

COMPUTEPREP

TIMED CALCULATION DRILLS · BANK & SSC EDITION

Free Sample: 33 Timed Speed Drills (One of Every Type)

Free sample — 33 engine-minted drills, one of every drill type ComputePrep generates, across Easy, Medium & Hard. Same chapters, same orientation cards, same exam-pace target times and same worked answer key as the full 150-drill Speed Book — just one drill per type instead of a full practice set. Free to keep and free to forward.

Sectioned by Family

All 33 Drill Types

Exam-Pace Target Times

Free Sample · 2026 · Share It Freely

How to Use This Book

Every drill is a multiple-choice question with one defensible answer and a **target time** printed under it. That target is not editorial — it is the exact per-question clock the ComputePrep daily enforces for that drill type at that difficulty.

Work against the clock, not just for the answer. A quant paper is not decided by whether you *can* do a sum; it is decided by whether you can do it inside the time the paper allows. Getting a drill right in triple the target time is a miss, and this book is written so you can see that happening.

Method: start a timer, work it mentally wherever the technique allows, commit to an option before you check, then read the worked solution even when you were right — the method in the answer key is often shorter than the one you used, and the shorter method is the one that survives exam pressure. Re-drill any type you missed on *time*, not just the ones you got wrong.

Start with Chapter 1. Speed & Vedic Shortcuts is deliberately the largest chapter: percentages, profit & loss, interest, averages, DI and mensuration all bottom out in a multiplication or a square, so every second you take off those makes the rest of the book — and the paper — faster.

Every answer here is **engine-computed, never hand-written** — each drill is minted by the same pure engine that mints the ComputePrep daily, and each worked solution is that engine's own step-by-step working. The distractors are built from the specific arithmetic slips the technique invites (a dropped carry, a base confusion, a percentage applied to the wrong number), so picking one tells you exactly which step went wrong.

The First 10 Seconds of Any Calculation

Before you compute anything, run this checklist — the ten seconds a fast solver spends on every question, whether it is a multiplication, a percentage, a DI cell or a mensuration formula. Speed in a quant paper is not faster arithmetic; it is less arithmetic.

1. **Look at the numbers before the operation.** Ending in 5? Both near 100? Same leading digits with units adding to 10? Close together, so their midpoint is easy to square? Each of those is a named technique in Chapter 1 and turns the whole multiplication into one step.
2. **Round, then correct.** 98×47 is 100×47 minus 2×47 . Most "hard" multiplications are an easy one plus a small correction — find the easy one first.
3. **Check what the question actually asks.** Approximate value? Percentage *change* or the new value? The profit or the selling price? More marks are lost here than to arithmetic.
4. **Scan the options before you compute.** They are often decades apart, or only one is even/odd, or only one is in range — in which case an estimate finishes the question and the exact working is wasted time.
5. **Estimate the magnitude first.** Know roughly where the answer must land, then compute. It costs a second and catches the misplaced decimal or the dropped zero before you commit.
6. **Decide fast whether to skip.** If nothing above fires within ten seconds, this is a long-working question. Mark it, move on, come back. Protecting the clock is a skill you drill here too.
7. **Never write down what you can carry.** Each intermediate you write is time and a copying error. The techniques in Chapter 1 are built so the intermediate fits in your head.

Contents

33 drills in 5 sections, plus a worked solution for every one of them. Drills are numbered **1–33 straight through the book** — the section lists that follow are slices of that one run, not separate books, and the answer key at the back uses the same numbers.

1 Speed & Vedic Shortcuts

The calculations that decide a quant section — squares, products, and long BODMAS chains — done by pattern instead of by long multiplication.

Drills 1–11

11 drills · 4E / 4M / 3H

2 Percentages & Commerce

Percentage, profit, interest, and averages — one family of problems, and every one of them turns on knowing which number the percentage is charged against.

Drills 12–18

7 drills · 2E / 2M / 3H

3 Time, Work & Motion

Work done, distance covered, and a stream helping or fighting you — all three are rate problems, and rates add where times never do.

Drills 19–24

6 drills · 2E / 2M / 2H

4 Data Interpretation & Equations

Tables, caselets, and paired quadratics — the marks are in reading only what the question asks for, then computing once.

Drills 25–27

3 drills · 1E / 1M / 1H

5 Counting & Measurement

Arrangements, chances, and shapes — the topics where the setup is the whole battle and the arithmetic afterwards is trivial.

Drills 28–33

6 drills · 2E / 2M / 2H



Solutions

The answer plus the full worked method for every drill, in the same numbering.

All 33

answer key

How to move around: every section opens with a one-page guide to its drill types, then its own contents list; each drill header carries a link back to that list. Clues are numbered — if something looks wrong, write to hello@computeprep.com quoting the drill number and the clue number (e.g. "Drill 42, clue 3"). More at computeprep.com.

Speed & Vedic Shortcuts — How to Read This Section

The calculations that decide a quant section — squares, products, and long BODMAS chains — done by pattern instead of by long multiplication.

Speed Arithmetic. ONE operation on exam-sized numbers, against a countdown — an addition, a subtraction, a multiplication, or (from medium up) a division. There is no method to choose here; the whole skill is doing a single step accurately without reaching for paper, which is what the rest of this chapter then builds on.

WORKED EXAMPLE $34 \times 26 = ?$ Split the second factor instead of stacking it: $34 \times 20 = 680$, and $34 \times 6 = 204$. $680 + 204 = 884$.

COMMON MISTAKE checking your digits but not your MAGNITUDE. The wrong options are planted close on purpose — one out at the units, one out by ten, one out by a hundred — so an answer that merely looks about right is exactly the one that was left there for you.

Squares, Cubes & Roots. Squares, cubes and their roots for the numbers the exam actually uses. Two facts do most of the work: a square's LAST DIGIT is fixed by the root's last digit, and the nearest round square brackets the answer.

WORKED EXAMPLE $\sqrt{5184} = ?$ It ends in 4, so the root ends in 2 or 8; and $70^2 = 4,900$ while $80^2 = 6,400$, so the root is in the 70s. $72^2 = 5,184$, so the root is 72.

COMMON MISTAKE guessing from the options without the last-digit test — that one check alone kills most distractors in about a second.

Complementary Products. When two numbers share the same LEADING part AND their units digits add to 10, the product assembles itself (Antyayordashake): the lead $\times$ its successor gives the front, the two units multiplied give the last two digits. It works at any width — 245×245 is the same trick on the lead 24.

WORKED EXAMPLE $43 \times 47 = ?$ Same lead 4, and $3 + 7 = 10$. Front: $4 \times 5 = 20$. Tail: $3 \times 7 = 21$. $= 2,021$.

COMMON MISTAKE forgetting the tail is always TWO digits — 91×99 gives front $9 \times 10 = 90$ and tail $1 \times 9 = 9$, which must be written 09, so 9,009 and not 909.

Simplification (BODMAS). One expression, one answer, and everything turns on ORDER: brackets first, then division and multiplication together left to right, then addition and subtraction together left to right. Two operations at easy; four, with a bracket in front, by the time you reach hard.

WORKED EXAMPLE $83 + 9 \times 9 - 70 \div 7 = ?$ $\times$ and $\div$ outrank $+$ and $-$, so clear those first: $9 \times 9 = 81$ and $70 \div 7 = 10$. Now $83 + 81 - 10 = 154$.

COMMON MISTAKE working strictly left to right — doing the $83 + 9$ before the multiplication that outranks it. It is the one slip this kind exists to catch, and it always lands you on a number that looks perfectly reasonable.

Vedic Squaring. Two sutras for squares the exam loves. Numbers ending in 5 (Ekadhikena): multiply the head by its successor and append 25. Numbers near a base like 100 (Yavadunam): slide by the deficit and append the deficit's square.

WORKED EXAMPLE $85^2 = ?$ It ends in 5, so take the head 8 and its successor 9: $8 \times 9 = 72$, then append 25. $= 7,225$.

COMMON MISTAKE using the head $\times$ successor trick on a number that does NOT end in 5 — it is a rule about the units digit, not a general squaring shortcut.

Difference of Squares. Any two numbers multiply to the square of their MIDPOINT minus the square of the distance from it (Sankalana-vyavakalanabhyam). The midpoint is just their average, and when the two sit close together that distance is 1, 2 or 3 — so one square replaces a whole multiplication.

WORKED EXAMPLE $67 \times 73 = ?$ Their midpoint is 70 and both sit 3 away, so the product is $70^2 - 3^2$. $4,900 - 9 = 4,891$.

COMMON MISTAKE subtracting the distance instead of its SQUARE — writing $4,900 - 3$. The identity is $(m - d)(m + d) = m^2 - d^2$, and the d is squared.

Nikhilam. Multiplying two numbers near a base (98×93 , 104×107): work with their small deficits or surpluses instead of the numbers themselves. Cross-subtract (or cross-add) for the head; multiply the two deviations for the tail.

WORKED EXAMPLE $98 \times 93 = ?$ Deficits from 100 are 2 and 7. Head: $98 - 7 = 91$ ($93 - 2$ gives the same). Tail: $2 \times 7 = 14$. = 9,114.

COMMON MISTAKE letting the tail overflow its two digits without carrying — 87×89 has deficits 13 and 11, so the tail is 143: carry the 1 into the head ($76 + 1 = 77$) and keep 43, giving 7,743.

Crosswise Multiplication. Urdhva-Tiryagbhyam, the general-purpose one: a multiplication in a single sweep — vertical on the left, crosswise in the middle, vertical on the right — with nothing written down but the answer. The easy drills are its $\times 11$ special case (add each pair of neighbours); the hard ones run three digits by two.

WORKED EXAMPLE $23 \times 41 = ?$ Vertical left: $2 \times 4 = 8$. Crosswise: $2 \times 1 + 3 \times 4 = 14$. Vertical right: $3 \times 1 = 3$. Lay them out as $8 \mid 14 \mid 3$. The middle column carries its ten into the front: 943.

COMMON MISTAKE writing the three column results side by side without carrying — $8 \mid 14 \mid 3$ read straight off gives 8,143 instead of 943.

Paravartya Division. Paravartya Yojayet, for dividing by 11: the flag digit ($11 = 10 + 1$, so the flag is 1) gets NEGATED, then chains leftward — bring down the first digit as-is, and each next quotient digit is the dividend digit plus ($-1 \times$ the previous quotient digit). The last digit falls out the same way and gives the remainder for free.

WORKED EXAMPLE $475 \div 11 = ?$ Flag digit is 1 ($11 = 10 + 1$); negate it to -1 . Bring down 4, then $7 + (-1 \times 4) = 3$. Quotient 43, remainder 2 — check: $43 \times 11 + 2 = 475$.

COMMON MISTAKE ADDING the previous quotient digit instead of subtracting it — forgetting to negate the flag digit. The slip doesn't stay local: it cascades, so every digit after the first comes out wrong, not just one.

Anurupyena Multiplication. Multiplying two numbers close to a working base that ISN'T a power of ten — 50, since $50 = 100 \div 2$. Cross-add one number with the other's deviation for a raw left part, then RESCALE it by the base's ratio to 100 (halve it, for base 50). The deviations' own product is the right part, padded to two digits.

WORKED EXAMPLE $54 \times 52 = ?$ Deviations from 50: +4 and +2. Cross-add: $54 + 2 = 56$, then rescale by the base's ratio to 100 ($\div 2$): $56 \div 2 = 28$. Right part: $4 \times 2 = 08$. Join them: $28 \mid 08 \rightarrow 2,808$.

COMMON MISTAKE joining the raw cross-add without rescaling it — writing $56 \mid 08$ straight as 5,608. The working base is 50, not 100, so that left part is always twice too big until you divide it by the base's ratio.

Approximation. The stem tells you WHAT to round and WHEN. Round each addend to the nearest ten before adding; round each factor to the nearest ten before multiplying; round a percent to the nearest 5 before taking it of n. The exact unrounded figure is always on the board.

WORKED EXAMPLE Round each factor to the nearest ten, then multiply: 49×21 . $49 \rightarrow 50$, $21 \rightarrow 20$. $50 \times 20 = 1,000$.

COMMON MISTAKE computing the exact product and calling that the approximation. The paper asked for the rounded calculation, and the exact number is the trap sitting next to it.

Section 1 Contents — Speed & Vedic Shortcuts

Drills 1–11 of this section only. The full book index is at the front.

Drill 1 · Easy

Drill 2 · Easy

Drill 3 · Easy

Drill 4 · Easy

Drill 5 · Medium

Drill 6 · Medium

Drill 7 · Medium

Drill 8 · Medium

Drill 9 · Hard

Drill 10 · Hard

Drill 11 · Hard

Drill 1 EASY *Speed Arithmetic*[↑ Section index](#)**Section 1: Building Pace (Direct Calculation)**

Solve in your head — beat the clock.

Given:

$$7 \times 7 = ?$$

Options:

- A** 39
- B** 56
- C** 59
- D** 49
- E** 42

Target time: ~15s

⚠ **Common mistake:** 7×7 is one step, so the slip is a table error, not a method error — $7 \times 8 = 56$ and $7 \times 6 = 42$ are both on the board.

Drill 2 EASY *Vedic Squaring*[↑ Section index](#)

Squaring a number ending in 5 — beat the clock.

Given:

$$55^2 = ?$$

Options:

- A** 3025
- B** 2525
- C** 3055
- D** 3021
- E** 3625

Target time: ~15s

⚠ **Common mistake:** Ekadhikena multiplies the head by ONE MORE than itself — 5×6 , not 5×5 . The tail is always exactly 25.

Drill 3 EASY *Complementary Products*[↑ Section index](#)

Units sum to 10, same lead — beat the clock.

Given:

$$91 \times 99 = ?$$

Options:

- A** 9009
- B** 9021
- C** 9010
- D** 9023
- E** 8109

Target time: ~15s

⚠ **Common mistake:** The left part is the head times ONE MORE than itself (9×10), and the right part is a PRODUCT of the units (1×9), always written in two digits — here 9, so it must be padded to 09.

Drill 4 EASY *Anurupyena Multiplication*[↑ Section index](#)

Multiplying near a working base — beat the clock.

Given:

$$48 \times 46 = ?$$

Options:

- A** 2208
- B** 8808
- C** 2193
- D** 4408
- E** 2200

Target time: ~15s

⚠ **Common mistake:** The working base is $50 = 100 \div 2$, so the cross-added left part must be HALVED ($44 \div 2 = 22$) before the deviation product is appended. Skipping the rescale, or doubling instead, is the only mistake this method has.

Drill 5 MEDIUM Simplification (BODMAS)[↑ Section index](#)**Section 2: Exam Speed (Applied Shortcuts)**

Simplify — order of operations wins.

Given:

$$64 + 9 \times 9 - 45 \div 9 = ?$$

Options:

- A 140
- B 139
- C 130
- D 138
- E 68

Target time: ~30s

⚠ **Common mistake:** BOTH the $\times$ and the $\div$ resolve before any $+$ or $-$: settle $9 \times 9 = 81$ and $45 \div 9 = 5$ first, then walk the additions. Letting the $\div 9$ swallow the whole expression gives 68.

Drill 6 MEDIUM Crosswise Multiplication[↑ Section index](#)

Crosswise multiplication — beat the clock.

Given:

$$82 \times 32 = ?$$

Options:

- A 2622
- B 2464
- C 2624
- D 2564
- E 2424

Target time: ~30s

⚠ **Common mistake:** The middle band takes BOTH cross-products — $8 \times 2 + 2 \times 3 = 22$, not just one of them, and 22 overflows one digit, so it must carry into the tens.

Drill 7 MEDIUM *Difference of Squares*[↑ Section index](#)

Multiply via the midpoint — beat the clock.

Given:

$$11 \times 27 = ?$$

Options:

- A 121
- B 361
- C 425
- D 297
- E 307

Target time: ~20s

⚠ **Common mistake:** Both operands sit 8 either side of 19, so the answer is 19^2 MINUS 8^2 — subtract the small square, never add it, and never stop at 19^2 alone.

Drill 8 MEDIUM *Approximation*[↑ Section index](#)

QUESTION

What is the approximate value?

Given:

Round each factor to the nearest ten, then multiply: 47×21 .

Options:

- A 987
- B 1000
- C 940
- D 994
- E 996

Target time: ~30s

⚠ **Common mistake:** The exact product is 987. The stem asked for the rounded product.

Drill 9 **HARD** *Squares, Cubes & Roots*[↑ Section index](#)**Section 3: Full Pressure (Multi-Step, Tight Clock)**

Powers and roots — instant recall.

Given:

$$14^3 = ?$$

Options:

- A** 2744
- B** 2197
- C** 2940
- D** 2548
- E** 3375

Target time: ~30s

⚠ **Common mistake:** A cube is $14^2 \times 14$, i.e. TWO multiplications — stopping at 196 gives the square, which is on the option list. Verify with the last digit: 14^3 must end in 4.

Drill 10 **HARD** *Nikhilam*[↑ Section index](#)

Nikhilam multiplication — beat the clock.

Given:

$$10021 \times 10035 = ?$$

Options:

- A** 10056735
- B** 200560000
- C** 100560735
- D** 100420735
- E** 100560749

Target time: ~35s

⚠ **Common mistake:** Cross-add ONCE ($10021 + 35$) — the two cross-steps give the same left part, so doing both is a wasted step — then pad the tail to exactly 4 digits.

Drill 11 **HARD** *Paravartya Division*[↑ Section index](#)

Dividing by 11 — beat the clock.

Given:

$$88297 \div 11 = ?$$

Options:

- A** 8027
- B** 8687
- C** 8025
- D** 80270
- E** 8021

Target time: ~45s

⚠ **Common mistake:** The flag digit is NEGATED — each step subtracts the previous quotient digit, it does not add it. Adding instead cascades the error through every digit that follows.

End of Section 1 — Speed & Vedic Shortcuts

You have worked drills 1–11 (11 of drills in this book). Any blank space below this line is deliberate — each section begins on a fresh page. Next: Section 2 — Percentages & Commerce, starting overleaf.

Percentages & Commerce — How to Read This Section

Percentage, profit, interest, and averages — one family of problems, and every one of them turns on knowing which number the percentage is charged against.

Percentages. Three shapes, and this book drills all of them. Most are a straight 'X% of Y' — convert the percentage to the fraction you already know ($10\% = 1/10$, $20\% = 1/5$, $25\% = 1/4$, $50\% = 1/2$, $75\% = 3/4$) and one division finishes it. Some ask the reverse, 'A is what percent of B'. The hardest chain two changes in a row, and there the second is charged on the number the first one left behind.

WORKED EXAMPLE 800 increased by 50%, then decreased by 10%. Final value? $800 \rightarrow 1,200$ after the rise. The 10% is now charged on 1,200, not on 800 — that is 120. $1,200 - 120 = 1,080$.

COMMON MISTAKE charging the second change on the ORIGINAL number, or just netting the two percentages ($+50 - 10 = +40\%$) and landing on 1,120. A percentage is meaningless until you name what it is a percentage of, and after the first change that base has moved.

Simple & Compound Interest. Simple interest is charged on the original principal every year; compound interest is charged on what the principal has grown into. Over 2 years the gap between them is exactly the interest earned on the first year's interest.

WORKED EXAMPLE ₹8,000 for 2 years at 10% p.a. — how much more is CI than SI? $SI = 8,000 \times 10\% \times 2 = 1,600$. $CI = 8,000 \times (1.1^2 - 1) = 8,000 \times 0.21 = 1,680$. CI exceeds SI by ₹80.

COMMON MISTAKE not using the 2-year shortcut as a check: the difference is always $P \times (r/100)^2$, which is ₹80 here. If your CI – SI doesn't match it, the arithmetic slipped.

Profit & Loss. Cost price, marked price, discount, selling price — four numbers and three percentages between them. Profit % is always on COST; discount is always on MARKED PRICE. Getting those two bases right is most of the topic.

WORKED EXAMPLE An article costing ₹250 is marked 40% above cost and sold at a 10% discount. Profit %? Marked price = 350. Selling price = $350 \times 0.9 = 315$. Profit = $315 - 250 = 65$. $65 \div 250 = 26\%$.

COMMON MISTAKE taking the discount off the COST instead of the marked price — every percentage in this topic names its own base, and swapping two of them is the standard trap.

Averages. One relation, $\text{total} = \text{average} \times \text{count}$, asked three ways. Read the total straight off a given mean; recover a MISSING number by subtracting the rest from that total; or handle a REPLACEMENT, where you never rebuild the total at all — the average simply moves by $(\text{change in total}) \div (\text{count})$.

WORKED EXAMPLE The average of 8 numbers is 43. One of them, 54, is replaced by 14. New average? The total falls by $54 - 14 = 40$, spread over the same 8 numbers — that is 5 off the mean. $43 - 5 = 38$.

COMMON MISTAKE rebuilding the whole sum for a replacement question. Only the total's CHANGE matters, so it stays one subtraction and one division however large the numbers get.

Weighted Average. Every average hides a total: $\text{total} = \text{average} \times \text{count}$. When groups combine, or a member joins or leaves, work in TOTALS and only divide at the end — by the NEW count. Two group averages are never simply averaged unless the groups are the same size.

WORKED EXAMPLE Group A has 8 members averaging 35; Group B has 12 members averaging 65. Combined average? Totals: $8 \times 35 = 280$ and $12 \times 65 = 780$, so 1,060 across $8 + 12 = 20$ members. $1,060 \div 20 = 53$.

COMMON MISTAKE averaging the two averages — $(35 + 65) \div 2 = 50$ — as if the groups were equal in size, or dividing the new total by the OLD count after someone joins. Both answers are always in the options.

Mixtures. Alligation: $\text{first}:\text{second} = |\text{second} - \text{mean}| : |\text{first} - \text{mean}|$. The printed order is first-then-second, not cheap-then-dear — invert the names and the ratio inverts.

Replacement holds the concentrate fixed and adds water to the other part.

WORKED EXAMPLE Rice at ₹20/kg is mixed with rice at ₹80/kg to produce a mixture worth ₹40/kg. First:second = $|80 - 40| : |20 - 40| = 40 : 20$. Reduce: 2:1.

COMMON MISTAKE assuming the first named price is the cheaper one and writing the cheap-first ratio. The swapped parts are always on the board.

Ratio & Proportion. A ratio is a share of a total. Split the total into parts, take the asked share; chain A:B and B:C by scaling the middle term to an LCM; or recover the larger of two numbers from their ratio and their sum.

WORKED EXAMPLE ₹720 is divided between Anil and Bhavna in the ratio 5:3. How much does Anil get? Parts = $5 + 3 = 8$. One part = $720 \div 8 = 90$. Anil holds 5 parts. $5 \times 90 = 450$.

COMMON MISTAKE handing the other person the asked share, or writing A:C as the unscaled first-and-last terms without aligning the middle.

Section 2 Contents — Percentages & Commerce

Drills 12–18 of this section only. The full book index is at the front.

Drill 12 · Easy

Drill 13 · Easy

Drill 14 · Medium

Drill 15 · Medium

Drill 16 · Hard

Drill 17 · Hard

Drill 18 · Hard

Drill 12 EASY Profit & Loss[↑ Section index](#)**Section 1: Building Pace (Direct Calculation)****QUESTION****What does a customer actually pay?****Given:**

1. A jacket is marked at ₹1375.
2. The shop allows a discount of 20%.

Options:

- A** 275
- B** 1375
- C** 1100
- D** 1650
- E** 1111

Target time: ~35s

⚠ **Common mistake:** ₹275 is the DISCOUNT; the question asks what is paid, which is ₹1375 minus it. That discount figure is on the option list, and so is the undiscounted ₹1375.

Drill 13 EASY Weighted Average[↑ Section index](#)**QUESTION****What is the combined average?****Given:****Group A has 12 members with an average of 98. Group B has 7 members with an average of 41.****Options:**

- A** 77
- B** 69.5
- C** 73.15
- D** 62
- E** 76

Target time: ~30s

⚠ **Common mistake:** averaging the two averages — $(35 + 65) \div 2 = 50$ — as if the groups were equal in size, or dividing the new total by the OLD count after someone joins. Both answers are always in the options.

Drill 14 MEDIUM Simple & Compound Interest[↑ Section index](#)

Section 2: Exam Speed (Applied Shortcuts)

QUESTION

By how much does the compound interest exceed the simple interest?

Given:

A sum of ₹40000 is invested for 2 years at 5% per annum.

Options:

- A 91
- B 100
- C 92
- D 98
- E 4000

Target time: ~50s

△ **Common mistake:** Over 2 years the gap is exactly one year's interest ON the first year's interest — $₹40000 \times (5/100)^2 = ₹100$. It is NOT 5% of the simple interest (₹200), and it is not the full CI (₹4100); both are on the option list.

Drill 15 MEDIUM Ratio & Proportion[↑ Section index](#)

QUESTION

What is the ratio of Faiz to Meera?

Given:

1. The ratio of Faiz to Nandini is 4:3.
2. The ratio of Nandini to Meera is 1:3.

Options:

- A 2:5
- B 4:11
- C 4:9
- D 9:4
- E 4:3

Target time: ~45s

△ **Common mistake:** Do not drop Nandini and write 4:3. The middle term must be scaled to a common multiple first.

Drill 16 **HARD** Percentages[↑ Section index](#)**Section 3: Full Pressure (Multi-Step, Tight Clock)**

Percentage drill — no paper.

Given:

800 increased by 20%, then decreased by 25%. Final value?

Options:

- A** 800
- B** 716
- C** 720
- D** 710
- E** 719

Target time: ~40s

⚠ **Common mistake:** Successive percentages MULTIPLY: the net effect is not $+20 - 25 = -5\%$. The second 25% is taken on 960, the value after the first change, not on the original 800.

Drill 17 **HARD** Averages[↑ Section index](#)

Averages — total and mean, no paper.

Given:

The average of 7 numbers is 32. One of them, 44, is replaced by 79. What is the new average?

Options:

- A** 32
- B** 67
- C** 37
- D** 47
- E** 27

Target time: ~40s

⚠ **Common mistake:** A replacement moves the TOTAL by 35, and the average by $35 \div 7 = 5$. Adding the full 35 to 32 gives 67, which is offered — divide the change by the count before you apply it.

Drill 18 **HARD** *Mixtures*[↑ Section index](#)**QUESTION****What is the new milk-to-water ratio?****Given:**

1. A mixture contains milk and water in the ratio 5:1.
2. 8 litres of water is added.
3. The original mixture is 36 litres.

Options:

- A** 19:7
- B** 15:8
- C** 5:1
- D** 15:7
- E** 30:13

Target time: ~65s

⚠ **Common mistake:** Milk/concentrate does not change. Adding 8 to the ratio numbers themselves (5:9) is the usual slip.

End of Section 2 — Percentages & Commerce

You have worked drills 12–18 (7 of drills in this book). Any blank space below this line is deliberate — each section begins on a fresh page. Next: Section 3 — Time, Work & Motion, starting overleaf.

Time, Work & Motion — How to Read This Section

Work done, distance covered, and a stream helping or fighting you — all three are rate problems, and rates add where times never do.

Time & Work. Take the whole job as a convenient number of units — the LCM of the given times — so each worker's rate comes out whole. Rates ADD when people work together, and the job divided by the combined rate is the answer.

WORKED EXAMPLE A alone finishes in 12 days, B alone in 18. Together? Call the work 36 units (LCM): A does 3 a day, B does 2 a day, so together 5 a day. $36 \div 5 = 7.2$ days.

COMMON MISTAKE averaging the two times to get 15 days. Rates add; times do not — two workers are always faster than either one alone, so the answer must be below the smaller time.

Pipes & Cisterns. A cistern is a work-rate problem with named pipes. Two inlets ADD. An outlet SUBTRACTS. If one pipe runs alone and then another joins, convert the solo stretch into units first, then divide only the remainder by the combined rate.

WORKED EXAMPLE Pipe A fills in 12 hours, Pipe B in 18, Pipe C empties in 36. All three on an empty cistern. Call the cistern 36 units: A +3, B +2, C -1, net 4 an hour. $36 \div 4 = 9$ hours.

COMMON MISTAKE adding the outlet as if it helped, or answering the total time when the question asked only for the hours after the second pipe opened.

Time, Speed & Distance. One relation, distance = speed $\times$ time, applied to each leg separately. The one thing to check every time is what is held equal between the legs — equal distances and equal times give different answers.

WORKED EXAMPLE Half a journey at 40 km/h and half at 60 km/h. Average speed? The DISTANCES are equal, so the average is the harmonic mean: $2 \times 40 \times 60 \div (40 + 60) = 48$ km/h, not 50.

COMMON MISTAKE averaging the two speeds. That is only right when equal TIMES are spent at each — with equal distances more time is spent at the slower speed, which drags the average down.

Boats & Streams. The stream adds to the boat going downstream and subtracts going up. So downstream speed = boat + stream and upstream = boat - stream, which means the boat is the two effective speeds averaged and the stream is half their difference.

WORKED EXAMPLE 30 km downstream in 2 hours and 30 km upstream in 3 hours. Boat and stream speeds? Downstream = 15 km/h, upstream = 10 km/h. Boat = $(15 + 10) \div 2$, stream = $(15 - 10) \div 2$. Boat 12.5 km/h, stream 2.5 km/h.

COMMON MISTAKE using the still-water speed where the question wants the effective one (or the reverse) — read carefully which of the three speeds is being asked for.

Ages. An age gap is a constant; a ratio is not. Given a gap and a sum, the elder is $(\text{sum} + \text{gap}) \div 2$. Given present and future ratios, cross-multiply after adding the same years to both. A father who is n times his son and later m times solves as son = $k(m - 1) / (n - m)$.

WORKED EXAMPLE Anil is 8 years older than Bhavna. The sum of their ages is 36. What is Anil's age? Let Bhavna = x . Anil = $x + 8$. $2x + 8 = 36 \rightarrow x = 14$. Anil = 22.

COMMON MISTAKE returning the other person's age, or treating a future ratio as if the parts themselves aged instead of the people.

Partnership. Profit follows capital $\times$ time. Same period, so the ratio is just the capitals. Different months, multiply each stake first, then split the profit in that ratio. Three partners are the same identity with one more term.

WORKED EXAMPLE Anil invests ₹6,000 for 8 months, Bhavna ₹4,000 for 6 months. Profit ₹1,800. Anil's share? Capital-months $48,000 : 24,000 = 2 : 1$. Anil takes $2/3$ of $1,800 = 1,200$.

COMMON MISTAKE splitting by capital alone and ignoring the months, or handing the other partner the asked share.

Section 3 Contents — Time, Work & Motion

Drills 19–24 of this section only. The full book index is at the front.

Drill 19 · Easy

Drill 20 · Easy

Drill 21 · Medium

Drill 22 · Medium

Drill 23 · Hard

Drill 24 · Hard

Drill 19 EASY Time & Work[↑ Section index](#)**Section 1: Building Pace (Direct Calculation)****QUESTION**

Working together, in how many days will they finish it?

Given:

1. Deepak can complete a piece of work in 12 days.
2. Latha can complete the same work in 36 days.

Options:

- A 1
- B 24
- C 7
- D 9
- E 48

Target time: ~45s

⚠ **Common mistake:** Days do not add. $12 + 36 = 48$ days is on the option list and is slower than either of them working alone, which cannot be right — add the RATES ($3 + 1$ units/day) and divide the work by the sum.

Drill 20 EASY Ages[↑ Section index](#)**QUESTION**

What is Anil's age?

Given:

1. Anil is 6 years older than Bhavna.
2. The sum of their ages is 38.

Options:

- A 42
- B 38
- C 16
- D 22
- E 6

Target time: ~40s

⚠ **Common mistake:** Bhavna is 16. The question asked for Anil.

Drill 21 MEDIUM Time, Speed & Distance[↑ Section index](#)

Section 2: Exam Speed (Applied Shortcuts)

QUESTION

How long does the journey take?**Given:****A train covers 504 km at a steady 72 km/h.****Options:**

- A** 432
- B** 7
- C** 5
- D** 6
- E** 2

Target time: ~50s

⚠ **Common mistake:** Divide the distance BY the speed: $504 \div 72$. km $\div$ km/h leaves hours; halving or doubling 72 first gives 14, which is on the option list.

Drill 22 MEDIUM Partnership[↑ Section index](#)

QUESTION

What is Faiz's share of the profit?**Given:**

1. Faiz invests ₹160 for 8 months.
2. Nandini invests ₹480 for 4 months.
3. The profit is ₹1500.

Options:

- A** 160
- B** 600
- C** 587
- D** 900
- E** 375

Target time: ~50s

⚠ **Common mistake:** Splitting by capital alone (ignoring months) gives ₹375. Time is part of the stake.

Drill 23 **HARD** Boats & Streams[↑ Section index](#)

Section 3: Full Pressure (Multi-Step, Tight Clock)

QUESTION

What is the speed of the boat in still water?

Given:

A boat travels downstream at 24 km/h and upstream at 12 km/h.

Options:

- A 6
- B 18
- C 36
- D 28
- E 20

Target time: ~65s

⚠ **Common mistake:** Both halves matter: the boat is the half-SUM (18 km/h) and the stream the half-DIFFERENCE (6 km/h). The question asks for the boat, so 6 — the other half — is a wrong answer sitting on the option list, as is the undivided 36.

Drill 24 **HARD** Pipes & Cisterns[↑ Section index](#)

QUESTION

How many more hours are needed to fill the cistern after Pipe B is opened?

Given:

1. Pipe A fills a cistern in 16 hours. Pipe B fills the same cistern in 48 hours.
2. Pipe A is opened alone for 12 hours, then Pipe B is also opened.

Options:

- A 3
- B 0
- C 1
- D 2
- E 15

Target time: ~70s

⚠ **Common mistake:** 15 hours is the total time from the start. The question asked only for the time after B opens.

End of Section 3 — Time, Work & Motion

You have worked drills 19–24 (6 of drills in this book). Any blank space below this line is deliberate — each section begins on a fresh page. Next: Section 4 — Data Interpretation & Equations, starting overleaf.

Data Interpretation & Equations — How to Read This Section

Tables, caselets, and paired quadratics — the marks are in reading only what the question asks for, then computing once.

Data Interpretation (Table). A small table and one question about it, and the question is always one of four: a column TOTAL, the DIFFERENCE between two named rows in one column, two columns COMBINED for a single row, or a column's AVERAGE. The table prints far more than any one question needs, so the skill is finding the named cells and ignoring the rest of the page.

WORKED EXAMPLE Branch / Men / Women — North 100 | 30, South 130 | 40, East 70 | 80. Total Men across all 3 branches? Only the Men column is in play: $100 + 130 + 70 = 300$. The Women column never enters it.

COMMON MISTAKE reading down the neighbouring column, or answering the question the table INVITES rather than the one printed. Underline the column name and the row names first — the arithmetic after that is a single addition.

Data Interpretation (Caselet). The same data as a table DI, hidden in a paragraph — and always in TWO steps. The paragraph splits a total (by a ratio or by a percentage), then asks for a share of ONE of the parts. Do the split on paper before you even look at what is being asked, and the question becomes a lookup.

WORKED EXAMPLE A store holds 48 items, split between imported and locally made in the ratio 5 : 7. Of the imported items, 25% are returned. How many imported items are returned? Step one, the split: 12 parts in all, so one part is 4 and imported = $5 \times 4 = 20$. Step two: 25% of 20 = 5. The 28 local items were never in the question.

COMMON MISTAKE taking that second percentage of the TOTAL instead of the part — 25% of 48 rather than of 20. The paragraph sets the trap by keeping both numbers in the same sentence.

Quadratic Equations. Two quadratics, one in x and one in y . Solve both, then compare EVERY root of one against every root of the other. The answer is a definite inequality only if the two sets do not overlap at all.

WORKED EXAMPLE $x^2 - 7x + 12 = 0$ and $y^2 - 9y + 20 = 0$. $x = 3$ or 4 ; $y = 4$ or 5 . The ranges overlap — x can equal y at 4, and x can also be less. The relation cannot be determined.

COMMON MISTAKE comparing only the largest roots, or only the smallest. ' $x < y$ ' is true only when every single x is below every single y — one overlapping pair makes it indeterminate.

Section 4 Contents — Data Interpretation & Equations

Drills 25–27 of this section only. The full book index is at the front.

Drill 25 · Easy

Drill 27 · Hard

Drill 26 · Medium

Drill 25 **EASY** *Data Interpretation (Table)*[↑ Section index](#)**Section 1: Building Pace (Direct Calculation)****QUESTION****What is the total Cost across all 3 quarters?****Given:**

1. Quarterly figures for a small firm, in ₹ thousand: (figures in ₹ thousand)
2. Quarter Revenue Cost
3. Q1 100 50
4. Q2 60 20
5. Q3 100 30

Options:

- A** 100
- B** 33
- C** 95
- D** 50
- E** 260

Target time: ~40s

⚠ **Common mistake:** Only the Cost column is asked for. The Revenue column totals 260 and the whole table totals 360; both are on the option list, and under a clock the eye slides one column across.

Drill 26 MEDIUM Data Interpretation (Caselet)[↑ Section index](#)

Section 2: Exam Speed (Applied Shortcuts)

QUESTION

How many children travelled without luggage?**Given:**

1. A train carried 2600 passengers, of whom 50% are adults.
2. Of the children, 40% travelled without luggage.

Options:

- A 520
- B 1040
- C 505
- D 1300
- E 508

Target time: ~50s

⚠ **Common mistake:** The 50% names the adults, but the question asks about the children — so the 40% runs on the COMPLEMENT (1300), not on 1300 and not on 2600.

Drill 27 HARD Quadratic Equations[↑ Section index](#)

Section 3: Full Pressure (Multi-Step, Tight Clock)

Solve both equations and state the relation between x and y .**Given:**

1. I. $x^2 + 5x - 104 = 0$
2. II. $y^2 - 31y + 234 = 0$

Options:

- A $x > y$
- B $x < y$
- C $x \geq y$
- D $x \leq y$
- E $x = y$ or no relation can be established

Target time: ~50s

⚠ **Common mistake:** comparing only the largest roots, or only the smallest. ' $x < y$ ' is true only when every single x is below every single y — one overlapping pair makes it indeterminate.

End of Section 4 — Data Interpretation & Equations

You have worked drills 25–27 (3 of drills in this book). Any blank space below this line is deliberate — each section begins on a fresh page. Next: Section 5 — Counting & Measurement, starting overleaf.

Counting & Measurement — How to Read This Section

Arrangements, chances, and shapes — the topics where the setup is the whole battle and the arithmetic afterwards is trivial.

Permutation & Combination. Ask one question first: does ORDER matter? A committee, a handshake or a selection is a set, so it is a combination; a ranking, a seating or a code is an arrangement, so it is a permutation. Then split any 'at least' condition into cases and add them.

WORKED EXAMPLE From 5 men and 4 women, choose a committee of 3 with at least 2 women. Split by cases:
exactly 2 women = $C(4,2) \times C(5,1) = 6 \times 5 = 30$; exactly 3 women = $C(4,3) = 4$. $30 + 4 = 34$.

COMMON MISTAKE using a permutation where order does not matter — a committee of A, B, C is the same committee however you list it, so it is counted once, not six times.

Probability. Favourable outcomes over total outcomes, with both counted the same way. Most drills are a single draw — one ball from a bag, one bulb from a box, one card from a pack of 52, or the sum on two dice out of 36 — so the work is counting the favourable cases exactly. Only when two are drawn WITHOUT replacement does the second draw see a changed bag.

WORKED EXAMPLE Two fair dice are rolled together. P(the sum is exactly 5)? Total outcomes = $6 \times 6 = 36$. A sum of 5 happens as 1+4, 2+3, 3+2, 4+1 — four ordered pairs. $4 \div 36 = 1/9$.

COMMON MISTAKE counting 1+4 and 4+1 as one outcome. The 36 in the denominator treats the two dice as distinguishable, so the numerator has to as well — otherwise the two halves of the fraction are counting different experiments.

Mensuration. Raw formulas on the standard shapes, and only a handful of them: area and perimeter of a rectangle and a square, the volume of a cuboidal tank, and the area and circumference of a circle. Circle questions hand you $\pi = 22/7$, which is itself a hint — the radius will be a multiple of 7, so the 7 always cancels.

WORKED EXAMPLE A circular park has a radius of 21 m. (Take $\pi = 22/7$.) What is its circumference? $C = 2\pi r = 2 \times 22/7 \times 21$, and 7 goes into 21 three times — so this is $2 \times 22 \times 3 = 132$ m.

COMMON MISTAKE answering the OTHER formula for the same shape — the area when it asked for the perimeter, the circumference when it asked for the area, the surface area when it asked for the volume. That answer is always sitting in the options. Read the last four words of the question before you touch a number.

HCF & LCM. HCF is the greatest shared factor (Euclid). LCM is product $\div$ HCF. For two numbers, product = HCF $\times$ LCM, so the missing number is HCF $\times$ LCM $\div$ the known one.

WORKED EXAMPLE The HCF of two numbers is 12 and their LCM is 180. One number is 36. The other? Other = $12 \times 180 \div 36 = 60$.

COMMON MISTAKE answering the other of the pair — LCM when it asked for HCF, or the given HCF when it asked for the missing number.

Integer Counting. Count, never list. Multiples of k from a to b inclusive = $\text{floor}(b/k) - \text{floor}((a-1)/k)$. 'Divisible by p but not q ' subtracts the multiples of $\text{lcm}(p, q)$, not of q . The number of factors of $n = p_1^{a_1} \times p_2^{a_2} \times \dots$ is $(a_1+1)(a_2+1)\dots$ — 1 and n included.

WORKED EXAMPLE How many multiples of 18 are there from 40 through 241, inclusive? $\text{floor}(241/18) = 13$ multiples up to 241; $\text{floor}(39/18) = 2$ of them sit below 40. $13 - 2 = 11$.

COMMON MISTAKE dropping an endpoint of an inclusive range, or counting prime factors when the question asked for ALL factors — $374 = 2 \times 11 \times 17$ has three prime factors but $2 \times 2 \times 2 = 8$ factors.

Number Properties. Odd and even, divisors and primes — decided by a rule, not by arithmetic. From 1 to n there are $\text{floor}(n/2)$ evens. A prime test only needs the primes up to $\sqrt{n}$. The largest divisor under a cap is found by dividing down from the cap, not up from 1.

WORKED EXAMPLE Which of these is prime: 54, 62, 52, 106, 53? Every even number above 2 is composite, so only 53 is left to test; $\sqrt{53}$ is just over 7. 2, 3, 5 and 7 all fail to divide it — 53.

COMMON MISTAKE answering n itself when the question caps the divisor, or counting every integer from 1 to n when it asked for the evens. Read the condition before you count.

Section 5 Contents — Counting & Measurement

Drills 28–33 of this section only. The full book index is at the front.

Drill 28 · Easy

Drill 29 · Easy

Drill 30 · Medium

Drill 31 · Medium

Drill 32 · Hard

Drill 33 · Hard

Drill 28 EASY *Mensuration*[↑ Section index](#)**Section 1: Building Pace (Direct Calculation)****QUESTION****What is its perimeter?****Given:****A rectangular field is 6 m long and 16 m wide.****Options:**

- A** 24
- B** 44
- C** 57
- D** 22
- E** 96

Target time: ~35s

⚠ **Common mistake:** Perimeter is $2(l + b)$ — add 6 and 16 FIRST, then double. Doubling only the length gives 12, and multiplying instead gives the area 96; both are offered.

Drill 29 EASY *HCF & LCM*[↑ Section index](#)**QUESTION****What is the HCF of 16 and 24?****Given:****The two numbers are 16 and 24.****Options:**

- A** 2
- B** 8
- C** 48
- D** 3
- E** 7

Target time: ~30s

⚠ **Common mistake:** $\text{LCM}(16, 24) = 48$ is on the board. The question asked for the HCF.

Drill 30 MEDIUM *Permutation & Combination*[↑ Section index](#)**Section 2: Exam Speed (Applied Shortcuts)****QUESTION****In how many ways can the medals be won?****Given:**

1. 7 athletes run a race.
2. Gold, silver and bronze medals are awarded.

Options:

- A** 210
- B** 170
- C** 21
- D** 35
- E** 343

Target time: ~55s

⚠ **Common mistake:** using a permutation where order does not matter — a committee of A, B, C is the same committee however you list it, so it is counted once, not six times.

Drill 31 MEDIUM *Integer Counting*[↑ Section index](#)**QUESTION****How many such multiples are there?****Given:****How many multiples of 9 are there from 115 through 236, inclusive?****Options:**

- A** 15
- B** 14
- C** 13
- D** 10
- E** 44

Target time: ~40s

⚠ **Common mistake:** Inclusive means an endpoint counts when it is a multiple of 9. Dropping the lower end is the usual slip.

Drill 32 **HARD** Probability[↑ Section index](#)**Section 3: Full Pressure (Multi-Step, Tight Clock)****QUESTION****What is the probability that both balls are red?****Given:**

1. A bag contains 3 red and 5 blue balls.
2. Two balls are drawn at random, one after the other, without replacement.

Options:

- A** $3/8$
- B** $2/7$
- C** $9/64$
- D** $3/28$
- E** $37/56$

Target time: ~70s

⚠ **Common mistake:** counting 1+4 and 4+1 as one outcome. The 36 in the denominator treats the two dice as distinguishable, so the numerator has to as well — otherwise the two halves of the fraction are counting different experiments.

Drill 33 **HARD** Number Properties[↑ Section index](#)**QUESTION****Which of these is prime?****Given:****Which of the following is a prime number?****Options:**

- A** 67
- B** 66
- C** 68
- D** 87
- E** 62

Target time: ~55s

⚠ **Common mistake:** Even numbers greater than 2 are never prime. 68 is the usual trap.

End of Section 5 — Counting & Measurement

You have worked drills 28–33 (6 of drills in this book). Any blank space below this line is deliberate — each section begins on a fresh page. Next: the Solutions — the answer and the full worked method for every puzzle, in the same numbering.

Solutions

Worked solutions for every drill — the answer plus the engine's own step-by-step working. Attempt the drill against its target time first; then read the working even if you were right, because the key's method is usually the shorter one.

Solution 1 EASY Speed Arithmetic

Q. Solve in your head — beat the clock.

Answer: D) 49

Why:

1. Compute directly: $7 \times 7 = 49$.

Solution 2 EASY Vedic Squaring

Q. Squaring a number ending in 5 — beat the clock.

Answer: A) 3025

Why:

1. Ends in 5 — Ekadhikena: take 5, multiply by one more: $5 \times 6 = 30$.
2. Append 25: $30 \mid 25 \rightarrow 3025$.
3. Answer: 3025.

Solution 3 EASY Complementary Products

Q. Units sum to 10, same lead — beat the clock.

Answer: A) 9009

Why:

1. Units $1 + 9 = 10$ with the same lead 9 — Antyayordashake applies.
2. Left: $9 \times 10 = 90$. Right: $1 \times 9 = 09$ (always two digits).
3. $90 \mid 09 \rightarrow 9009$.
4. Answer: 9009.

Solution 4 EASY Anurupyena Multiplication

Q. Multiplying near a working base — beat the clock.

Answer: A) 2208

Why:

1. Deviations from 50: $48 \rightarrow -2$, $46 \rightarrow -4$.
2. Cross-add for the raw left part: $48 - 4 = 44$.
3. Rescale for the working base: 50 is $100 \div 2$, so divide by 2: $44 \div 2 = 22$.

4. Right part — multiply the deviations: $(-2) \times (-4) = 8$, padded to two digits: 08.
5. Join them: $22 \mid 08 \rightarrow 2208$.
6. Answer: 2208.

Solution 5 **MEDIUM** *Simplification (BODMAS)*

Q. Simplify — order of operations wins.

Answer: A) 140

Why:

1. $\times$ and $\div$ first: $9 \times 9 = 81$; $45 \div 9 = 5$.
2. Then left to right: $64 + 81 - 5 = 140$.

Solution 6 **MEDIUM** *Crosswise Multiplication*

Q. Crosswise multiplication — beat the clock.

Answer: C) 2624

Why:

1. Units: $2 \times 2 = 4$.
2. Cross: $8 \times 2 + 2 \times 3 = 22$; tens: $8 \times 3 = 24$ — stack with carries.
3. $2400 + 220 + 4 = 2624$.
4. Answer: 2624.

Solution 7 **MEDIUM** *Difference of Squares*

Q. Multiply via the midpoint — beat the clock.

Answer: D) 297

Why:

1. 11 and 27 straddle 19 by 8 — Sankalana: $a \times b = m^2 - d^2$.
2. $19^2 - 8^2 = 361 - 64 = 297$.
3. Answer: 297.

Solution 8 **MEDIUM** *Approximation*

Q. What is the approximate value?

Answer: B) 1000

Why:

1. $47 \rightarrow 50$, $21 \rightarrow 20$.
2. $50 \times 20 = 1000$.
3. Answer: 1000.

Solution 9 **HARD** *Squares, Cubes & Roots*

Q. Powers and roots — instant recall.

Answer: A) 2744

Why:

1. $14^3 = 14^2 \times 14 = 196 \times 14 = 2744$. (Exam-standard cube — worth memorising to 15^3 .)

Solution 10 **HARD** *Nikhilam*

Q. Nikhilam multiplication — beat the clock.

Answer: C) 100560735

Why:

1. Choose the base (nearest power of 10): 10000.
2. Distance from base: 10021 is 21 above 10000, 10035 is 35 above 10000.
3. Cross-add: $10021 + 35 = 10056$ (same as $10035 + 21$).
4. Multiply the distances: $21 \times 35 = 735$.
5. Base 10000 has 4 zeros, so the right-hand part must occupy exactly 4 digits.
6. 735 fits, padded to 4 digits $\rightarrow$ 0735.
7. Left part: 10056. Right part: 0735.
8. Write them side by side: $10056 | 0735 = 100560735$.

Solution 11 **HARD** *Paravartya Division*

Q. Dividing by 11 — beat the clock.

Answer: A) 8027

Why:

1. $88297 \div 11$ — Paravartya: $11 = 10 + 1$, so the flag digit is 1; negate it to -1 .
2. Bring down the first digit as-is: 8 (first quotient digit).
3. $8 + (-1 \times 8) = 0$ (next quotient digit).
4. $2 + (-1 \times 0) = 2$ (next quotient digit).
5. $9 + (-1 \times 2) = 7$ (next quotient digit).
6. Last digit gives the remainder the same way: $7 + (-1 \times 7) = 0$.
7. Quotient 8027, remainder 0 — check: $8027 \times 11 + 0 = 88297$.
8. Answer: 8027.

Solution 12 **EASY** Profit & Loss

Q. What does a customer actually pay?

Answer: C) 1100

Why:

1. Discount = 20% of ₹1375 = ₹275.
2. Amount paid = ₹1375 – ₹275 = ₹1100 — the discount is the reduction, not the price.
3. Answer: 1100.

Solution 13 **EASY** Weighted Average

Q. What is the combined average?

Answer: A) 77

Why:

1. Total = $12 \times 98 + 7 \times 41 = 1463$.
2. Combined average = $1463 \div 19 = 77$.
3. Answer: 77.

Solution 14 **MEDIUM** Simple & Compound Interest

Q. By how much does the compound interest exceed the simple interest?

Answer: B) 100

Why:

1. Simple interest = $\text{₹}40000 \times 5 \times 2 \div 100 = \text{₹}4000$.
2. Compound interest = $\text{₹}40000 \times [(1 + 5/100)^2 - 1] = \text{₹}4100$.
3. Difference = $\text{₹}4100 - \text{₹}4000 = \text{₹}100$. (Shortcut: $P \times (R/100)^2$ gives the same.)
4. Answer: 100.

Solution 15 **MEDIUM** Ratio & Proportion

Q. What is the ratio of Faiz to Meera?

Answer: C) 4:9

Why:

1. Align Nandini's term: LCM of 3 and 1 is 3.
2. Faiz:Nandini becomes 4:3. Nandini:Meera becomes 3:9.
3. Faiz:Meera = 4:9 $\rightarrow$ 4:9.
4. Answer: 4:9.

Solution 16 **HARD** Percentages

Q. Percentage drill — no paper.

Answer: C) 720

Why:

1. +20%: $800 \rightarrow 800 \times 120/100 = 960$.
2. Successive changes multiply — they never simply add (20–25 $\neq$ the net change).
3. –25%: $960 \rightarrow 960 \times 75/100 = 720$. Final value: 720.

Solution 17 **HARD** Averages

Q. Averages — total and mean, no paper.

Answer: C) 37

Why:

1. Only the total moves: $79 - 44 = 35$.
2. Spread that over 7 numbers — the average moves by $35 \div 7 = 5$, NOT by 35.
3. New average: $32 + 5 = 37$.

Solution 18 **HARD** Mixtures

Q. What is the new milk-to-water ratio?

Answer: D) 15:7

Why:

1. Original: 30 concentrate/milk and 6 water.
2. Add 8 water $\rightarrow 30 : 14$.
3. Reduce: 15:7.
4. Answer: 15:7.

Solution 19 **EASY** Time & Work

Q. Working together, in how many days will they finish it?

Answer: D) 9

Why:

1. Take the total work as 36 units (the LCM of 12 and 36).
2. Deepak does 3 units/day, Latha does 1 units/day — add the RATES, never the days.
3. Together they do 4 units/day, so the job takes $36 \div 4 = 9$ days.
4. Answer: 9 days.

Solution 20 **EASY** *Ages*

Q. What is Anil's age?

Answer: D) 22

Why:

1. Let Bhavna = x . Then Anil = $x + 6$.
2. $x + (x + 6) = 38 \rightarrow 2x = 32 \rightarrow x = 16$.
3. Anil = $16 + 6 = 22$.
4. Answer: 22.

Solution 21 **MEDIUM** *Time, Speed & Distance*

Q. How long does the journey take?

Answer: B) 7

Why:

1. Time = distance $\div$ speed = $504 \div 72 = 7$ hours.
2. Answer: 7 hours.

Solution 22 **MEDIUM** *Partnership*

Q. What is Faiz's share of the profit?

Answer: B) 600

Why:

1. Capital-months: Faiz $160 \times 8 = 1280$, Nandini $480 \times 4 = 1920$.
2. Ratio 1280:1920 = 2:3.
3. Faiz's share = $2 / 5$ of ₹1500 = ₹600.
4. Answer: 600.

Solution 23 **HARD** *Boats & Streams*

Q. What is the speed of the boat in still water?

Answer: B) 18

Why:

1. Downstream = boat + stream, upstream = boat – stream.
2. Adding: boat = $(24 + 12) \div 2 = 18$ km/h. (The stream is the HALF-DIFFERENCE, 6 km/h.)
3. Answer: 18 km/h.

Solution 24 **HARD** *Pipes & Cisterns*

Q. How many more hours are needed to fill the cistern after Pipe B is opened?

Answer: A) 3

Why:

1. Cistern = 48 units. A adds 3/hour, B adds 1/hour.
2. A alone for 12 hours fills 36. Remaining 12.
3. Both add 4/hour, so remaining takes 3 hours.
4. Answer: 3.

Solution 25 **EASY** *Data Interpretation (Table)*

Q. What is the total Cost across all 3 quarters?

Answer: A) 100

Why:

1. Add down the Cost column: $50 + 20 + 30$.
2. Total = 100 — read down the asked column, not across a row.
3. Answer: 100.

Solution 26 **MEDIUM** *Data Interpretation (Caselet)*

Q. How many children travelled without luggage?

Answer: A) 520

Why:

1. Adults = 50% of 2600 = 1300.
2. So children = $2600 - 1300 = 1300$ — the question asks about this group, not the first one.
3. 40% of 1300 = 520.
4. Answer: 520.

Solution 27 **HARD** *Quadratic Equations*

Q. Solve both equations and state the relation between x and y .

Answer: B) $x < y$

Why:

1. Factorise I: $x^2 + 5x - 104 = 0 \rightarrow (x - 8)(x + 13) = 0$, so $x = -13$ and 8.
2. Factorise II: $y^2 - 31y + 234 = 0 \rightarrow (y - 13)(y - 18) = 0$, so $y = 13$ and 18.
3. Compare every x against every y — one pair is never enough.
4. The largest x (8) is still below the smallest y (13), so $x < y$.

Solution 28 **EASY** *Mensuration*

Q. What is its perimeter?

Answer: B) 44

Why:

1. Perimeter = $2 \times (6 + 16) = 44$ m — add first, then double.
2. Answer: 44 m.

Solution 29 **EASY** *HCF & LCM*

Q. What is the HCF of 16 and 24?

Answer: B) 8

Why:

1. $16 = 8 \times 2$, $24 = 8 \times 3$.
2. HCF = 8.
3. Answer: 8.

Solution 30 **MEDIUM** *Permutation & Combination*

Q. In how many ways can the medals be won?

Answer: A) 210

Why:

1. The three medals are DIFFERENT, so order matters — use nPr , not nCr .
2. $7P3 = 7 \times 6 \times 5 = 210$.
3. Answer: 210.

Solution 31 **MEDIUM** *Integer Counting*

Q. How many such multiples are there?

Answer: B) 14

Why:

1. $\text{floor}(236/9) - \text{floor}(114/9) = 26 - 12 = 14$.
2. Both endpoints count when they are multiples of 9.
3. Answer: 14.

Solution 32 **HARD** *Probability*

Q. What is the probability that both balls are red?

Answer: D) $3/28$

Why:

1. First draw: $P(\text{red}) = 3/8$. The ball is NOT put back.
2. Second draw: 2 reds remain among 7 balls — multiply: $3/8 \times 2/7$.
3. $P(\text{both red}) = 6/56 = 3/28$.
4. Answer: $3/28$.

Solution 33 **HARD** *Number Properties*

Q. Which of these is prime?

Answer: A) 67

Why:

1. 67 has no divisor other than 1 and itself.
2. 68 is even and greater than 2, so composite.
3. Answer: 67.

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