

Question 1: Sequence: 2, 6, 12, 20, 30, ?

- a) 36
- b) 42
- c) 44
- d) 48

Question 2: A 6×6 magic-square candidate is presented: each row sum should equal same constant. Which quick sanity check is best before deeper verification?

- a) Check whether each row contains distinct numbers 1–36
- b) Compute expected magic sum $(n(n^2+1)/2)$ and verify one row equals it
- c) Count diagonal elements only
- d) Confirm the first row is increasing

Question 3: Find the next term in sequence: 5, 11, 23, 47, ?

- a) 95
- b) 89
- c) 91
- d) 99

Question 4: A, B, C, D are four friends. Each made 1 true statement and 1 false statement. A: “I won’t be first.” “C finished last.” Best approach to deduce finishing order?

- a) Enumerate possible orders and eliminate contradictions (systematic casework)
- b) Assume A is entirely truthful and deduce rest
- c) Ignore statements and guess
- d) Take majority votes

Question 5: If $3x + 2y = 21$ and $x - y = 2$, what is x ?

- a) 4
- b) 6
- c) 5
- d) 8

Question 6: An advertisement claims product reduces 70% of germs. Which immediate question strengthens evaluation?

- a) Ask what test method, sample size and control were used (methodology)
- b) Ask for the ad designer’s name
- c) Believe percentage as written
- d) Ask price only

Question 7: 1, 4, 9, 16, 25, ? Which should be the next term?

- a) 36
- b) 49
- c) 30
- d) 31

Question 8: A table shows monthly sales: Jan 120, Feb 150, Mar 135. Which single statistic best shows typical monthly sale?

- a) Range
- b) Median (if months are symmetric)
- c) Mean (average)
- d) Sum only

Question 9: 3, 7, 15, 31, ? — what is next?

- a) 63
- b) 59
- c) 60
- d) 57

Question 10: A team must split 100 tasks among 4 students fairly. Which method minimizes envy and is easy to compute?

- a) Sequential greedy assignment by current load (assign next task to least-loaded student)
- b) Give all tasks to strongest student
- c) Random assignment without checking loads
- d) Assign by alphabetical order only

Question 11: Algebra: Solve for t if $2(t - 3) = 3t + 1$.

- a) -7
- b) 5
- c) -1
- d) 7

Question 12: A riddle — “If you double my age and add 5 you get 53.” What is my age?

- a) 24
- b) 23
- c) 21
- d) 26

Question 13: 8, 4, 2, 1, 0.5, ? What’s the pattern and next term?

- a) 0.25
- b) 0.75
- c) 0.1
- d) 1

Question 14: Two clocks start in sync. Clock A loses 2 min per hour, Clock B gains 1 min per hour. After how many hours will they differ by 90 minutes?

- a) 60
- b) 40
- c) 30
- d) 45

Question 15: A boat covers 30 km downstream in 2 hours and 30 km upstream in 6 hours. What is the speed of the boat in still water (km/h)?

- a) 6 km/h
- b) 7.5 km/h
- c) 10 km/h
- d) 9 km/h

Question 16: A bar chart shows exam score distribution grouped by ranges. Which measure best compares variability between two cohorts?

- a) Compare medians only
- b) Compare interquartile ranges (IQR) or standard deviations
- c) Compare maximums only
- d) Compare first values only

Question 17: Sequence: Terms defined by $a_n = a_{n-1} + n$, with $a_1 = 1$. What is a_5 ?

- a) 9
- b) 15
- c) 11
- d) 5

Question 18: Three boxes labelled APPLES, ORANGES, MIXED, all labels are wrong. One draw gives a fruit from box labelled MIXED and it’s an orange. Which box is which?

- a) Labelled MIXED contains ORANGES; deduce rest by elimination
- b) Labelled MIXED contains APPLES
- c) Labelled APPLES contains MIXED
- d) Labelled ORANGES contains ORANGES

Question 19: If $(x - 1)(x + 2) = 0$, which is true?

- a) $x = 1$ or $x = -2$
- b) $x = -1$ or $x = 2$
- c) $x = 0$ only
- d) $x = 3$ or $x = -3$

Question 20: A survey of 200 students: 120 like math, 90 like science, 60 like both. How many like neither?

- a) 50
- b) 80
- c) 30
- d) 60

Question 21: Find next term: 2, 3, 5, 8, 13, ? (Fibonacci type)

- a) 21
- b) 20
- c) 18
- d) 22

Question 22: If “All P are Q” and “Some Q are R,” which must be true?

- a) Some P are R
- b) Some Q are not R
- c) Some R are Q
- d) All R are P

Question 23: Solve system: $x + y = 10$, $xy = 21$.

What is x and y (order not important)?

- a) 3 and 7
- b) 4 and 6
- c) 2 and 8
- d) 5 and 5

Question 24: “Eating nuts reduces heart disease by 50%.” Best immediate evaluation?

- a) Check study design, sample size, controls, absolute vs relative risk reduction
- b) Accept claim because numbers sound large
- c) Reject claim because it’s about food
- d) Check only the brand that sponsored study

Question 25: Pattern: 2, 3, 5, 7, 11, ? Next is:

- a) 13
- b) 14
- c) 15
- d) 16

Question 26: A scatterplot shows negative correlation between study hours and mistakes on test. What is the best interpretation?

- a) More study hours are associated with fewer mistakes
- b) Studying causes zero mistakes always
- c) Mistakes determine study hours only
- d) There is no relation

Question 27: A four-digit number reversed equals original plus 1989. Which is a valid approach?

- a) Set variables for digits, form equations and solve
- b) Guess randomly
- c) Use only divisibility tests
- d) Count permutations

Question 28: A trader buys an article for ₹500 and sells it at a 20% profit. What is the selling price of the article?

- a) ₹580
- b) ₹600
- c) ₹620
- d) ₹550

Question 29: A company's cost function $C(q) = 100 + 10q$, revenue $R(q) = 20q$. For what q is profit zero?

- a) $q = 0$
- b) $q = 20$
- c) $q = 5$
- d) $q = 10$

Question 30: A, B, C wear hats red/blue; each sees others but not own; A says "I don't know my hat"; B says "I also don't know"; C deduces own hat is red. What is C's deduction method?

- a) C uses others' ignorance to eliminate possibilities
- b) C guesses randomly
- c) C counts hats on table
- d) C uses colour memory

Question 31: If $4^x = 64$, what is x ?

- a) 3
- b) 4
- c) 6
- d) 5

Question 32: Find next: 1, 3, 6, 10, 15 ?

- a) 18
- b) 20
- c) 21
- d) 22

Question 33: A pie chart shows market share A 40%, B 30%, C 20%, D 10%. If total revenue 1,000,000, revenue of C is:

- a) 200,000
- b) 150,000
- c) 100,000
- d) 300,000

Question 34: A & B start at opposite ends of a 100 m hall, A walks 1 m/s, B walks 2 m/s towards each other. After how many seconds do they meet?

- a) 33.33 s
- b) 50 s
- c) 66.66 s
- d) 25 s

Question 35: The numbers are 12, 18, 24, 30, and 36. What is their average?

- a) 20
- b) 22
- c) 24
- d) 25

Question 36: A farmer claims crop yield doubled after fertilizer X. Best statistical check?

- a) Compare controlled plots with and without fertilizer, replicate and test significance
- b) Accept claim because farmer says so
- c) Increase fertilizer on all fields immediately
- d) Check fertilizer brand only

Question 37: Series: 10, 7, 8, 5, 6, 3, ? What is next?

- a) 4
- b) 1
- c) 2
- d) 0

Question 38: Sum of three consecutive integers is 84. What are they?

- a) 27,28,29
- b) 28,29,30
- c) 26,27,28
- d) 25,26,27

Question 39: A boxplot shows median at 50, Q1 30, Q3 70. Which statement is true?

- a) Interquartile range (IQR) is 40
- b) Mean must be 50
- c) No outliers exist
- d) Max is 70

Question 40: 2, 5, 10, 17, 26, ? Next term?

- a) 34
- b) 37
- c) 38
- d) 35

Question 41: A headline says “Study shows chocolate improves grades”. Which additional info is crucial?

- a) Sample size, control for confounders (e.g., socioeconomic status), p-values, effect size
- b) Chocolate brand only
- c) Colour of journal cover
- d) Publication date only

Question 42: Arithmetic progression with first term 7 and common difference 3. 10th term?

- a) 34
- b) 37
- c) 36
- d) 40

Question 43: 4 houses each different color, owner likes a different pet. Which solving method is best?

- a) Build a grid table, mark clues and eliminate — constraint propagation
- b) Try random assignment until success
- c) Use calculus
- d) Count total combinations only

Question 44: Algebra: Simplify expression $(x^2 - 9)/(x - 3)$ for $x \neq 3$.

- a) $x + 3$
- b) $x - 3$
- c) $x^2 + 3$
- d) 1

Question 45: Test scores improved after introducing a tutoring program. Which alternative explanation must be considered?

- a) Selection bias, test difficulty changes, regression to mean, seasonal effects (confounders)
- b) Tutoring is only explanation always
- c) Students grew older so improved automatically
- d) Scores are random

Question 46: Number pattern: 121, 144, 169, 196, ? What is next?

- a) 225
- b) 216
- c) 210
- d) 242

Question 47: If statement “If A then B” is true and B is false, what follows?

- a) A must be false (contrapositive)
- b) A must be true
- c) Nothing follows
- d) Both A and B true

Question 48: Table shows conversion rates over months. Which test compares month-to-month proportions?

- a) Chi-square test for proportions or two-proportion z-test
- b) T-test for means always
- c) Correlation only
- d) Use only averages

Question 49: Given geometric progression 3, 6, 12, 24, ? next term:

- a) 48
- b) 30
- c) 36
- d) 54

Question 50: Algebra: Solve $(x/3) + (x/4) = 7$. What is x?

- a) 9
- b) 14
- c) 10
- d) 12

Question 51: A 3×3 Latin square uses numbers 1–3 per row/col. How many solutions (up to row permutations) roughly exist?

- a) Many — use combinatorial reasoning; answer concept: there are 12 Latin squares of order 3 (up to symmetries)
- b) Only 1
- c) Infinite
- d) Zero

Question 52: A city planner allocates buses to routes to minimize waiting. Which algorithmic strategy fits?

- a) Optimization via linear programming or greedy with constraints (resource allocation)
- b) Assign randomly
- c) Duplicate all buses to one route
- d) Use only historic timetable without demand data

Question 53: Sequence: 7, 14, 28, 56, ?

- a) 112
- b) 84
- c) 70
- d) 120

Question 54: In a sample of 100, mean = 50, standard deviation = 5. Which interval roughly contains ~95% (assuming normal)?

- a) 40–60
- b) 30–70
- c) 45–55
- d) 49–51

Question 55: When facing an unfamiliar algebra problem, best first step is:

- a) Work with small numbers, test pattern, generalize (example→conjecture→proof)
- b) Skip problem and hope it disappears
- c) Memorize final answer in mind without working
- d) Differentiate both sides always

Question 56: 1, 2, 6, 24, ? Next term:

- a) 120
- b) 720
- c) 24
- d) 48

Question 57: An experiment reports $p = 0.04$ with small N. Which careful interpretation is best?

- a) There is evidence against the null at typical 5% level, but effect size, sample size and reproducibility should be considered (cautious)
- b) Claim is absolutely proven forever
- c) Ignore p-value only
- d) $p > 0.05$ so insignificant

Question 58: Look at differences: 4, 9, 16, 25, ? What's next?

- a) 36
- b) 49
- c) 30
- d) 32

Question 59: A shop sells pencils 3 for \$2. At same rate, how many pencils for \$10?

- a) 15
- b) 12
- c) 13
- d) 20

Question 60: Team solved 24 problems in a relay. If team A solves twice as many as team B and team C solves 4 less than B. How many did A solve? ($A = 2B$, $C = B - 4$, $A + B + C = 24$)

- a) 12
- b) 8
- c) 10
- d) 14

(NOT TO BE EVALUATED)

[illegible]