

SSC CGL Tier 1 — Quant in 30 Days

Your target: **35 out of 50**. Built from 606 real PrepAngel mock attempts and 19,975 question responses.

35

MARKS YOU NEED

20

QUESTIONS TO ATTEMPT

19

YOU MUST GET RIGHT

20

MINUTES YOU GET

The only maths that matters right now

Quant has 25 questions, 2 marks each, 50 marks total. Every wrong answer costs you 0.5 marks. You do **not** need to solve all 25. Here is what actually gets you to 35:

If you attempt	Correct	Wrong	Skipped	Your score	Verdict
20 questions	19	1	5	37.5	Target hit comfortably
20 questions	18	2	5	35.0	Exactly on target
25 questions	18	7	0	32.5	Attempted more, scored less
13 questions	13	0	12	26.0	Perfect accuracy, still short

Read row 2 and row 3 together. Attempting 5 extra questions you are unsure about lost 5 marks. Skipping is not surrender — skipping is scoring. Your job is to find your best 20 questions, not to finish the paper.

Where students actually stand

Out of 606 students who attempted Quant on PrepAngel in the last 30 days:

Score band	Students	Share	What their answer sheet looks like
Below 0 marks	49	8.1%	Guessing on almost everything. Negative marking eats the whole paper.
0 – 14.5	311	51.3%	Attempts only 8–9 questions, gets about half right. Runs out of time.
15 – 24.5	108	17.8%	Solid in Arithmetic, freezes on Algebra and Geometry.
25 – 34.5	66	10.9%	Good accuracy but attempts too few. Last 5–6 questions never read.
35 and above	72	11.9%	Attempts 22, gets 21 right. Skips traps in under 10 seconds.

59.4% of students score below 15 marks. When we audited their sheets, the cause was almost never a missing chapter. It was three habits: guessing wildly on Advance Maths, burning 2+ minutes on one calculation, and leaving 8–12 easy questions completely unread because the clock ran out.

What separates the top 11.9% from everyone else

Group	Avg score	Attempts /25	Accuracy	Marks lost to wrong answers
Top scorers (35+)	41.2	22.5	93.1%	−0.8
Middle (20–34.5)	26.8	16.8	84.0%	−1.4
Low scorers (below 20)	6.8	8.8	50.7%	−2.2

The gap is not brainpower. Top scorers attempt **2.6 times** as many questions as low scorers and are wrong less often. Speed and selection, not genius.

What the paper is actually made of

Based on 19,975 questions served across real attempts, here is how the 25 questions split:

Section	Share of paper	Roughly	Student accuracy	What to do about it
Arithmetic Percentage, Profit & Loss, Ratio, Time & Work, TSD, Interest	61%	15 Qs 30 marks	72.0%	Your bread and butter. At 90%+ this alone gives you 27 of the 35 marks.
Advance Maths Algebra, Geometry, Trigonometry, Mensuration	33%	8 Qs 16 marks	64.3%	This decides your rank. You need 6 of these 8.
Number System & DI	6%	2 Qs 4 marks	55.4%	Small but cheap. Factor and remainder shortcuts take 20 seconds each.

Correction: Advance Maths is about **one third** of the paper (8 questions), not half. But the point stands — Arithmetic alone caps you at roughly 30 marks. To cross 35 you must convert 6 of those 8.

Your topic hit-list

Ranked by how often students actually get it right. Attack top-down.

GROUP A — Bank these. Never skip, never lose.

Topic	Accuracy	Avg time	Why it is easy marks
Mensuration 3D	83.9%	14s	Pure formula recall. Memorise 8 formulas, get 100%.
Simplification	78.7%	22s	BODMAS and surds. Should take 15s, not 22s. Speed drill fixes this.
Ratio & Proportion	77.6%	18s	Reused inside Partnership, Ages and Mixtures too.
Averages	76.7%	23s	Use the deviation method, not full addition. Half the time.
Simple & Compound Interest	73.2%	21s	The 2-year difference formula solves most in one line.

GROUP B — Drill these. This is where your 35 comes from.

Topic	Accuracy	Avg time	The fix
Trigonometry	71.3%	15s	Stop solving. Put $\theta = 45^\circ$ or 0° into the options and eliminate.
Time & Work	68.1%	21s	Use LCM units for total work instead of fractions. Never use fractions here.
Geometry	67.6%	18s	Biggest Advance Maths topic. 10 theorems cover nearly all of it.
Profit, Loss & Discount	67.3%	23s	Multiplying-factor method turns 4 steps into 1. Slowest topic here.
Time, Speed & Distance	65.5%	17s	Convert km/h to m/s ($\times 5/18$) before anything else.
Percentages	65.0%	22s	Learn the fraction table to 1/20. Half the Arithmetic paper uses it.

GROUP C — Handle with care. Solve only if the method is obvious in 10 seconds.

Topic	Accuracy	Avg time	Where students lose it
Number System	55.6%	20s	Remainder and factor-counting traps. 3 formulas make these free marks.
Alligation & Mixtures	55.5%	16s	Mixing cost price and selling price in the same alligation. See Trap #2.
Algebra	55.1%	23s	Expanding polynomials by hand instead of using identities. See Trap #1.
Mensuration 2D	54.8%	22s	Your weakest topic. Sectors and segments. Day 19 matters most.

Read these numbers carefully. Accuracy is correct $\div$ attempted, and students attempt only 36% of what they see — usually what they already know. Real accuracy is lower. Also, DI's 0% comes from a single attempt, so treat DI as untested, not impossible — the real exam has 1–3 DI questions and they are often the easiest marks on the page.

6 traps that destroy scores — and the 10-second way out

These 6 question types produced the highest error rates in real attempts. Learn these six shortcuts and you convert your six worst questions into six fastest ones.

TRAP 1 — Algebra: high powers of $x + 1/x$ 80.8% got it wrong

Question: If $x + 1/x = 1$, find $x^{2026} + 1/x^{2026}$.

What students do wrong: They square both sides again and again, build monster fractions, and lose 90 seconds.

The shortcut: Multiply $x + 1/x = 1$ by $(x + 1)$. You get $x^3 = -1$, so $x^6 = 1$. Now every power reduces modulo 6. $2026 \div 6$ leaves remainder 4. So the answer is $x^4 + 1/x^4 = -(x + 1/x) = -1$.

Remember the pair: $x + 1/x = 1$ gives $x^3 = -1$ (cycle of 6). $x + 1/x = -1$ gives $x^3 = +1$ (cycle of 3, the cube roots of unity). Students mix these two up constantly. Check the sign first.

TRAP 2 — Alligation: mixing cost price with selling price 78.4% got it wrong

Question: In what ratio must water be mixed with milk costing Rs. 32/L so that selling the mixture at Rs. 36/L gives 50% profit?

What students do wrong: They put 32, 0 and 36 straight into the alligation cross and get 1:8. Wrong, because 36 is a selling price and 32 is a cost price.

The shortcut: All three numbers must be cost prices. First convert: CP of mixture = $36 \div 1.5 = \text{Rs. } 24$. Now alligate. Water : Milk = $(32 - 24) : (24 - 0) = 8 : 24 = 1 : 3$.

Rule to memorise: Never let a selling price enter an alligation. Convert to CP first, every single time.

TRAP 3 — Geometry: area of a triangle from its medians 75.0% got it wrong

Question: The three medians of a triangle are 9 cm, 12 cm and 15 cm. Find the area of the triangle.

What students do wrong: They try to find the actual sides using Apollonius' theorem and drown in square roots.

The shortcut: Area of triangle = $\frac{4}{3} \times \text{area of the triangle made by its three medians}$. Here 9, 12, 15 is a right triangle (3-4-5 scaled), so median triangle area = $\frac{1}{2} \times 9 \times 12 = 54$. Answer = $\frac{4}{3} \times 54 = 72 \text{ cm}^2$. Fifteen seconds.

TRAP 4 — Number System: counting perfect-square factors 74.4% got it wrong

Question: How many factors of 7560 are perfect squares (including 1)?

What students do wrong: They start listing factors by hand and miss half of them.

The shortcut: Break into primes: $7560 = 2^3 \times 3^3 \times 5^1 \times 7^1$. For square factors every power must be even, so count the even powers available in each: for 2^3 you can use 2^0 or $2^2 = 2$ choices, same for $3^3 = 2$ choices, for 5^1 only $5^0 = 1$, for 7^1 only 1. Answer = $2 \times 2 \times 1 \times 1 = 4$.

General formula: number of square factors = $([a/2] + 1)([b/2] + 1)([c/2] + 1) \dots$

TRAP 5 — Mensuration 2D: minor segment of a 90° chord 68.8% got it wrong

Question: In a circle of radius 14 cm, a chord subtends 90° at the centre. Find the area of the minor segment.

What students do wrong: They compute the quarter-sector and the triangle separately with messy decimals.

The shortcut: For a 90° angle with $\pi = 22/7$, minor segment = $(\frac{2}{7}) \times r^2$. Here: $(\frac{2}{7}) \times 196 = 56 \text{ cm}^2$. Do it in your head.

Where it comes from: sector – triangle = $r^2(\pi/4 - \frac{1}{2}) = r^2(11/14 - 7/14) = (\frac{2}{7})r^2$.

TRAP 6 — Profit & Loss: dishonest dealer with successive discounts 64.9% got it wrong

Question: A shopkeeper marks goods 50% above cost, gives 20% and then 10% discount, and uses a 900 g weight for 1 kg. Find net profit %.

What students do wrong: They assume CP = Rs. 100 and walk through four separate steps, then forget which way the false weight goes.

The shortcut: Multiply the factors, in one line: $1.50 \times 0.80 \times 0.90 \times (1000/900) = 1.20$. A factor of 1.20 means **20% profit**.

Build the habit: markup 50% $\rightarrow \times 1.5$. Discount 20% $\rightarrow \times 0.8$. False weight 900 g for 1 kg $\rightarrow \times 1000/900$. Every profit-loss question is one multiplication chain.

Exam hall: the 2-pass method

You get about 20 minutes for Quant inside the 60-minute paper. Do not read questions in order 1 to 25. Do three passes.

Pass	What you do	Pick up these questions	Come out with
PASS 1 Minute 0–11 11 minutes	Sweep the whole section. Solve only what you can see the answer to instantly. Build a lead with zero risk.	Solve now: Simplification · Ratio · Percentage · Averages · 3D Mensuration volumes · Direct trig values (30°, 45°, 60°) · Standard algebra identities Skip in under 5 seconds: anything more than 3 lines long, or any chart	12–13 questions Target 100% accuracy 24–26 marks banked
PASS 2 Minute 11–19 8 minutes	Go back to what you marked. Take on the 2-step questions now that the pressure is off.	Solve now: Circle and tangent theorems · Time & Work with alternate days or pipes · Two-train and circular-track problems · CI vs SI difference Hard stop at 35 seconds: if no equation has formed, leave it. Do not guess.	6–7 questions Target 85% accuracy +11 to +13 marks
PASS 3 Final 60 seconds	Verification only. Check unit digits, check you have not misclicked an option.	No new questions. No last-minute guessing. You are protecting marks you already earned.	Final: 35–39 marks

The 35-second rule is the whole plan. Low scorers do not fail because a question was too hard. They fail because they spent 2 minutes on question 7 and never reached questions 20 to 25, which were easier. When the timer in your head hits 35 seconds with no path forward, move. Every time.

Your daily 3 hours

When	Block	What you do	Why it matters
6:30 – 7:00 AM 30 minutes	Speed drill	Tables to 30 · squares to 50 · cubes to 30 · fractions 1/2 to 1/20 as percentages · 10 mental multiplications · 5 Pythagorean triplets	Cuts calculation time roughly 40% on every single question. This is the block students skip and it is the one that pays most.
7:00 – 8:30 AM 90 minutes	Topic practice	30 min: theory and formula derivation for today's topic 60 min: 35–40 previous-year questions (CGL and CHSL, 2021–2024) on that topic only	Previous-year questions repeat their patterns. After 40 of them you stop reading the question and start recognising it.
8:30 – 9:30 PM 60 minutes	Mock + error log	20 min: one 25-question Quant sectional on PrepAngel, strict timer 40 min: re-solve every mistake yourself before looking at the solution, then write the formula in your Mistake Notebook	The 40-minute audit is worth more than the 20-minute mock. A mistake you do not log is a mistake you will repeat in the exam.

If you only have 90 minutes a day: keep the 30-minute speed drill and the 20-minute mock with a 40-minute audit. Drop the theory block and learn from your own mistakes instead. Never drop the mock.

Exam day, in one line. Never let your ego attach to a stubborn question. If it resists for 35 seconds, skip it cleanly — there are 24 others waiting. Crossing 35 marks in Quant is not about being the best mathematician in the hall. It is ruthless question selection and flawless basics. You have 30 days. Execute.

The 30-day schedule — Days 1 to 15

Day	Topic	What you must be able to do by tonight	PYQs	Evening drill
PHASE 1 — Arithmetic core (Days 1-7) · This is 61% of your paper. Get it to 90%.				
1	Percentages I	Fraction-to-percentage table up to 1/20 by memory. Increase and decrease. Price-consumption-expenditure.	35	Diagnostic mock
2	Percentages II	Successive change ($a + b + ab/100$). Election problems. Population growth and depreciation.	35	Speed sprint: %
3	Profit, Loss & Discount I	CP, SP, MP relationships. Successive discounts. Discount vs markup difference.	40	Topic set 1
4	Profit, Loss & Discount II	Multiplying-factor method (Trap 6). Dishonest shopkeeper. Buy-x-get-y schemes.	35	Topic set 2
5	Ratio, Proportion, Partnership & Ages	Mean and third proportional. Coin problems. Partnership profit sharing. Age word problems.	40	Speed drill: ratio
6	Averages, Mixtures & Alligation	Deviation method for averages. Alligation cross rule. Replacement (milk-water) formula. Trap 2.	35	Sectional mock 1
7	Time & Work + Pipes + catch-up	LCM method for total work. Efficiency ratios. Alternate days. Wages. Inlet, outlet and leaks.	30	Week 1 review mock
PHASE 2 — Algebra & Trigonometry (Days 8-14) · Algebra is your worst Advance Maths topic at 55%.				
8	Simplification, Surds, LCM & HCF	BODMAS order. Rationalising surds. Recurring decimals. Unit digit. LCM/HCF word problems.	40	Speed sprint
9	Algebra I: Identities	$(a+b)^2$, $(a+b)^3$. The full $x + 1/x = k$ family. Write them from memory in 60 seconds.	40	Flashcard drill
10	Algebra II: $a + b + c = 0$	$a^3 + b^3 + c^3 - 3abc$. Spotting when $a+b+c = 0$ is hidden. Symmetric expressions.	35	Topic practice
11	Algebra III: Power cycles	$x + 1/x = 1$ gives $x^3 = -1$. $x + 1/x = -1$ gives $x^3 = 1$. Value-putting with 0 and 1. Trap 1.	35	Sectional mock 2
12	Trigonometry I: Identities	The three Pythagorean identities. Quadrant signs. Complementary angles ($A + B = 90^\circ$).	40	Trig values table
13	Trigonometry II: Value-putting	Eliminate variables by substituting $\theta = 0^\circ, 45^\circ, 90^\circ$. Maximum and minimum of trig expressions.	35	Topic practice
14	Heights & Distances + catch-up	30-60-90 as $1 : \sqrt{3} : 2$ and 45-45-90 as $1 : 1 : \sqrt{2}$. Two-point elevation setup.	25	Week 2 review mock
15	Geometry I: Triangles	Incentre $90 + A/2$ · Circumcentre $2A$ · Orthocentre $180 - A$ · Centroid divides median 2:1.	40	Theorem cheatsheet

Why Days 7, 14 and 21 have fewer questions. They are deliberately light. You will fall behind — everyone does. These three days are where you catch up on whatever you missed that week. If you are fully on schedule, use the spare time on Mensuration 2D, which is the weakest topic in the entire data set.

The 30-day schedule — Days 16 to 30

Day	Topic	What you must be able to do by tonight	PYQs	Evening drill
PHASE 3 — Geometry & Mensuration (Days 15-21) · Geometry is the single biggest Advance Maths topic.				
16	Geometry II: Similarity	Thales theorem. Angle bisector theorem. Area ratio = (side ratio) ² . Median-area theorem (Trap 3).	35	Topic practice
17	Geometry III: Circles	Chords equidistant from centre. Cyclic quadrilaterals. Intersecting chords: $PA \times PB = PC \times PD$.	40	Sectional mock 3
18	Geometry IV: Tangents	Alternate segment theorem. Direct common tangent. Transverse common tangent. Tangent-secant.	35	Topic practice
19	Mensuration 2D ★ weakest topic	Equilateral and isosceles triangles. Rhombus, trapezium. Sectors and segments including the $(2/7)r^2$ shortcut (Trap 5).	40	Formula drill: 2D
20	Mensuration 3D	Cylinder, cone, sphere, hemisphere, frustum, prism, pyramid. Volume and TSA, both.	35	Formula drill: 3D
21	Coordinate Geometry & Statistics + catch-up	Distance and section formula. Slope. Mean, median, mode, variance. Low weight — do not over-invest.	20	Week 3 review mock
PHASE 4 — Speed arithmetic (Days 22-27) · Back to Arithmetic, but now under a timer.				
22	Time, Speed & Distance I	Average speed $2xy/(x+y)$. Relative speed. Meeting points. Stoppage problems.	35	Sectional mock 4
23	Time, Speed & Distance II	Train crossing pole, platform, another train. Circular track races. Linear races with head-start.	35	Trains & races set
24	Boats & Streams	Upstream ($u - v$), downstream ($u + v$). Round-trip average. Escalator problems use the same logic.	30	Speed sprint: boats
25	Simple & Compound Interest	2-year difference = $P(R/100)^2$. 3-year difference. Effective rates. Installments.	40	Topic practice
26	Number System & Divisibility	Divisibility rules for 7, 11, 13. Remainder theorem. Power cycles. Factor counting (Trap 4).	40	Sectional mock 5
27	Data Interpretation	Bar, pie, line and table. Approximate with fractions instead of long division. Read the axis label first.	4 sets	4 DI sets in 8 min
PHASE 5 — Simulation (Days 28-30) · No new topics. Only execution.				
28	Full simulation I	Two full 25-question sectionals back to back, strict 20-minute timer each. Practise the 2-pass method.	50	Full error analysis
29	Full simulation II	Two more sectionals. Audit your speed: how many questions took over 35 seconds?	50	Final formula review
30	Calibration & rest	Mistake Notebook only. No new questions. Run the 2-pass plan through your head once. Sleep 8 hours.	0	Rest

If you are starting late and have fewer than 30 days: do Days 1–7 (Arithmetic core), then Days 9–11 (Algebra), 12–13 (Trig), 15 and 17 (Geometry), 19–20 (Mensuration), then jump straight to Days 28–30. That compressed 17-day version still covers about 85% of the marks on the paper.

Formula sheet — keep this page open every day

ARITHMETIC (61% of your paper)

Fraction to percentage
1/2 = 50% 1/3 = 33.33% 1/4 = 25% 1/5 = 20% 1/6 = 16.67% 1/7 = 14.28% 1/8 = 12.5% 1/9 = 11.11% 1/10 = 10% 1/11 = 9.09% 1/12 = 8.33% 1/13 = 7.69% 1/14 = 7.14% 1/15 = 6.67% 1/16 = 6.25% 1/20 = 5% 1/25 = 4% 1/40 = 2.5%
Percentage
Successive change: $a + b + ab/100$ Price up $x\%$ → cut consumption by $100x/(100+x)\%$ Price down $x\%$ → raise consumption by $100x/(100-x)\%$
Profit & Loss (multiplying factor)
Markup $m\%$ → $x(1 + m/100)$ Discount $d\%$ → $x(1 - d/100)$ False weight → $x(\text{claimed} / \text{actual})$ Multiply the chain. Factor -1 = profit %. Two discounts a, b = $a + b - ab/100$ total
Alligation
Cheaper qty / Dearer qty = $(D - M) / (M - C)$ All three must be the same price type (all CP). Replacement: final = initial $\times (1 - x/V)^n$
Time & Work
Total work = LCM of the days given. Efficiency = total work ÷ days. A and B together = $ab / (a + b)$ days. Wages split in the ratio of efficiency.
Speed, Time & Distance
km/h → m/s: $\times 5/18$ m/s → km/h: $\times 18/5$ Equal distance: average = $2xy / (x + y)$ Equal time: average = $(x + y) / 2$ Train + platform: $(L_{\text{train}} + L_{\text{platform}}) / \text{time}$ Boats: downstream $u + v$, upstream $u - v$
Interest
CI – SI over 2 years = $P(R/100)^2$ CI – SI over 3 years = $P(R/100)^2(3 + R/100)$ No need to compute the amounts separately.
Number System
$N = p^a q^b r^c \rightarrow \text{factors} = (a+1)(b+1)(c+1)$ Square factors = $([a/2]+1)([b/2]+1)([c/2]+1)$ Unit digit cycles in 4: $2 \rightarrow 2, 4, 8, 6$ $3 \rightarrow 3, 9, 7, 1$ $7 \rightarrow 7, 9, 3, 1$ $8 \rightarrow 8, 4, 2, 6$ 4 and 9 cycle in 2. 0, 1, 5, 6 never change.

ADVANCE MATHS (33% of your paper)

Algebra identities
$a^3+b^3+c^3 - 3abc = (a+b+c)(a^2+b^2+c^2 - ab-bc-ca)$ If $a+b+c = 0$ then $a^3+b^3+c^3 = 3abc$.
The $x + 1/x$ family
If $x + 1/x = k$: $x^2 + 1/x^2 = k^2 - 2$ $x^3 + 1/x^3 = k^3 - 3k$ $x^4 + 1/x^4 = (k^2 - 2)^2 - 2$ If $x - 1/x = k$: $x^2 + 1/x^2 = k^2 + 2$ $x^3 - 1/x^3 = k^3 + 3k$ Special: $k = 1 \rightarrow x^3 = -1$, powers cycle in 6 Special: $k = -1 \rightarrow x^3 = 1$, powers cycle in 3
Triangle centres
Incentre angle = $90 + A/2$ Circumcentre angle = $2A$ Orthocentre angle = $180 - A$ Centroid divides each median $2 : 1$ Area = $4/3 \times$ area of the median triangle
Right triangle circles
Inradius $r = (a + b - c) / 2$ Circumradius $R = \text{hypotenuse} / 2$ For 3-4-5: $r = 1, R = 2.5$
Circle theorems
Chords inside: $PA \times PB = PC \times PD$ Secants outside: $PA \times PB = PC \times PD$ Tangent-secant: $PT^2 = PA \times PB$ Direct common tangent = $\sqrt{[d^2 - (r_1 - r_2)^2]}$ Transverse common tangent = $\sqrt{[d^2 - (r_1 + r_2)^2]}$
Trigonometry
$\sin^2 + \cos^2 = 1 \cdot \sec^2 - \tan^2 = 1 \cdot \operatorname{cosec}^2 - \cot^2 = 1$ If $a \sin \theta + b \cos \theta = c$ and $a^2 + b^2 = c^2$: $\sin \theta = a/c, \cos \theta = b/c, \tan \theta = a/b$ $A + B = 90^\circ \rightarrow \sin A = \cos B, \tan A \times \tan B = 1$ and $\sin^2 A + \sin^2 B = 1$
Mensuration 2D
Equilateral triangle = $(\sqrt{3}/4)a^2$, height = $(\sqrt{3}/2)a$ Rhombus = $\frac{1}{2} \times d_1 \times d_2$ Trapezium = $\frac{1}{2} \times (\text{sum of parallel sides}) \times h$ Sector = $(\theta/360) \times \pi r^2$ Minor segment at $90^\circ = (2/7)r^2$ ($\pi = 22/7$)
Mensuration 3D
Cylinder: $V = \pi r^2 h, \text{CSA} = 2\pi r h$ Cone: $V = \frac{1}{3}\pi r^2 h, \text{CSA} = \pi r l, l = \sqrt{r^2 + h^2}$ Sphere: $V = \frac{4}{3}\pi r^3, \text{SA} = 4\pi r^2$ Hemisphere: $V = \frac{2}{3}\pi r^3, \text{TSA} = 3\pi r^2$ Prism: $V = \text{base area} \times \text{height}$
Pythagorean triplets — memorise
3,4,5 · 5,12,13 · 7,24,25 · 8,15,17 9,40,41 · 11,60,61 · 12,35,37 · 20,21,29 Multiples count too: 6,8,10 · 10,24,26 · 15,20,25