Skillshort

Self-Study Preparation Pack

CA FOUNDATION

Paper 3: Quantitative Aptitude

Mock Test 3 – 100 MCQs with Answer Key & Working

Exam pattern: 100 MCQs · 1 mark each · 2 hours · Negative marking 0.25 per wrong answer VERIFY · Original Skillshort questions (answers computed and checked by program)

Part A Maths Q1–40 | Part B Reasoning Q41–60 | Part C Statistics Q61–100 | Answer key with working at the end

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This subject pack has 6 parts

1 Chapter-wise notes
2 Important topics & weightage
3 Past papers: trends & links
4 Mock tests + solutions
5 Chapter practice questions
6 Last-week plan & strategy

Prepared by Skillshort for self-study. Original explanations and questions; not an official ICAI/ICMAI/ICSI publication. Items marked VERIFY should be checked against the latest official material.

Instructions

All 100 questions are compulsory and carry 1 mark each. **0.25 mark is deducted for each wrong answer** VERIFY. Time allowed: **2 hours**. A simple non-programmable calculator may be used. Mark your answers on a separate sheet, then check with the key at the end. Score guide: 70+ excellent · 55–69 safe · 40–54 borderline · below 40 – revise weak chapters in file 05.

Part A – Business Mathematics (Q1–40)

1. The value of (8)^(2/3) is:

(a) 6 (b) 2
(c) 4 (d) 8

2. A can complete a work in 12 days and B in 36 days. Working together, they will complete it in:

(a) 11 days (b) 24 days
(c) 9 days (d) 7 days

3. A started a business with ₹1,20,000. After some months B joined with ₹1,20,000. At the year-end the profit was shared in the ratio 2 : 1. B joined after:

(a) 7 months (b) 4 months
(c) 8 months (d) 6 months

4. An amount of ₹90,000 is divided among P, Q and R in the ratio 7 : 5 : 3. The share of Q is:

(a) ₹60,000 (b) ₹42,000
(c) ₹30,000 (d) ₹18,000

5. The third proportional to 2 and 4 is:

(a) 9 (b) 8
(c) 6 (d) 1

6. The roots of $x^3 - 5x^2 - 4x + 20 = 0$ are:

(a) 2, -2, -5 (b) -2, 2, -5
(c) -2, 2, 5 (d) -1, 3, 6

7. A father's age is 3 times his son's age. After 5 years, the ratio of their ages will be 41 : 17. The son's present age is:

(a) 36 years (b) 12 years
(c) 17 years (d) 14 years

8. If α and β are the roots of $x^2 + x - 6 = 0$, then $\alpha^3 + \beta^3 = ?$

(a) -1 (b) 17
(c) -19 (d) -20

9. If α and β are the roots of $x^2 - 7x + 10 = 0$, the equation whose roots are 2α and 2β is:

(a) $x^2 - 7x + 40 = 0$ (b) $x^2 - 14x + 40 = 0$
(c) $x^2 - 14x + 10 = 0$ (d) $x^2 - 14x + 20 = 0$

10. The solution of $7x + 3 \le 3x - 8$ is:

(a) $x \ge -11/4$ (b) $x \le -11/4$
(c) $x \le -5/4$ (d) $x \le -7/4$

11. The solution set of $-4 < 2x - 3 \leq 5$ is:

(a) $-7/2 < x \leq 1$
(b) $-4 < x \leq 5$
(c) $-1/2 \leq x < 4$
(d) $-1/2 < x \leq 4$

12. Maximise $Z = 5x + 3y$ subject to $x + y \leq 5$, $x + 2y \leq 6$, $x \geq 0$, $y \geq 0$. The maximum value of Z is:

(a) 0
(b) 25
(c) 9
(d) 23

13. The present value of ₹2,00,000 receivable after 4 years at 12% p.a. compound interest is (nearest rupee):

(a) ₹1,35,135
(b) ₹1,33,459
(c) ₹1,04,000
(d) ₹1,27,104

14. ₹5,000 is deposited at the beginning of each year for 4 years at 10% p.a. compound interest. The amount at the end of 4 years (annuity due) is (nearest rupee):

(a) ₹25,526
(b) ₹20,000
(c) ₹28,078
(d) ₹23,205

15. The EMI (paid at the end of each month) on a loan of ₹1,00,000 at 9% p.a. compounded monthly for 36 months is approximately:

(a) ₹3,434
(b) ₹3,180
(c) ₹3,528
(d) ₹2,778

16. A growing perpetuity pays ₹10,000 at the end of year 1, growing at 4% p.a. thereafter. If the discount rate is 10%, its present value is:

(a) ₹1,00,000
(b) ₹71,428.57
(c) ₹1,66,666.67
(d) ₹1,73,333.33

17. A company sets up a sinking fund to accumulate ₹10,00,000 in 10 years at 8% p.a. The annual end-of-year instalment is approximately:

(a) ₹69,029
(b) ₹1,00,000
(c) ₹80,000
(d) ₹74,552

18. An investment grew from ₹1,00,000 to ₹1,33,100 in 3 years. The CAGR is approximately:

(a) 12%
(b) 10%
(c) 11.0%
(d) 33.1%

19. A project costs ₹2,00,000 and gives ₹50,000 at the end of each year for 4 years. At 10% the annuity factor is 3.1699. The NPV is approximately:

(a) ₹1,58,493
(b) ₹0
(c) ₹41,507
(d) ₹−41,507

20. At 8% p.a. simple interest, a sum doubles in:

(a) 12.50 years
(b) 9 years
(c) 6.25 years
(d) 25 years

21. A sum amounts to ₹89,600 in 2 years and ₹1,04,000 in 5 years at simple interest. The rate of interest is:

(a) 5%
(b) 12%
(c) 6%
(d) 8%

22. Compound interest on ₹50,000 at 10% p.a. for 2 years (compounded annually) is:

(a) ₹60,500
(b) ₹10,500
(c) ₹10,000
(d) ₹10,775.31

23. The effective annual rate of interest corresponding to a nominal rate of 16% p.a. compounded quarterly is:

(a) 16.69%
(b) 16.00%
(c) 16.99%
(d) 17.49%

24. The present value of ₹2,00,000 receivable after 4 years at 10% p.a. compound interest is (nearest rupee):

(a) ₹1,36,603
(b) ₹1,43,433
(c) ₹1,42,857
(d) ₹1,20,000

25. The future value of an annuity of ₹12,000 payable at the end of each year for 3 years at 12% p.a. compound interest is (nearest rupee):

(a) ₹45,352
(b) ₹28,822
(c) ₹36,000
(d) ₹40,493

26. The EMI (paid at the end of each month) on a loan of ₹2,00,000 at 6% p.a. compounded monthly for 24 months is approximately:

(a) ₹9,573
(b) ₹9,333
(c) ₹8,333
(d) ₹8,864

27. If ${}^{n}C_{2} = 66$, then n = ?

(a) 11
(b) 24
(c) 13
(d) 12

28. How many 3-digit numbers can be formed with the digits 1 to 9 if no digit is repeated?

(a) 84
(b) 504
(c) 729
(d) 720

29. The number of arrangements of the letters of the word "COMMITTEE" is:

(a) 45,360
(b) 3,62,880
(c) 90,720
(d) 22,680

30. In how many ways can 7 different beads be strung into a necklace?

(a) 360
(b) 5,040
(c) 2,520
(d) 720

31. If the AM and GM of two positive numbers are 17 and 15, their HM is:

(a) 225/17
(b) 242/17
(c) 225/2
(d) 17

32. The sum of the first 11 terms of the AP 3, 5, 7, ... is:

(a) 143
(b) 253
(c) 165
(d) 140

33. The sum to infinity of the GP 10, -5/2, 5/8, ... is:

(a) 21
(b) 8
(c) 9
(d) 40/3

34. $1^3 + 2^3 + 3^3 + \ldots + 15^3 = ?$

(a) 17,775
(b) 1,240
(c) 14,400
(d) 7,200

35. If A has 2 elements and B has 4 elements, the number of relations from A to B is:

(a) 8
(b) 16
(c) 64
(d) 256

36. If $f(x) = 5x + 2$ and $g(x) = x^2$, then $f(g(1)) = ?$

(a) 7 (b) 5
(c) 49 (d) 9

37. $\lim (2x^2 + 2x)/(2x^2 - 5)$ as $x \to \infty$ equals:

(a) 2/5 (b) 0
(c) 1 (d) ∞

38. Marginal cost MC = 4x + 7 and fixed cost is ₹100. Total cost of producing 13 units is:

(a) ₹867 (b) ₹429
(c) ₹529 (d) ₹159

39. The revenue function is $R(x) = 100x - 2x^2$. Revenue is maximum at x =

(a) 51 (b) 26
(c) 50 (d) 25

40. $\int$ from 0 to 3 of $(6x^2 + 12x)\,dx = ?$

(a) 36 (b) 48
(c) 108 (d) 111

Part B – Logical Reasoning (Q41–60)

41. Find the next term: 8, 15, 24, 35, 48, ?

(a) 63 (b) 65
(c) 61 (d) 62

42. If RIVER is coded as TKXGT, how is LIGHT coded?

(a) NKIJV (b) KIJVN
(c) JGEFR (d) VJIKN

43. Find the odd one out: 122, 81, 324, 100, 169

(a) 324 (b) 122
(c) 100 (d) 81

44. Find the next term: 4, 20, 6, 17, 8, 14, 10, ?

(a) 14 (b) 12
(c) 11 (d) 10

45. If MANGO is coded as PDQJR, how is PLANT coded?

(a) WQDOS (b) MIXKQ
(c) SODQW (d) ODQWS

46. Find the odd one out: 729, 216, 27, 121, 343

(a) 729 (b) 27
(c) 216 (d) 121

47. A man is facing north. He turns 270° anticlockwise and then 45° anticlockwise. Which direction is he facing now?

(a) South-west (b) North
(c) North-east (d) South-east

48. Meena walks 4 km south, turns right and walks 15 km, turns right and walks 12 km. In which direction is the person now from the starting point?

(a) South-west
(b) North-west
(c) South-east
(d) North-east

49. A man is facing north. He turns 135° anticlockwise and then 135° anticlockwise. Which direction is he facing now?

(a) South
(b) East
(c) North-east
(d) West

50. Meena walks 4 km south, turns right and walks 15 km, turns right and walks 8 km, turns right and walks 12 km. How far is the person from the starting point?

(a) 39 km
(b) 5 km
(c) 3 km
(d) 7 km

51. A man is facing south. He turns 135° anticlockwise and then 90° clockwise. Which direction is he facing now?

(a) East
(b) South-east
(c) North-west
(d) South-west

52. Six friends B, C, E, F, G, H sit around a circular table facing the centre. H sits opposite G; C is not a neighbour of G; F is not a neighbour of B; B is to the immediate right of G; C is to the immediate left of F. Who sits opposite C?

(a) G
(b) B
(c) H
(d) E

53. 5 persons B, D, H, K, L sit in a row facing north. B does not sit next to K; H does not sit next to L; H sits immediately to the left of B; K sits immediately to the left of H; exactly one person sits between D and B. Who sits in the middle?

(a) B
(b) L
(c) K
(d) D

54. Six friends B, C, D, E, F, G sit around a circular table facing the centre. E is not a neighbour of C; D is to the immediate right of G; G is not a neighbour of C; E is to the immediate right of F. Who sits opposite G?

(a) E
(b) D
(c) F
(d) B

55. 5 persons B, G, J, P, T sit in a row facing north. P sits immediately to the left of J; B sits at one of the ends; exactly one person sits between B and G; exactly one person sits between G and J. Who sits immediately to the left of G?

(a) J
(b) G
(c) P
(d) T

56. Rita's brother's son is Rita's:

(a) Brother-in-law
(b) Nephew
(c) Son
(d) Cousin

57. If P + Q means P is the husband of Q, P − Q means P is the sister of Q, and P × Q means P is the son of Q, then in "A × B + C", how is A related to C?

(a) Husband
(b) Son
(c) Nephew
(d) Brother

58. Kavita's brother's son is Kavita's:

(a) Brother-in-law
(b) Son
(c) Nephew
(d) Cousin

59. Anita is the sister of Tarun. Rita is the mother of Tarun. Sunil is the father of Rita. How is Anita related to Sunil?

(a) Grandmother
(b) Granddaughter
(c) Daughter
(d) Niece

60. Pooja's brother's son is Pooja's:

(a) Son
(b) Cousin
(c) Nephew
(d) Brother-in-law

Part C – Statistics (Q61–100)

61. The most suitable diagram to show the break-up of a total into components is a:

(a) Histogram
(b) Ogive
(c) Scatter diagram
(d) Pie chart

62. Census means:

(a) Study of a random group
(b) Study of a sample
(c) Complete enumeration of all units
(d) Study of secondary data

63. The mode can be located graphically using a:

(a) Line diagram
(b) Histogram
(c) Ogive
(d) Pie chart

64. Errors that arise even in complete enumeration are:

(a) Standard errors
(b) Errors of estimation only
(c) Non-sampling errors
(d) Sampling errors

65. A sample survey is the only practical method when:

(a) Time and money are unlimited
(b) Testing is destructive
(c) The population is small
(d) Every unit must be studied

66. Selecting every 10th item from a list after a random start is:

(a) Purposive sampling
(b) Cluster sampling
(c) Systematic sampling
(d) Stratified sampling

67. The median of a frequency distribution can be located graphically using:

(a) Pie chart
(b) Histogram
(c) Ogives
(d) Frequency polygon

68. The number of possible samples of size 2 from a population of 5 units without replacement is:

(a) 12
(b) 20
(c) 25
(d) 10

69. The mean deviation about the median of 3, 13, 14, 19, 28 is:

(a) 31/4
(b) 25/2
(c) 31/5
(d) 36/5

70. The variance of the first 13 natural numbers is:

(a) 85/6 (b) 7
(c) 28 (d) 14

71. Marks 40, 56, 41 carry weights 2, 3, 2 respectively. The weighted mean is:

(a) 137/7 (b) 137/3
(c) 337/7 (d) 330/7

72. The mean deviation about the median of 2, 5, 6, 22, 26 is:

(a) 41/5 (b) 41/4
(c) 12 (d) 46/5

73. The median of 58, 64, 28, 62, 59, 22, 34 is:

(a) 58 (b) 327/7
(c) 28 (d) 59

74. If the mean is 80 and the standard deviation is 12, the coefficient of variation is:

(a) 666.67% (b) 1.50%
(c) 180% (d) 15%

75. The standard deviation of the two numbers 12 and 42 is:

(a) 225 (b) 15
(c) 30 (d) 27

76. Group A has 25 items with mean 44 and group B has 75 items with mean 67. The combined mean is:

(a) 249/4 (b) 199/4
(c) 111/2 (d) 245/4

77. If the standard deviation of x is 4, the standard deviation of y = 4 + 2x is:

(a) 8 (b) 16
(c) 12 (d) 4

78. The mean deviation about the median of 3, 6, 15, 23, 24 is:

(a) 43/5 (b) 21/2
(c) 19/2 (d) 38/5

79. The harmonic mean of 3 and 6 is:

(a) 4.24 (b) 9/2
(c) 2 (d) 4

80. The standard deviation of the two numbers 11 and 23 is:

(a) 12 (b) 36
(c) 6 (d) 17

81. A card is drawn from a well-shuffled pack of 52 cards. The probability that it is a king or a heart is:

(a) 17/52 (b) 4/13
(c) 6/13 (d) 1/52

82. If the odds in favour of an event are 2 : 7, its probability is:

(a) 7/9 (b) 2/7
(c) 2/9 (d) 1/9

83. The probability that a non-leap year selected at random contains 53 Sundays is:

(a) 1/7
(b) 53/365
(c) 2/7
(d) 1/52

84. If the odds in favour of an event are 5 : 6, its probability is:

(a) 5/6
(b) 5/11
(c) 5/22
(d) 6/11

85. Two fair dice are thrown. The probability that the sum is 3 is:

(a) 1/12
(b) 1/6
(c) 1/18
(d) 1/3

86. If P(B) = 3/10 and P(A ∩ B) = 1/5, then P(A/B) = ?

(a) 3/50
(b) 1/10
(c) 1/3
(d) 2/3

87. A bag contains 5 red and 2 white balls. Two balls are drawn at random without replacement. The probability that both are red is:

(a) 1/21
(b) 25/49
(c) 5/7
(d) 10/21

88. In a normal distribution, QD : MD : SD is approximately:

(a) 10 : 12 : 15
(b) 15 : 12 : 10
(c) 1 : 2 : 3
(d) 12 : 10 : 15

89. X is normal with mean 40 and SD 4. The area between z = 0 and z = 1.0 is 0.3413. P(X > 44) is:

(a) 0.1587
(b) 0.6587
(c) 0.8413
(d) 0.3413

90. X is normal with mean 50 and SD 10. The area between z = 0 and z = 1.0 is 0.3413. P(X > 60) is:

(a) 0.3413
(b) 0.8413
(c) 0.1587
(d) 0.6587

91. A fair coin is tossed 4 times. The probability of getting exactly 2 heads is:

(a) 3/8
(b) 7/16
(c) 1/4
(d) 1/2

92. For 8 pairs of ranks without ties, $\Sigma d^2 = 10$. The rank correlation coefficient is:

(a) 247/252
(b) 37/42
(c) -37/42
(d) 113/128

93. The correlation between x and y is 0.7. If u = -2x + 5 and v = 3y − 7, the correlation between u and v is:

(a) -0.7
(b) -4.2
(c) 0.47
(d) 0.7

94. Mean of x = 44, mean of y = 67 and b_{yx} = 2/5. The estimated value of y when x = 54 is:

(a) 75
(b) 71
(c) 70
(d) 443/5

95. If b_{yx} = 9/10 and b_{xy} = 2/5, the correlation coefficient r is:

(a) 0.650
(b) 0.6
(c) 0.36
(d) -0.6

96. If b_yx = -4/5 and b_xy = -1/5, the correlation coefficient r is:

(a) -0.500
(b) 0.4
(c) -0.4
(d) 0.16

97. From the data below, Laspeyres' price index is (approx.):

Item	p_0	p_1	q_0
A	2	7	9
B	4	7	3
C	7	12	2

(a) 250.45
(b) 200.00
(c) 40.74
(d) 245.45

98. A worker's money wage is ₹50,000 and the consumer price index is 125 (base = 100). The real wage is:

(a) ₹37,500
(b) ₹62,500
(c) ₹400
(d) ₹40,000

99. Paasche's price index uses as weights the:

(a) Base-year prices
(b) Base-year quantities
(c) Average prices
(d) Current-year quantities

100. A worker's money wage is ₹24,000 and the consumer price index is 120 (base = 100). The real wage is:

(a) ₹20,000
(b) ₹200
(c) ₹28,800
(d) ₹12,000

Answer Key with Working

EXAM TIP Scoring

Score = correct answers − 0.25 × wrong answers VERIFY. Note every wrong question in your mistake log with its chapter; revise that chapter's formulas from file 01 before the next mock.

Answer key – Mock Test 3

Q	Ans	Explanation / working
1	(c)	(8)^(1/3) = 2; raised to 2 → 4.
2	(c)	1/12 + 1/36 = 1/9 per day → 9 days.
3	(d)	1,20,000 × 12 : 1,20,000 × (12 − m) = 2 : 1 → 12 − m = 6 → m = 6.
4	(c)	Total parts 15; one part = ₹6,000; Q = 5 × ₹6,000 = ₹30,000.
5	(b)	Third proportional = b^2/a = 16/2 = 8.
6	(c)	Sum of roots = −b/a = 5, product = −d/a = -20; each root satisfies the equation.
7	(b)	(3s + 5)/(s + 5) = 41/17 → s = 12.
8	(c)	$\alpha^3 + \beta^3 = (\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta)$ = -1 − 3(-6)(-1) = -19.
9	(b)	New sum = 2(α + β) = 14; new product = 4αβ = 40.
10	(b)	(7 − 3)x ≤ -8 − (3) → x ≤ -11/4.
11	(d)	Subtract -3 and divide by 2: -1/2 < x ≤ 4.
12	(b)	Corner points (0,0), (5,0), (4,1), (0,3) give Z = 0, 25, 23, 9; maximum 25 at (5, 0).
13	(d)	PV = 2,00,000 ÷ (1 + 0.12)^4 = 2,00,000 ÷ 1.573519 = ₹1,27,104.
14	(a)	FV(due) = FV(regular) × (1 + i) = ₹23,205 × 1.1 = ₹25,526.
15	(b)	i = 9/1200 = 0.0075; EMI = $P{\cdot}i(1 + i)^n/[(1 + i)^n - 1]$ = ₹3,180.
16	(c)	PV = A/(i − g) = 10,000/(0.1 − 0.04) = ₹1,66,666.67.
17	(a)	A = $FV{\cdot}i/[(1 + i)^n - 1]$ = 10,00,000 × 0.08/1.15892 = ₹69,029.
18	(b)	CAGR = (1,33,100/1,00,000)^(1/3) − 1 = 10% (the simple average 11.0% is wrong).
19	(d)	NPV = 50,000 × 3.1699 − 2,00,000 = ₹−41,507.
20	(a)	Doubling: SI = P → T = 100/8 = 12.50 years.
21	(c)	SI for 3 years = ₹14,400 → 1 year ₹4,800; P = ₹89,600 − 2 × ₹4,800 = ₹80,000; R = 4,800 × 100/80,000 = 6%.
22	(b)	A = 50,000 × (1.1)^2 = ₹60,500; CI = ₹10,500.
23	(c)	E = (1 + 0.0400)^4 − 1 = 16.99%.
24	(a)	PV = 2,00,000 ÷ (1 + 0.1)^4 = 2,00,000 ÷ 1.464100 = ₹1,36,603.
25	(d)	FV = 12,000 × [(1.12)^3 − 1]/0.12 = 12,000 × 3.3744 = ₹40,493.
26	(d)	i = 6/1200 = 0.0050; EMI = $P{\cdot}i(1 + i)^n/[(1 + i)^n - 1]$ = ₹8,864.
27	(d)	n(n − 1)/2 = 66 → n(n − 1) = 132 → n = 12.
28	(b)	$^9P_3$ = 504.
29	(a)	9 letters with repeats (M×2, T×2, E×2) → 9! ÷ 8 = 45,360.
30	(a)	Clockwise and anticlockwise are the same: (n − 1)!/2 = 360.
31	(a)	$GM^2 = AM \times HM$ → HM = 225/17 = 225/17.
32	(a)	$S_n = n/2\,[2a + (n - 1)d]$ = 11/2 × [6 + 20] = 143.
33	(b)	$S\infty = a/(1 - r)$ = 10/(1 − (-1/4)) = 8.
34	(c)	$[n(n + 1)/2]^2 = 120^2$ = 14,400.
35	(d)	Relations = subsets of A × B = 2^(2×4) = 256.
36	(a)	g(1) = 1; f(1) = 7.
37	(c)	Divide numerator and denominator by x^2 → 2/2 = 1.

Q	Ans	Explanation / working
38	(c)	C = ∫MC dx + F = $2x^2 + 7x + 100$ = ₹529 at x = 13.
39	(d)	MR = 100 − 4x = 0 → x = 25; R″ = −4 < 0 (maximum R = 1250).
40	(c)	$[2x^3 + 6x^2]$ from 0 to 3 = 108.
41	(a)	Terms are $n^2 - 1$ for n = 3, 4, ...; next = $8^2 - 1$ = 63.
42	(a)	Each letter is moved +2 place(s) in the alphabet: LIGHT → NKIJV.
43	(b)	All except 122 are perfect squares.
44	(c)	Two alternate series: 4, 6, ... (+2) and 20, 17, ... (−3) → 11.
45	(c)	Each letter is moved +3 place(s) in the alphabet: PLANT → SODQW.
46	(d)	All except 121 are perfect cubes.
47	(c)	Net rotation = -315° (clockwise positive) from north → North-east.
48	(b)	Net displacement: 15 km west and 8 km north → North-west.
49	(b)	Net rotation = -270° (clockwise positive) from north → East.
50	(b)	Net displacement: 3 km west and 4 km north → √(9 + 16) = 5 km.
51	(b)	Net rotation = -45° (clockwise positive) from south → South-east.
52	(b)	Unique arrangement going to each person's left (clockwise when viewed from above): B → G → F → C → H → E; opposite C is B.
53	(a)	The only arrangement satisfying all clues (left → right): K H B L D.
54	(c)	Unique arrangement going to each person's left (clockwise when viewed from above): B → E → F → C → D → G; opposite G is F.
55	(d)	The only arrangement satisfying all clues (left → right): B T G P J.
56	(b)	Brother's son = nephew.
57	(b)	A × B: A is B's son; B + C: B is C's husband → C is A's mother → A is C's son.
58	(c)	Brother's son = nephew.
59	(b)	Anita is Rita's daughter and Rita is Sunil's daughter → Anita is Sunil's granddaughter.
60	(c)	Brother's son = nephew.
61	(d)	Pie charts show parts of a whole.
62	(c)	Every unit of the population is studied.
63	(b)	Mode is located from the tallest rectangle of the histogram.
64	(c)	Non-sampling errors (response, recording, processing) occur in a census too.
65	(b)	Destructive testing (bulbs, crackers) rules out a census.
66	(c)	Every kth unit after a random start = systematic sampling.
67	(c)	The intersection of less-than and more-than ogives gives the median.
68	(d)	${}^{N}C_{n}$ = 5C2 = 10.
69	(c)	Median = 14; Σ|x − 14| = 31 → ÷ 5 = 31/5.
70	(d)	Variance = $(n^2 - 1)/12$ = 168/12 = 14.
71	(d)	Σwx/Σw = 330/7 = 330/7.
72	(a)	Median = 6; Σ|x − 6| = 41 → ÷ 5 = 41/5.
73	(a)	Arranged: 22, 28, 34, 58, 59, 62, 64 → median = 58.
74	(d)	CV = σ/x̄ × 100 = 12/80 × 100 = 15%.
75	(b)	For two numbers SD = |a − b|/2 = 15.
76	(d)	(25×44 + 75×67)/100 = 245/4.
77	(a)	SD(y) = |b| × SD(x) = 2 × 4 = 8; the constant 4 has no effect.
78	(d)	Median = 15; Σ|x − 15| = 38 → ÷ 5 = 38/5.
79	(d)	HM = 2ab/(a + b) = 36/9 = 4.
80	(c)	For two numbers SD = |a − b|/2 = 6.

Q	Ans	Explanation / working
81	(b)	P = (4 + 13 − 1)/52 = 4/13.
82	(c)	P = m/(m + n) = 2/9.
83	(a)	365 days = 52 weeks + 1 day → 1/7.
84	(b)	P = m/(m + n) = 5/11.
85	(c)	2 favourable outcomes out of 36 → 1/18.
86	(d)	P(A/B) = P(A ∩ B)/P(B) = 1/5/3/10 = 2/3.
87	(d)	5C2/7C2 = 10/21 = 10/21.
88	(a)	QD ≈ 2/3 σ and MD ≈ 4/5 σ.
89	(a)	z = (44 − 40)/4 = 1.0; P = 0.5 − 0.3413 = 0.1587.
90	(c)	z = (60 − 50)/10 = 1.0; P = 0.5 − 0.3413 = 0.1587.
91	(a)	4C2 × (1/2)^4 = 6/16 = 3/8.
92	(b)	$R = 1 - 6\Sigma d^2/[n(n^2 - 1)] = 1 - 60/504 = 37/42$.
93	(a)	r is unaffected in magnitude by change of origin and scale; the signs of -2 and 3 are opposite → -0.7.
94	(b)	$y - \bar{y} = b_{yx}(x - \bar{x})$ → y = 67 + 2/5(54 − 44) = 71.
95	(b)	$r = \pm\sqrt{(b_{yx} \times b_{xy})} = \sqrt{0.36} = 0.6$, with the sign of the coefficients.
96	(c)	$r = \pm\sqrt{(b_{yx} \times b_{xy})} = \sqrt{0.16} = 0.4$, with the sign of the coefficients.
97	(d)	$\Sigma p_1 q_0/\Sigma p_0 q_0 \times 100 = 108/44 \times 100 = 245.45$.
98	(d)	Real wage = 50,000 ÷ 125 × 100 = ₹40,000.
99	(d)	$P = \Sigma p_1 q_1/\Sigma p_0 q_1 \times 100$.
100	(a)	Real wage = 24,000 ÷ 120 × 100 = ₹20,000.