowledge is inadmissible. An option can be factually correct, widely known, even something you studied for GS — and still be wrong, if the passage does not say it. The passage is the witness; you are the cross-examiner, not a second witness.

How to solve it: For every answer you mark, identify the lines that license it — a phrase or sentence you could point to. If you cannot point, you are answering from memory or belief, and you should reconsider. This habit also speeds you up: line-hunting is faster than deliberating, because the text settles disputes your judgment cannot.

Where aspirants slip: Subject experts suffer most here. The economist reads a passage on inflation and marks the technically perfect option — which the passage never quite states — while the correct option is the passage's own

cruder formulation. Expertise becomes a liability the moment it overrides the text. Humility before the passage is the whole technique.

How UPSC tests it: UPSC deliberately includes options that are true in the real world but unsupported by the passage, precisely to catch knowledgeable candidates. The paper rewards textual fidelity over subject mastery — a feature, not a bug, of an aptitude test.

Part II: Logical Reasoning & Analytical Ability

13. 13. Number & Alphabet Series

Key fact	Detail
Common patterns	Arithmetic, geometric, squares/cubes, primes, alternating, digit operations
Alphabet trick	Write A=1...Z=26 above the question; most patterns become arithmetic
First move	Check differences between consecutive terms before anything else
Time target	Under 60 seconds per question with practice

The concept: A series hides a rule in plain sight — each term is generated from the previous ones by addition, multiplication, squaring, or a positional trick. Alphabet series are number series in disguise: once you convert letters to their positions (A=1, B=2...), the same arithmetic patterns appear. The test is pattern recognition under time pressure, not mathematical depth.

How to solve it: Always start with first differences (subtract consecutive terms); if those form a pattern, you are done. If not, check ratios, then squares and cubes near each term, then alternating subsequences (odd and even positions separately). For alphabet series, write the number line first — never try to spot letter patterns by staring at letters. When two patterns seem to fit, the simpler one is almost always intended.

Where aspirants slip: The classic error is hunting for an exotic pattern when a simple one works — if the differences are 2, 4, 6, 8, the answer is not a prime-number conspiracy. In alphabet series, people forget that Z wraps to A, or misjudge positions past M. Write the positions down; mental alphabet arithmetic is where errors breed.

How UPSC tests it: Series questions are regulars — usually 2–4 per paper, kept at moderate difficulty. UPSC favours mixed patterns (e.g., +3, ×2 alternating) and series with one wrong term to identify. They are among the fastest marks in the reasoning section once the standard patterns are on your fingertips.

14. 14. Coding-Decoding

Key fact	Detail
Basic types	Letter shifting, reverse order, positional sums, word substitution
Essential tool	The A=1...Z=26 number line, plus opposite pairs (A↔Z, B↔Y...)
Word codes	Look for common letters across coded words to crack the mapping
Speed key	Check +1/−1 and reversal first — they cover most questions

The concept: Coding-decoding gives you a word and its coded form and asks you to apply the same rule elsewhere. The rule is usually one of a small set: shift each letter by a fixed amount, reverse the word, replace each letter with its opposite (A↔Z), or use positional sums. Harder variants code whole sentences by substituting words ("red is written as blue").

How to solve it: Line up the original and coded word letter by letter and compute the shift for each position — if every letter shifts by the same amount, the rule is found in seconds. If shifts vary, check reversal or opposite-letter mapping.

For sentence codes, find the word that appears in two coded sentences; its code is the common element. Always verify your hypothesised rule on a second letter before applying it.

Where aspirants slip: People guess the rule from the first letter alone and apply it — then discover the third letter breaks it. Check the full word. In sentence coding, the error is assuming word order is preserved; it often is not, which is why you match by common elements instead. And in opposite-letter questions, forgetting that M↔N is the centre pair causes off-by-one slips.

How UPSC tests it: Typically 1–3 questions, pitched at easy-to-moderate level. UPSC likes the "code the whole sentence" variant and number-based codes (CAT = 3+1+20 = 24). These are accuracy bankers — slow down slightly and collect them.

15. 15. Blood Relations

Key fact	Detail
Method	Draw a family tree with gender marks; never do it mentally
Symbols	Square = male, circle = female, horizontal line = marriage, vertical = children
Coded relations	Translate symbols to words first (A+B, A×B), then solve
Watch for	"Only son", "only daughter" — they fix family size

The concept: Blood-relation questions describe a family in words ("A is B's mother's brother's wife") and ask you to name the relationship. The difficulty is purely linguistic — unpacking nested possessives without losing track. Drawing the tree converts a verbal tangle into a visual fact, and the answer becomes readable.

How to solve it: Build the tree left to right as you read, marking each person's gender the moment it is stated or implied ("brother" fixes male, "wife" fixes female). For coded problems (P+Q means P is the father of Q), first write out the legend in plain words, then substitute and draw. When the question asks "how is X related to Y", trace the path between them on your tree and name it from X's perspective — direction matters.

Where aspirants slip: Mental solving is the main casualty — three nested relations exceed working memory, and "mother's brother's wife" quietly becomes "mother's sister". Gender ambiguity is the second trap: "A's child" tells you nothing about gender, so never assume. Always mark unknown genders explicitly rather than leaving them blank.

How UPSC tests it: Usually 1–2 questions per paper. UPSC favours the coded-relation format and statements with "only" qualifiers that pin down the family structure. Drawn properly, these take under 90 seconds and are nearly error-proof.

16. 16. Direction Sense Test

Key fact	Detail
Setup	Draw the compass first: N up, then E, S, W clockwise
Turns	Right turn = clockwise; left turn = anticlockwise — from the walker's facing direction
Shortest distance	Usually a Pythagoras setup: 3-4-5 and 5-12-13 triangles recur
Shadow trick	Morning shadow points west, evening shadow points east

The concept: A person walks a described route — "5 km north, then turns right and walks 3 km" — and you must find the final direction or distance from the start. Turns are always relative to the walker's current facing, not the map: "turns right" after walking north means turning east. The geometry is simple; the discipline is tracking facing direction at every step.

How to solve it: Draw the route to scale as you read, marking the facing direction after each turn. For final direction, read it off your diagram's endpoint relative to the start. For shortest distance, look for the right triangle — UPSC loves routes whose legs form 3-4-5 or 5-12-13 triples, so check those before reaching for a calculator-style computation. Shadow questions reduce to one fact: the sun rises in the east, so shadows fall west in the morning.

Where aspirants slip: The dominant error is turning relative to the page instead of the walker — after walking south, a "right turn" points west, and people routinely get this backwards. The second is forgetting to update the facing direction after each leg, so later turns compound the error. Draw every leg; the diagram is the solution.

How UPSC tests it: A steady 1–2 questions per paper. Expect one straightforward route-tracing question and occasionally a shadow-based direction question. Both are quick marks for candidates who draw instead of visualise.

17. 17. Syllogisms

Key fact	Detail
Standard forms	All A are B; No A is B; Some A are B; Some A are not B
Method	Venn diagrams — draw the minimum-overlap version first
Golden rule	A conclusion must follow in ALL possible diagrams, not just one
Classic trap	"Some A are B" does not mean "Some A are not B"

The concept: Syllogisms give you two or three statements about categories and ask which conclusions necessarily follow. "All cats are animals; some animals are black" — does "some cats are black" follow? (No.) The logic is strict: a conclusion is valid only if it holds in every diagram consistent with the statements. One counterexample kills it.

How to solve it: Draw Venn circles for the statements, but draw them to allow maximum flexibility — for "some A are B", draw the circles overlapping only slightly, and ask whether the conclusion survives even that. Then try to break the conclusion: can you redraw the diagram, still respecting the statements, so the conclusion fails? If yes, reject it. Two-diagram testing (one supporting, one breaking) resolves most questions definitively.

Where aspirants slip: Real-world knowledge corrupts the diagrams — people draw "all cats are animals" correctly but then refuse to consider that some cats might not be black because they know cats come in many colours. The statements are the entire universe; reality is inadmissible. The other classic slip is treating "some" as "some but not all" — in logic, "some" means "at least one, possibly all".

How UPSC tests it: Syllogisms appear most years, 1–3 questions, usually with two statements and two or three conclusions to evaluate. UPSC's favourite trap is the conclusion that follows from one natural diagram but fails in another — training yourself to hunt for the breaking diagram is the whole skill.

18. 18. Statements & Conclusions

Key fact	Detail
Question form	Statement(s) given; which conclusions logically follow?
Core test	A conclusion must be 100% forced — 99% is not enough
Kill words	"All", "definitely", "must" in a conclusion drawn from "some" premises
Overlap	Same machinery as syllogisms, in plainer language

The concept: You get a factual statement and two or three proposed conclusions, and must judge which ones the statement logically compels. "The government has announced free coaching for rural students" — does "the government wants to help rural students" follow? These questions test the gap between what is said and what can be concluded — the same discipline as inference questions in comprehension.

How to solve it: Treat the statement as the only evidence in existence. For each conclusion, ask the hard question: "Is there any possible world where the statement is true and this conclusion is false?" If such a world exists, the conclusion does not follow. Conclusions that merely repeat the statement in different words follow; conclusions that add new claims, motives, or predictions almost never do.

Where aspirants slip: Motive-attribution is the great trap — reading intentions ("the government wants...") into factual announcements. Predictions are the second: a statement about the present never logically forces a claim about the future. Mark conclusions that stay inside the statement's boundaries as safe; everything that reaches beyond them is suspect.

How UPSC tests it: A regular feature, 2–4 questions per paper. UPSC writes one conclusion that follows cleanly, one that overreaches slightly, and sometimes a pair where "either 1 or 2 follows" is the intended answer. The overreach is usually a single unjustified word — train your eye for it.

19. 19. Statements & Assumptions

Key fact	Detail
Definition	An assumption is unstated and necessary — the argument needs it
Test	Negate it: if the statement becomes pointless, it was assumed
Not assumptions	Restatements of the statement; facts too obvious to need stating
Common pattern	Advice assumes the advised action is possible and beneficial

The concept: Every statement leans on things it does not say. "Drink green tea for better health" assumes green tea is obtainable, safe, and actually healthier — none of which the sentence states. An assumption is load-bearing: remove it and the statement wobbles. This differs from an implication (what the statement suggests) — assumptions are what it stands on.

How to solve it: Apply the negation test mechanically. Take each proposed assumption, flip it to its opposite, and check whether the original statement still makes sense. "The company should advertise more" with the assumption "advertising increases sales" — negate it ("advertising does not increase sales") and the advice becomes absurd, so the assumption is implicit. If negating changes nothing, the option was never load-bearing.

Where aspirants slip: People select options that are true, sensible, and related — but not necessary. "Green tea is popular" might be true, yet the health advice does not need it. Necessity is the only criterion; truth and relevance are not enough. Also watch for assumptions phrased absolutely ("all customers...") when the statement only needs a milder version.

How UPSC tests it: Usually 1–2 questions. UPSC's assumption options include one genuine load-bearer, one true-but-unnecessary statement, and one that goes too far. The negation test cuts through all three in under a minute once it becomes habit.

20. 20. Statements & Arguments

Key fact	Detail
Question form	A proposal; which arguments are "strong"?
Strong =	Directly relevant, fact-based, and addressing the proposal's core
Weak =	Emotional, hypothetical, trivial, or beside the point
Mindset	Judge like a policymaker, not a debater

The concept: You are given a proposal ("Should voting be made compulsory?") and several arguments for and against, and must decide which are strong. Strength here has a technical meaning: a strong argument is directly related to the proposal, grounded in fact or established principle, and substantial enough to matter. "Compulsory voting worked in Australia" is strong; "voting is a hassle on a holiday" is weak — it is a feeling, not a reason.

How to solve it: Run each argument through three gates: Is it about this proposal (not a neighbouring issue)? Is it based on evidence or principle rather than emotion or anecdote? Does it carry real weight — would a serious decision-maker consider it? Arguments appealing to precedent, data, constitutional values, or large-scale consequences usually pass; arguments from personal inconvenience, vague fears, or "everyone knows" usually fail.

Where aspirants slip: Personal agreement hijacks judgment — if you favour the proposal, its weak arguments start looking strong. Judge arguments, not sides. Another slip: treating a true statement as a strong argument. "Elections cost money" is true, but as an argument against compulsory voting it is trivial unless quantified — truth alone does not make an argument strong.

How UPSC tests it: Appears in most papers, 1–2 questions. UPSC's weak arguments are often emotionally appealing ("it hurts the sentiments of..."), testing whether you can stay clinical. The strong ones tend to cite consequences at scale — economy, governance, rights.

21. 21. Analogies & Classification

Key fact	Detail
Analogy	A : B :: C : ? — find the relation, then replicate it
Classification	Find the odd one out — the item sharing no relation with the rest
Relation types	Function, part-whole, cause-effect, tool-user, degree, sequence
Method	Name the relation in words before looking at options

The concept: Analogies ask you to complete a parallel pair: "Doctor : Hospital :: Teacher : ?" The hidden relation — professional to workplace — transfers to the second pair. Classification inverts the task: three items share a relation and one does not. Both test whether you can abstract the relationship away from the specific words.

How to solve it: State the relation as a sentence before touching the options: "A is the tool used by B", "A is a part of B", "A causes B". Then test each option against that exact sentence. In classification, find what three items share (all are mammals, all are prime numbers, all are tools) and the odd one is the answer. If two relations seem possible, prefer the more specific one — UPSC designs the set so only one relation covers exactly three items.

Where aspirants slip: Vague relations mislead: "they are related" is not a relation. "Doctor : Hospital" could be "works at" — but so could "Teacher : School", and both options might appear. Precision wins: "a doctor's primary workplace is a hospital" eliminates loose fits. In number classification, people miss digit-sum or prime patterns because they only check magnitude.

How UPSC tests it: A light but steady presence — 1–3 questions. Word analogies lean on functional and categorical relations; number/letter classification leans on arithmetic properties (primes, squares, digit sums). Quick marks if you verbalise the relation first.

22. 22. Seating Arrangement

Key fact	Detail
Layouts	Linear row, circle, rectangle — facing centre or facing outward
Anchor	Fix the person with the most constraints first
Facing rule	Facing centre: right = anticlockwise; facing outward: right = clockwise

Output	One diagram usually answers 3–4 questions — high ROI
--------	--

The concept: Several people sit in a defined layout with positional clues ("B sits second to the right of A"), and you must reconstruct the full arrangement. Each question set is a small logic puzzle: the clues interlock, and one correct diagram answers three or four questions at once. The cost is the setup time; the payoff is the question bundle.

How to solve it: Draw the layout skeleton first (eight chairs around a circle, say), then place the person named in the most clues — they are your anchor. Apply direct clues before conditional ones ("if X sits here, then..."). When stuck, try the two possibilities for an ambiguous clue on scratch paper; usually one branch contradicts a later clue and dies. Never attempt these mentally — the diagram is non-negotiable.

Where aspirants slip: Facing direction is the classic killer: in a circle facing the centre, "right" is anticlockwise, and candidates who treat it as page-right invert the whole arrangement. The second error is placing people from vague clues first and then refusing to move them when contradictions appear — treat early placements as pencil, not ink, until the diagram closes.

How UPSC tests it: Seating sets appear regularly, often as a 3–4 question bundle. UPSC keeps the logic moderate — the challenge is execution speed, not genius. Attempt these when your mind is fresh; they punish fatigue more than any other type.

23. 23. Puzzles: Floor, Box & Schedule

Key fact	Detail
Types	Floor-based, box-stacking, day/month scheduling, comparison puzzles
Tool	A grid/table with one column per attribute
Key phrases	"Immediately above", "not adjacent to", "exactly two floors between"
Strategy	Translate every clue into the grid before deducing

The concept: These puzzles assign attributes to positions — people to floors, boxes to stacks, events to days — under a web of constraints. Like seating arrangements, they front-load the work: ten minutes of careful tabulation can yield four or five questions. The skill is systematic bookkeeping, not brilliance.

How to solve it: Build a table with rows for positions (floors 1–7, say) and columns for each attribute (person, colour, profession). Enter every clue as written — including negative ones ("C is not on floor 3") — before drawing any inference. Then propagate: a filled cell often forces its neighbours. When two arrangements remain possible, check whether the questions distinguish them; often they ask only about what is fixed in both.

Where aspirants slip: The expensive mistake is partial tabulation — keeping "a couple of clues in mind" instead of writing all of them. Working memory holds about four constraints; these puzzles give you seven. The other trap is the word "immediately": "immediately above" means adjacent with nothing between, while "above" alone allows gaps. Read the qualifier literally.

How UPSC tests it: Puzzle bundles of 3–5 questions appear in most papers. UPSC's versions are solvable but clue-dense — the differentiator is whether you tabulate completely. In the exam, attempt these only after securing the quicker marks elsewhere.

24. 24. Ranking & Order

Key fact	Detail
Core formulas	Position from top + position from bottom – 1 = total
Between formula	People between A and B = (total) – (A's rank) – (B's rank from bottom)

Left-right	Position from left + position from right – 1 = total in a row
Watch for	"Between" excludes the endpoints; overlapping counts need care

The concept: Ranking questions give positions from one or both ends and ask for totals, middle positions, or the number of people between two individuals. The entire topic rests on one insight: counting from both ends double-counts the person, so you subtract one. Everything else is careful bookkeeping of who is counted where.

How to solve it: Draw a quick line diagram and mark the known positions from each end. Apply the total formula first — most questions reduce to it. For "how many between A and B" problems, find each person's absolute position from the same end, then subtract. When ranks overlap ("5th from top and 8th from bottom" with only 10 people), someone is counted twice — that overlap is usually the point of the question.

Where aspirants slip: Forgetting the minus-one in the total formula is the evergreen error — it turns every answer wrong by exactly one, which UPSC helpfully provides as a distractor. The second is treating "between" as inclusive: if A is 5th and B is 9th from the top, there are 3 people between them, not 4. Count the gap, not the endpoints.

How UPSC tests it: Usually 1–2 questions, kept simple. They are speed questions — under a minute each once the formulas are automatic. UPSC occasionally combines ranking with a seating or order twist, but the core formula still governs.

25. 25. Data Sufficiency

Key fact	Detail
Question form	A question + two statements; can it be answered?
Options	I alone / II alone / both together / neither
Golden rule	Never solve fully — only check sufficiency
Order	Test I, then II, then both — in that order, independently

The concept: Data sufficiency does not ask for the answer — it asks whether the answer is reachable. You get a question ("What is X's age?") and two statements, and must judge whether statement I alone, statement II alone, both together, or neither lets you determine the answer. It tests logical economy: knowing when you have enough, and stopping there.

How to solve it: Evaluate statement I in isolation: does it pin down a unique answer? Then forget I entirely and evaluate II alone — contamination between statements is the classic error. Only if neither suffices alone, combine them. And never compute the actual answer; the moment you know it is determinable, move on. Sufficiency is a yes-or-no judgment, not a calculation.

Where aspirants slip: Carrying information from statement I into the evaluation of statement II inflates "II alone" into "both together" — the most common wrong option. The reverse error is solving completely, burning three minutes on a question that needed forty seconds of judgment. Discipline: judge, don't solve.

How UPSC tests it: A regular 2–3 questions per paper, often with number-system or age problems. The statements are designed so that each looks insufficient and the pair looks sufficient — but sometimes one alone does the job. Independent evaluation is the whole technique.

26. 26. Decision Making & Problem Solving

Key fact	Detail
Format	A workplace/administrative scenario; choose the best response

Correct answers	Have NO negative marking (official instruction)
Ethos	Think like a fair, rule-bound administrator
Priority order	Public interest → rules → empathy → efficiency

The concept: These questions place you in an administrator's chair — a subordinate's complaint, a resource crunch, an ethical dilemma — and ask for the most appropriate action. There is officially no negative marking on this section, which changes the strategy completely: every question should be attempted. The test is judgment, modelled on civil-service values.

How to solve it: Rank the options by the administrator's priorities: does it serve the larger public interest, follow the rules, treat people fairly, and solve the problem at its root? Eliminate extremes first — doing nothing and drastic punishment are both usually wrong. Prefer options that gather facts before acting, follow due process, and address causes rather than symptoms. When torn, ask: "What would the rulebook want?"

Where aspirants slip: Personal morality overrides administrative logic — candidates pick the kindest option rather than the most procedurally correct one. Another slip is choosing the fastest fix over the systemic one: transferring a complaining employee instead of addressing the grievance mechanism. UPSC rewards the response a good officer would defend in writing.

How UPSC tests it: A dedicated block of 5–8 questions with no negative marking — free marks for the prepared. The scenarios recycle themes: staff conflicts, public complaints, resource allocation, ethical grey zones. Since there is no penalty, attempt all of them even under time pressure.

27. 27. Clocks

Key fact	Detail
Hands gain	Minute hand gains 5.5° per minute over the hour hand (360° per 65½ min... precisely 360/65.45)
Coincide	Hands meet every 65 5/11 minutes, 11 times in 12 hours
Right angles	Twice an hour, 22 times in 12 hours
Opposite	Hands point opposite 11 times in 12 hours

The concept: Clock problems are relative-speed problems in disguise. The minute hand moves 360° per hour, the hour hand 30° per hour — so the minute hand gains 330° per hour, or 5.5° per minute. Every standard question (when do the hands coincide? when are they at right angles?) is solved by asking how many degrees the minute hand must gain and dividing by 5.5.

How to solve it: Convert the question into a "degrees to gain" problem. For coincidence between 3 and 4 o'clock: at 3:00 the hands are 90° apart, so the minute hand must gain 90°, taking 90/5.5 = 16 4/11 minutes past 3. For mirror/water images, use the subtraction tricks (time to 12:00 for mirror, to 6:00... precisely, mirror time = 12:00 – given time; water image = 6:00 – given time in the upper half). One formula family covers the topic.

Where aspirants slip: Forgetting that the hour hand also moves — treating it as fixed turns every answer slightly wrong. In mirror-image questions, people subtract from 12:00 correctly but fumble when minutes borrow an hour. And the "11 not 12" coincidences fact (between 11 and 1 the hands meet only once) is a favourite conceptual trap.

How UPSC tests it: Usually 1 question, sometimes folded into a reasoning set. UPSC prefers the conceptual variant (how many times, mirror images) over heavy calculation. Know the 11/22/11 counts cold — they answer half the clock questions without arithmetic.

28. 28. Calendars

Key fact	Detail
Odd days	Days beyond complete weeks; a normal year has 1, a leap year has 2
Century rule	100 years = 5 odd days; 400 years = 0 odd days
Leap years	Divisible by 4 — except centuries, which need divisibility by 400
Anchor	1 Jan 1900 was a Monday (useful reference)

The concept: Calendar problems ask for the day of the week on a given date, or the calendar features of a year. The engine is "odd days": every date's weekday is determined by how many extra days beyond whole weeks have accumulated since a reference point. A normal year contributes 1 odd day, a leap year 2, and centuries follow the 400-year cycle.

How to solve it: Count odd days from a known anchor to your target date: complete years first (remembering leap years add an extra day each), then the months of the target year up to the date. Total odd days mod 7, added to the anchor's weekday, gives the answer. For "same calendar repeats" questions, the gap is 6, 11, or 28 years depending on leap-year placement — 28 for leap years, 6 or 11 for ordinary ones.

Where aspirants slip: The century leap-year exception (1900 was not a leap year; 2000 was) breaks many calculations — always check divisibility by 400 for century years. Off-by-one errors in counting the target year's elapsed months are the other staple: for a date in March, you count January and February's days, not March's. Write the month-day table; don't trust memory.

How UPSC tests it: Typically 1 question per paper, sometimes two. UPSC likes day-of-week computations and the "which year has the same calendar" variant. The arithmetic is simple; accuracy comes from handling the leap-year and century rules correctly.

Part III: Basic Numeracy & Data Interpretation

29. 29. Number System Basics

Key fact	Detail
Divisibility shortcuts	3: digit sum; 4: last two digits; 11: alternating digit-sum difference
Remainders	Remainder of $(a \times b) = \text{remainder of } (ra \times rb)$; use cyclicity for powers
Unit digits	Cycle every 4 for most bases — reduce the exponent mod 4
Prime check	Test divisibility up to $\sqrt{n}$ only

The concept: Number-system questions test fluency with integers: divisibility, remainders, unit digits, and prime properties. UPSC keeps the level at Class 10, but the questions reward number sense — recognising that $999 = 1000 - 1$ makes a remainder problem trivial, while long division makes it a five-minute sink.

How to solve it: Memorise the divisibility rules for 2 through 12 — they convert most questions into one-line checks. For remainders of large powers, find the cycle: compute the first few powers' remainders until the pattern repeats, then reduce the exponent. For unit digits, only the base's unit digit and the exponent mod 4 matter. When a number looks deliberately ugly (like 7^{103}), the ugliness is the hint that a cycle exists.

Where aspirants slip: Computing instead of pattern-matching is the time killer — nobody needs to expand 13^4 . The divisibility-by-11 rule (difference of alternating sums) is the most misremembered; write it out until it is automatic. And in remainder questions, people forget that remainders can be negative-adjusted (a remainder of -1 means divisor -1).

How UPSC tests it: A steady 2–4 questions per paper. Expect one divisibility question, one remainder/unit-digit question, and occasionally a prime or factor-count question. These are pure practice-payoff questions: the patterns repeat year after year.

30. 30. HCF & LCM

Key fact	Detail
HCF	Largest number dividing all given numbers
LCM	Smallest number divisible by all given numbers
Link	$HCF \times LCM = \text{product of the two numbers}$
Fractions	$HCF \text{ of fractions} = HCF \text{ of numerators} / LCM \text{ of denominators (and vice versa)}$

The concept: The Highest Common Factor is the biggest divisor shared by a set of numbers; the Least Common Multiple is the smallest number they all divide into. Word problems disguise them well: "greatest number that divides..." signals HCF, "smallest number divisible by..." signals LCM. The product formula connects the two for any pair.

How to solve it: Translate the wording first — "maximum capacity of a container that can exactly measure..." is an HCF problem wearing a story. For remainder variants ("least number which when divided by 4, 5, 6 leaves remainder 3"), compute the LCM and add the common remainder. Use prime factorisation for the computation: HCF takes the lowest powers, LCM the highest. The fraction formulas handle the occasional fraction variant.

Where aspirants slip: Mixing up the two is the classic error — reading "greatest number that divides 24, 36 and 48" and computing the LCM. Slow down on the wording: "divides them" (HCF) versus "divisible by them" (LCM) point in opposite directions. In remainder problems, people add the remainder before taking the LCM instead of after.

How UPSC tests it: Usually 1–2 questions, often as word problems about containers, bells tolling together, or traffic lights. The bell-tolling variant ("bells toll every 4, 6, 8 minutes; when together again?") is an LCM question UPSC returns to repeatedly.

31. 31. Percentages

Key fact	Detail
Fraction equivalents	$12.5\% = 1/8$, $16.67\% = 1/6$, $20\% = 1/5$, $25\% = 1/4$, $33.33\% = 1/3$
Successive change	$a\% \text{ then } b\%: \text{net} = a + b + ab/100$
Increase vs of	"Increased by 20%" = $\times 1.2$; "increased to 120%" = $\times 1.2$ — same; watch wording
Base matters	A 50% rise then 50% fall $\neq$ original: $100 \rightarrow 150 \rightarrow 75$

The concept: Percentages are the grammar of CSAT arithmetic — they appear directly and hide inside profit-loss, interest, and data-interpretation questions. The single most powerful skill is instant fraction conversion: seeing 37.5% as 3/8 turns a percentage problem into a fraction problem, which is almost always faster.

How to solve it: Memorise the standard percentage–fraction pairs (1/2 through 1/16) until they are reflexive. For successive changes, use the $ab/100$ formula rather than computing step by step — and remember the sign: a rise then a fall of the same percentage always loses. When a question gives percentages of different bases, convert everything to one base before comparing; percentages with different bases cannot be added directly.

Where aspirants slip: Adding percentages on different bases ("prices rose 10% then fell 10%, so no change" — wrong, it is a 1% net fall). Confusing "percentage points" with "percent": a rise from 20% to 25% is 5 percentage points but a 25% increase. UPSC's DI questions exploit exactly this confusion.

How UPSC tests it: Percentages surface everywhere — 3–5 questions directly, plus embedded in DI and profit-loss. The successive-change formula and the base-change trap are the two patterns to master; they cover most of what UPSC asks.

32. 32. Ratio & Proportion

Key fact	Detail
Basics	$a:b = 2:3$ means $a = 2k$, $b = 3k$ for some k
Componendo-dividendo	If $a/b = c/d$, then $(a+b)/(a-b) = (c+d)/(c-d)$
Combined ratios	$a:b$ and $b:c \rightarrow$ make the common term equal, then $a:b:c$
Mixtures	Alligation: the ratio splits inversely to distances from the mean

The concept: Ratios compare quantities; proportions equate two ratios. The working trick is the multiplier k : a ratio of 2:3:5 with total 100 means the parts are 20, 30, 50 — one equation, $k = 10$, done. Mixtures and partnerships are ratio problems in costume, and the alligation cross gives mixture ratios without algebra.

How to solve it: Introduce k immediately for any ratio with a total or difference given. For chained ratios ($a:b = 2:3$, $b:c = 4:5$), equalise the shared term b (multiply to get $b = 12$ in both), then read off $a:b:c = 8:12:15$. For mixtures, draw the alligation cross: place the two concentrations at the ends, the target mean in the middle, and the differences cross over to give the mixing ratio. Partnership profit splits follow investment $\times$ time ratios.

Where aspirants slip: Forgetting to equalise the common term before combining ratios produces nonsense triples. In mixture problems, people mix up which difference goes where in the alligation cross — the difference is written opposite its source. Partnership questions trip people who ignore the time factor: twice the money for half the time equals the same share.

How UPSC tests it: A regular 2–3 questions, often about income-expenditure splits, mixtures, or partnership. The mixture/alligation variant is the UPSC favourite — learn the cross diagram and these become one-minute questions.

33. 33. Averages

Key fact	Detail
Definition	Average = $\text{sum} \div \text{count}$; $\text{sum} = \text{average} \times \text{count}$
New entrant	New average = $\text{old average} \pm (\text{deviation} \div \text{new count})$
Weighted	Combine group averages by their counts, never by simple mean
Cricket-type	Runs needed: $\text{target average} \times \text{new innings} - \text{current total}$

The concept: Average questions revolve around the sum: every average is a total in disguise. "Average age of 5 people is 30" really says "their ages total 150". Most questions are about what happens to the total when someone joins, leaves, or is replaced — and the deviation method answers them without ever computing the full sum twice.

How to solve it: Work with totals, not averages: multiply out immediately. For replacement problems, use the deviation shortcut — if replacing a 40-year-old with a 25-year-old in a group of 5, the average falls by $15/5 = 3$. For weighted averages (two classes with different averages), weight by headcount: the combined average is pulled toward the larger group. The "wrongly computed average" variant is just a total correction: fix the sum, recompute.

Where aspirants slip: Averaging the averages — taking the mean of two group averages without weighting by size. It is wrong whenever the groups differ in count, and UPSC sets the trap deliberately. The second slip: in "average increased by 2 when a new person joined" problems, forgetting that the newcomer's excess is spread over the new total, not the old one.

How UPSC tests it: Usually 1–2 questions, pitched easy. Expect the replacement or wrong-entry variant rather than plain computation. These are accuracy questions — the method is short, so slow down and avoid the weighting trap.

34. 34. Simple & Compound Interest

Key fact	Detail
SI	$SI = P \times R \times T / 100$; amount = $P + SI$
CI	Amount = $P(1 + R/100)^T$; $CI = \text{Amount} - P$
Difference (2 yrs)	$CI - SI = P(R/100)^2$
Doubling	Rule of 72: years to double $\approx 72 \div \text{rate}$

The concept: Simple interest pays on the principal alone; compound interest pays on the principal plus accumulated interest — interest earning interest. The two-year difference formula ($P \times R^2 / 10000$) is the workhorse: UPSC loves giving you the SI–CI difference and the rate and asking for the principal, which the formula answers in one step.

How to solve it: For SI, the formula is direct. For CI over 2–3 years, use successive multiplication or the tree method rather than the power formula — computing year by year is less error-prone. Memorise the two-year difference formula and the three-year variant; they invert the usual question (find P from the difference) into a single division. The Rule of 72 gives doubling-time estimates for the occasional conceptual question.

Where aspirants slip: Applying the annual rate to half-yearly compounding without halving it (and doubling the periods) — "10% compounded half-yearly" means 5% per half-year. Mixing up amount and interest: the CI formula gives the amount; subtract P for the interest. In difference problems, people square the wrong thing — it is $(R/100)^2$ times P, not R^2 alone.

How UPSC tests it: Typically 1–2 questions. The SI–CI difference variant is the UPSC signature here; half-yearly compounding appears as the twist. Keep the formulas on instant recall and these are two-minute marks.

35. 35. Profit & Loss

Key fact	Detail
Basics	Profit% = $(\text{Profit}/CP) \times 100$ — always on cost price unless stated
SP relations	$SP = CP \times (1 + \text{profit}\% / 100)$; $CP = SP \times 100 / (100 + \text{profit}\%)$
Discount	Discount% is on marked price; profit% is on cost price
Dishonest dealer	Effective profit combines price gain and weight fraud

The concept: Every profit-loss question is a triangle of cost price, selling price, and marked price, with percentages measured from specific vertices. Profit% is computed on cost price; discount% on marked price. Confusing the bases is the entire difficulty of the topic — the arithmetic itself is elementary.

How to solve it: Fix the base before computing: ask "percent of what?" for every figure. Chain the relations — marked price to selling price via discount, selling price to cost via profit — working backwards when needed (CP from SP uses division by $1 + \text{profit}\% / 100$). For successive discounts, apply the $ab/100$ formula from percentages. Dishonest-dealer problems split into two profits: the price markup and the weight shortfall, multiplied together.

Where aspirants slip: Computing profit% on selling price instead of cost — the single most common error, and UPSC provides it as a distractor. In discount-then-profit chains, people apply both percentages to the same base. And "profit of 20% on selling price" (a rarer phrasing) means something different from the standard — read the base every time.

How UPSC tests it: A regular 1–2 questions, usually combining discount and profit in one story. The numbers are chosen to work cleanly with fraction equivalents ($20\% = 1/5$), so the percentage–fraction table from Topic 31 pays off again here.

36. 36. Time, Speed & Distance

Key fact	Detail
Core	Distance = Speed × Time; convert km/h to m/s with $\times 5/18$
Average speed	For equal distances at speeds a and b: $2ab/(a+b)$
Relative speed	Same direction: subtract; opposite: add
Trains	Crossing a pole: length = speed × time; crossing each other: sum of lengths

The concept: Three variables, one equation — and a family of standard situations built on it. Trains, boats in streams, and circular tracks are all relative-speed problems: two things moving, and the question is about their separation changing over time. Unit conversion (km/h to m/s) is where a third of the marks are lost.

How to solve it: Convert units first, always — mismatched units are the top error source. For average speed over equal out-and-back distances, use the harmonic formula $2ab/(a+b)$, not the simple mean. Draw the relative motion: in the same direction the gap closes at the speed difference; towards each other, at the sum. Boat problems split into downstream (add the stream) and upstream (subtract it); still-water speed is the average of the two.

Where aspirants slip: Unit chaos — multiplying km/h by seconds without converting. Averaging speeds arithmetically for round trips (wrong unless times are equal). In train problems, forgetting that crossing a platform means covering train length plus platform length. Write the units next to every number; the discipline feels slow but it prevents the characteristic blunders.

How UPSC tests it: Usually 2–3 questions, the heaviest single quant topic. Expect one train problem, one relative-speed or boat problem, and occasionally a circular-track meeting question. The patterns are stable year to year — this is the topic where practice volume converts most directly into marks.

37. 37. Time & Work

Key fact	Detail
Unit method	If A finishes in n days, A's 1-day work = $1/n$
Combined	$1/T = 1/a + 1/b$ for two workers; LCM method avoids fractions
Efficiency	A is twice as efficient as B → A takes half the time
Pipes	Filling pipes add, emptying pipes subtract — same maths as work

The concept: Work problems measure output per unit time. The standard move is to convert "A finishes in 12 days" into "A does $1/12$ of the work per day", then add rates when people collaborate. The LCM method sidesteps fractions entirely: call the total work 24 units, and A does 2 units a day — the arithmetic stays in whole numbers.

How to solve it: Assign the total work as the LCM of the individual times; express each worker's daily output in units; then divide by the combined rate. For "A and B work together for 3 days, then C joins" stories, subtract completed work from the total before recomputing. Efficiency ratios convert directly to time ratios inverted: twice as efficient means half the days. Pipes and cisterns are identical — a leak is just a worker with negative output.

Where aspirants slip: Adding days instead of rates — "A takes 4 days, B takes 6, together 10 days" is spectacularly wrong (the answer is 2.4). Forgetting to subtract work already done before a new worker joins. In wage-sharing questions, pay splits by work done (rate × time), not by time alone — the efficient worker earns more per day.

How UPSC tests it: Usually 1–2 questions, often with a twist: alternate-day working, a worker leaving midway, or wages to distribute. The LCM method handles all variants cleanly — make it your default.

38. 38. Basic Algebra: Equations & Inequalities

Key fact	Detail
Identities	$(a+b)^2 = a^2 + 2ab + b^2$; $a^2 - b^2 = (a-b)(a+b)$
Quadratic	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$; roots sum = $-b/a$, product = c/a
Word problems	Define variables from the question's unknowns, translate "is" to =
Inequalities	Multiplying/dividing by a negative flips the sign

The concept: CSAT algebra stays at the Class-10 level: linear equations, quadratics, and the standard identities. The real test is translation — turning a word story about ages, coins, or two-digit numbers into equations. Once translated, the solving is mechanical; the marks are won or lost in the translation step.

How to solve it: Name the unknowns explicitly and write one equation per sentence — most CSAT stories give exactly as many sentences as unknowns. For two-digit numbers, write the number as $10x + y$; reversing digits swaps to $10y + x$. Use the identities to factor rather than expand: $a^2 - b^2 = (a-b)(a+b)$ collapses ugly arithmetic. For inequalities, the sign-flip on negative multiplication is the one rule to guard.

Where aspirants slip: Translation errors — "5 years ago, A was twice as old as B" becomes $A - 5 = 2(B - 5)$, and people forget to shift both ages. In digit problems, treating the number as $x + y$ instead of $10x + y$. And solving the equations correctly but answering the wrong unknown (finding x when the question asked for $2x + 1$).

How UPSC tests it: Typically 1–2 questions, usually age or digit word problems rather than bare equations. The numbers are chosen to solve cleanly — if your algebra produces fractions everywhere, recheck the translation.

39. 39. Sets & Venn Diagrams

Key fact	Detail
Two sets	$n(A \cup B) = n(A) + n(B) - n(A \cap B)$
Three sets	Add singles, subtract pairwise intersections, add the triple intersection
Only A	$n(\text{only } A) = n(A) - n(A \cap B)$
Neither	Total – $n(A \cup B)$ = neither

The concept: Set problems count overlapping groups — readers of newspapers, speakers of languages, players of sports. The Venn diagram makes the overlaps visible, and the inclusion-exclusion formulas handle the arithmetic. Every "how many do neither / only this" question is one formula application away.

How to solve it: Draw the circles and fill from the centre outward: the triple intersection first, then the pairwise-only regions, then the only-regions. The formulas then verify your diagram. For survey-style word problems, define the total explicitly (including the "neither" group, which people forget to count). When percentages are given, work with 100 as the total — the diagram fills itself.

Where aspirants slip: Double-counting the overlap — adding $n(A) + n(B)$ without subtracting the intersection. Confusing "A and B" (intersection) with "A or B" (union) in word problems. In three-set problems, subtracting the triple intersection three times instead of adding it back once. Fill the diagram region by region; the formulas are just the checksum.

How UPSC tests it: Usually 1 question, often a two- or three-circle survey problem. UPSC sometimes phrases the data as "those who read X but not Y", which is the only-region directly — read the qualifiers carefully and the diagram almost draws itself.

40. 40. Permutations & Combinations Basics

Key fact	Detail
Permutation	$nPr = n!/(n-r)!$ — order matters (arrangements, codes)
Combination	$nCr = n!/[r!(n-r)!]$ — order doesn't (teams, selections)
Key identities	$nCr = nC(n-r)$; $nC0 = nCn = 1$
Restricted	"Together" → bind them as one unit; "never together" → total minus together

The concept: The whole topic is one question: does order matter? Arranging people in a row — order matters, use permutations. Selecting a committee — order doesn't, use combinations. CSAT keeps the numbers small and the situations standard; the skill is classifying the situation correctly, because the formulas then apply mechanically.

How to solve it: Ask "would swapping two chosen items create a different outcome?" If yes (seating, passwords, rankings), permute; if no (teams, groups, selections), combine. For "together" restrictions, tie the items into a single bundle and arrange the bundles, then multiply by the bundle's internal arrangements. For "never together", compute the unrestricted total and subtract the together-count — the complement is usually easier.

Where aspirants slip: Using permutations for selection problems is the standard error — committees of 3 from 10 is $10C3 = 120$, not $10P3 = 720$. Forgetting the internal arrangements of a bound bundle (the bundle of 2 can sit AB or BA). In circular arrangements, dividing by n for rotations — linear formulas overcount circles.

How UPSC tests it: Usually 1 question, kept elementary — a committee selection or a simple arrangement. The classification step is the entire test; UPSC rarely demands heavy computation here.

41. 41. Probability Basics

Key fact	Detail
Definition	$P = \text{favourable outcomes} \div \text{total outcomes}$
Range	$0 \leq P \leq 1$; $P(\text{event}) + P(\text{not event}) = 1$
Independent	$P(A \text{ and } B) = P(A) \times P(B)$
Mutually exclusive	$P(A \text{ or } B) = P(A) + P(B)$

The concept: Probability is counting with division: enumerate what you want, enumerate everything possible, and divide. CSAT probability stays with coins, dice, cards, and balls-in-bags — situations where the total outcomes are countable. The complement rule (compute "not happening" and subtract from 1) solves half the questions faster than the direct route.

How to solve it: Count total outcomes first, carefully — two dice give 36 outcomes, not 12. For "at least one" questions, use the complement: $P(\text{at least one head in 3 tosses}) = 1 - P(\text{no heads}) = 1 - 1/8 = 7/8$. Distinguish "and" (multiply, for independent events) from "or" (add, for exclusive events). Cards: remember the deck structure — 52 cards, 4 suits, 13 ranks — since UPSC assumes you know it.

Where aspirants slip: Miscounting total outcomes (the dice error above). Multiplying for "or" or adding for "and". Forgetting that drawing without replacement changes the denominator on the second draw — the bag's composition shifts. When stuck, the complement route is almost always cleaner than direct counting.

How UPSC tests it: Usually 1 question, occasionally two. Dice, coins, and cards dominate; the "at least one" complement pattern is the UPSC favourite. Keep the deck and dice outcome counts memorised.

42. 42. Mensuration Basics (2D & 3D)

Key fact	Detail
2D essentials	Circle: πr^2 area, $2\pi r$ perimeter; triangle: $\frac{1}{2}bh$; rectangle: lb
3D essentials	Cube: $6a^2$ surface, a^3 volume; cylinder: $2\pi r(h+r)$, πr^2h ; sphere: $4\pi r^2$, $\frac{4}{3}\pi r^3$
Scaling	Doubling the side $\times 4$ the area, $\times 8$ the volume
Common twist	Painted cubes cut into smaller cubes — count faces painted

The concept: Mensuration is formula application: areas, perimeters, surface areas, volumes. UPSC tests whether you know the dozen standard formulas and can handle the classic twists — the scaling laws (area grows as the square, volume as the cube of linear scale) and the painted-cube dissection. No calculus, no cleverness; just recall and care.

How to solve it: Keep a one-page formula sheet and drill it until the formulas are instant — hesitation here costs the minutes other questions need. For scaling questions, apply the square/cube laws directly instead of recomputing. Painted-cube problems reduce to position counting: corner small-cubes have 3 faces painted, edge (non-corner) cubes 2, face-centre cubes 1, interior cubes 0. Path and fencing problems are perimeter/area with a width — draw the strip.

Where aspirants slip: Mixing up surface area with volume (the units differ — check them). Forgetting the factor relationships in scaling: doubling all sides multiplies volume by 8, not 2. In path-around-a-field problems, adding the path width to only one side instead of both. A quick unit sanity check catches most of these.

How UPSC tests it: Usually 1–2 questions. The painted cube and the scaling question are the two UPSC staples; straightforward formula questions fill out the rest. This is a memorisation-payoff topic — the sheet either is in your head or it isn't.

43. 43. Data Interpretation: Tables

Key fact	Detail
First step	Read the title, units, and footnotes before any question
Core operations	Ratios, percentage change, averages across rows/columns
Estimate	Round to friendly numbers; exact computation is rarely needed
Question order	Do the direct-lookup questions first, computation ones after

The concept: Table DI presents data in rows and columns — production figures, marks, populations — and asks questions that combine cells: growth rates, shares, averages, comparisons. The table is a small database; each question is a query. The skill is reading the right cells and choosing the lightest computation that answers the query.

How to solve it: Spend thirty seconds orienting: what does each row mean, each column, what are the units, is there a total row? Then attack questions in order of cheapness — direct lookups first ("which year had maximum production?"), then single-operation questions, then the multi-step ones. Round aggressively: if options are far apart, 47.3% can be treated as "about half". Only compute precisely when options are close.

Where aspirants slip: Skipping the units and footnotes — a table in thousands misread as units inflates every answer by 1000×. Computing exactly when estimation suffices, burning four minutes on a question worth 2.5 marks. Answering from the wrong row or column because the labels were skimmed. Orientation first, always.

How UPSC tests it: Table sets are the most common DI format — expect at least one set per paper. UPSC's tables are moderately sized (5–8 rows); the questions test percentage change and ratios more than raw reading. Estimation discipline is the differentiator.

44. 44. Data Interpretation: Bar Graphs

Key fact	Detail
Read first	Axes labels, scale, and what each bar represents
Comparisons	Heights compare directly — the eye does the first sort
Grouped bars	Compare within a group (categories) and across groups (years)
Stacked bars	Total height = whole; segments = parts — read both

The concept: Bar graphs encode numbers as heights, which makes comparison visual and fast. Simple bars show one series; grouped bars compare categories across periods; stacked bars show composition within totals. The questions ask the same things as table DI — growth, share, extremes — but the visual format lets you eliminate options by eye before computing.

How to solve it: Let the picture do the first pass: the tallest bar, the steepest rise, the biggest gap are visible without arithmetic — use that to kill impossible options immediately. Then compute only for the surviving contenders. For grouped bars, be explicit about which comparison the question wants (across years for one category, or across categories in one year). For stacked bars, check whether the question asks about a segment or the total — they look similar and mean different things.

Where aspirants slip: Misreading the scale — a truncated y-axis exaggerates small differences, and UPSC occasionally uses one. Confusing grouped with stacked conventions. In multi-series graphs, pulling the value from the wrong series because the legend was glanced at, not read. The legend is part of the question; read it like one.

How UPSC tests it: Bar-graph sets appear regularly, sometimes combined with a table. UPSC favours grouped bars with 2–3 series and questions on growth rates and ratios. Visual elimination before computation is the speed skill to practise.

45. 45. Data Interpretation: Line Graphs

Key fact	Detail
What slopes show	Steepness = rate of change; peaks and troughs = extremes
Multi-line	Intersections = equality points; gaps = differences
Common question	"In which year was the growth rate highest?" — steepest segment
Caution	Absolute change vs percentage change are different questions

The concept: Line graphs show trends over time — the slope is the story. A steep segment means fast change; a flat one means stability; a crossing of two lines means the lead changed hands. Questions probe growth rates, turning points, and comparisons between series, all readable from the shape before any number is crunched.

How to solve it: Read the trend first: which line rises, which falls, where do they cross? Growth-rate questions are answered by the steepest segment relative to its starting value — a small absolute rise from a tiny base can be the largest percentage growth. Mark the candidate segments visually, then compute only those. For "average over the period" questions, estimate the line's mid-height rather than averaging every point.

Where aspirants slip: Confusing absolute rise with growth rate — the steepest-looking segment is not always the highest percentage growth if it starts from a large base. Ignoring the y-axis scale, which can make gentle trends look

dramatic. In multi-line graphs, attributing a point to the wrong line when lines run close together — trace with a finger or pen.

How UPSC tests it: Line-graph sets are frequent, often showing 2–3 series over 5–6 years. The growth-rate-vs-absolute-change distinction is the signature test. Practise reading slopes as rates and the questions become quick.

46. 46. Data Interpretation: Pie Charts

Key fact	Detail
Full circle	$360^\circ = 100\% = \text{the total}$; $1\% = 3.6^\circ$
Reading	$\text{Sector angle} \div 360 \times \text{total} = \text{sector value}$
Two pies	Compare only after noting each pie's total — they often differ
Estimate	Quarter = 25%, half = 50% — eyeball first, compute after

The concept: Pie charts show composition — how a total divides into parts. Each sector's angle is its share: a 90° sector is exactly a quarter. Questions ask for sector values, ratios between sectors, and changes across two pies. The visual format makes rough shares instant; the arithmetic is one multiplication per question.

How to solve it: Convert angles to shares using the 3.6° -per-percent bridge, or eyeball quarters and halves for elimination. When two pies are given (two years, two companies), write down each pie's total first — comparing a 30% sector of a small pie with a 20% sector of a large pie requires the totals, and UPSC sets this trap deliberately. For "how much more" questions between sectors, compute the angle difference first, then convert once.

Where aspirants slip: Comparing percentages across pies with different totals as if the totals were equal — the number-one pie-chart error. Overcomputing: converting every sector to a value when the question only needs a ratio (ratios of sectors need no total at all). Misreading which pie a question refers to when two are shown side by side.

How UPSC tests it: Pie-chart sets appear in most papers, often paired with a table giving the totals. The two-pie comparison is the UPSC staple — always extract both totals before touching the questions.

47. 47. Data Interpretation: Caselets & Mixed Sets

Key fact	Detail
Caselet	Data given as a paragraph, not a graph — you build the table
First move	Convert the paragraph into a table before reading questions
Mixed sets	Table + graph together; each answers different questions
Time cost	Highest setup cost in DI — attempt after the visual sets

The concept: A caselet hides a table inside a paragraph: "In a class of 60, 25 like cricket, 20 like football, 10 like both..." Your first job is extraction — rebuilding the table the examiner withheld. Mixed sets combine formats (a table plus a bar graph) where some questions need one source and some need both. Both types front-load effort and reward systematic extraction.

How to solve it: For caselets, draw the table skeleton immediately and fill it sentence by sentence — do not read the questions first, because every question draws on the same extracted data. Use the Venn/set formulas from Topic 39 for overlap caselets; they are set problems in paragraph form. For mixed sets, label which source each question needs before computing; half the errors come from answering a two-source question with one source.

Where aspirants slip: Trying to hold the paragraph data in memory while answering — working memory overflows around the third number, and the rest of the set goes wrong. Skipping the extraction step feels faster and is

catastrophically slower. In mixed sets, the classic error is using last year's table with this year's graph when two periods are shown.

How UPSC tests it: Caselets appear as the "hard" DI set in many papers — 4–5 questions behind one paragraph. They are very doable once tabulated, which is exactly why UPSC uses them: they separate the systematic from the hasty. Budget the setup time deliberately.

48. 48. Approximation & Simplification

Key fact	Detail
Principle	Round to friendly numbers; keep the error small relative to option gaps
BODMAS	Brackets, Orders, Division/Multiplication, Addition/Subtraction — in that order
Common rounds	47.3 → 47 or 50; 9.8% → 10%; $1/7 \approx 14.3\%$
Check	If two options are close, compute exactly — approximation only when gaps allow

The concept: Simplification questions ask for exact values of arithmetic expressions; approximation is the meta-skill of knowing when exactness is unnecessary. In DI, options are often far apart — 120, 250, 400, 600 — and rounding 47.3% of 512 to "half of 500" gives 250 in seconds. The judgment is matching your precision to the option spread.

How to solve it: For simplification, follow BODMAS strictly and cancel before multiplying — dividing first keeps numbers small. Convert decimals to fractions where they terminate cleanly ($0.125 = 1/8$). For approximation, round each number once, in the same direction where possible, and check the option gaps first: wide gaps mean aggressive rounding is safe; narrow gaps mean you compute properly. A quick reasonableness check (order of magnitude) catches BODMAS slips.

Where aspirants slip: Approximating when options are close together — rounding turns a 47 vs 53 distinction into a coin flip. BODMAS violations under time pressure, especially with mixed division and subtraction. And over-rounding early in a multi-step computation, where small errors compound — round at the last step, not the first.

How UPSC tests it: Direct simplification questions are occasional; approximation as a skill is tested inside every DI set. UPSC designs DI options with deliberate gaps — learning to read the gap before choosing your precision is the real examination skill.

49. 49. The 33% Rule: Question Selection Strategy

Key fact	Detail
Target	33% of 200 = 66.67 marks $\approx$ 27 correct answers of 2.5 marks
Negative marking	Each wrong answer costs 0.83 marks — three wrongs erase one correct
Implication	Blind guessing needs >25% accuracy to break even; aim far higher
Strategy	Attempt in tiers: sure → probable → skip; never random-guess

The concept: You do not need 80 attempts — you need about 30 correct ones with minimal damage. The maths of negative marking punishes volume without accuracy: at 0.83 per wrong answer, every three wild guesses cancel one good answer. Selection — which questions to attempt and which to leave — is a bigger score lever than solving speed.

How to solve it: Run three passes. Pass one: answer everything you are sure about (aim: 25–30 questions). Pass two: return to questions where you eliminated two options — a 50–50 guess has positive expected value ($2.5 \times 0.5 - 0.83 \times 0.5 \approx +0.83$). Pass three: leave the rest blank. A blank scores zero; a random guess among four options has negative expected value. Track your tier counts in mocks until the discipline is automatic.

Where aspirants slip: Ego-attempting — answering questions to feel complete rather than to score. The "I studied this" trap: attempting a hard question from a prepared topic while skipping an easy one from an unprepared topic. And the reverse error: over-caution, leaving 50–50s unattempted out of fear — the maths favours the attempt, so take it.

How UPSC tests it: This is not a question type but the frame around the whole paper. Every year's paper has roughly 30 accessible questions, 25 moderate ones, and 25 hard ones — the paper is designed so that selection skill separates qualifiers from the rest. Your mock analysis should score your selection, not just your solving.

50. 50. Mock Strategy & Time Management

Key fact	Detail
Budget	120 minutes ÷ 80 questions = 90 seconds per question
Suggested split	Comprehension ~35 min, reasoning ~40 min, numeracy/DI ~40 min, buffer 5 min
Mock count	15–20 full mocks before the exam, each analysed
Analysis	Log every error by type: concept, calculation, misread, time

The concept: CSAT is won in the analysis notebook, not the mock hall. Each mock produces a diagnostic: which topics leak marks, which errors repeat, where time pooled uselessly. Fifteen mocks with honest analysis transform a candidate; fifteen mocks without it just rehearse the same mistakes. The 90-seconds-per-question budget is the spine everything hangs on.

How to solve it: Personalise the time split to your strengths — strong readers can take 40 minutes for comprehension and compress numeracy, but fix your split before the exam, not during it. In analysis, classify every lost mark: concept gap (study the topic), calculation slip (slow down 10%), misread (read stems aloud in practice), time loss (skip faster). Re-attempt every wrong question a week later; a repeated error is a system failure, not bad luck. Previous-year papers count double — they are the only mocks written by the actual examiner.

Where aspirants slip: Mock without analysis — the most common and most expensive habit in CSAT preparation. Changing strategy mid-paper when the first section feels hard; the split was made with a cool head, trust it. And peaking too early: burning out on mocks in the last week instead of tapering into revision and rest.

How UPSC tests it: The paper itself is the time-management test — 80 questions of deliberately mixed difficulty in 120 minutes, with the easy marks scattered across all three sections. Candidates who front-load one section starve the others. The winning pattern, visible in topper after topper, is balanced harvesting: secure the easy questions everywhere first, then spend the remainder on the moderate ones.

5 Revision Tips for CSAT

- 1. Previous-year papers are the syllabus.** CSAT has no fixed syllabus beyond "comprehension, reasoning, numeracy" — but ten years of papers reveal exactly which patterns repeat. Solve 2015–2026 before touching any other material; most of your marks will come from patterns you have already seen.
- 2. Maintain a formula and pattern sheet.** One page for quant formulas, one for reasoning patterns (series types, Venn rules, clock counts). Revise it weekly. CSAT rewards instant recall — the candidate who remembers the 3-4-5 triple beats the one who re-derives it.
- 3. Drill in timed sets, not loose questions.** Solving ten series questions untimed teaches the pattern; solving ten in eight minutes teaches the exam. From the second month onward, every practice set should have a clock running.
- 4. Fix your question order early.** Decide in mocks whether you start with comprehension, reasoning, or numeracy — and stick to it. Decision fatigue mid-paper costs more marks than any single tough question. Your order should put your strongest section first to bank confidence.

5. Analyse every mock by error type. Concept gap, calculation slip, misread stem, time trap — label each lost mark. The labels tell you what to fix; the score only tells you that something is broken. Re-attempt wrong questions after a week to confirm the fix held.

Frequently Asked Questions

1. Is CSAT really tough for non-maths students?

It feels tougher than it is. The maths is Class-10 level, and roughly half the paper — comprehension and reasoning — needs no maths background at all. Non-maths students typically need 2–3 months of structured practice to reach the 33% comfortably. The ones who fail are usually those who avoided practice, not those who lacked ability.

2. How many marks do I need to qualify CSAT?

33% of 200, which is 66.67 marks. Since each question carries 2.5 marks, about 27 correct answers with minimal negative marking clears it. In practice, aim for 90+ marks in mocks — the buffer absorbs exam-day nerves and one unexpectedly tough section.

3. Is there negative marking in CSAT?

Yes — one-third of the marks allotted to the question, i.e. 0.83 marks per wrong answer. The one exception is the decision-making section, where officially there is no negative marking. This is why blind guessing is punished and the tiered attempt strategy in Topic 49 matters.

4. Can I skip CSAT preparation and focus on GS?

This is the single most failed gamble in UPSC preparation. Every year, strong GS candidates miss the Prelims cutoff because of CSAT — the paper is qualifying, but "qualifying" still eliminates you if you fall short. Even two hours a week from early in your preparation is enough insurance.

5. Which is the best source for CSAT preparation?

Previous-year papers first — nothing else mirrors the examiner's style. After that, any standard aptitude book for concept clarity in your weak areas, plus 15–20 timed mocks. Avoid the trap of collecting five books; one source finished twice beats five sources skimmed once.

6. How much time should I give CSAT daily?

For most aspirants, 1–2 hours daily for 3–4 months is sufficient, tapering to mock-based practice in the final month. If you are comfortable with quant, even less — but keep a weekly timed set running throughout, because speed decays faster than concepts.