1. What will come in place of question mark '?' in the following question?

4.5% of 900 + 8.5 = 8^2 - ?

A) 11 B) 13

C) 10 D) 15

E) 25

2. What approximate value should come in place of question mark '?' in the following question?

405.03 ÷ 9.08 x 14.94 = ?

A) 675 B) 645

C) 575 D) 605

E) 595

3. What approximate value should come in place of question mark '?' in the following question?

59.89% of 4500 + 39.96% of 6500 - 79.87% of 5500 = ?

A) 900 B) 700

C) 800 D) 750

E) 1000

4. What will come in place of question mark (?) in the following question?

$$1\frac{3}{4} + 1\frac{5}{6} - 2\frac{1}{8} = ? + 1\frac{1}{12}$$

A) 9/24 B) 7/24

C) 5/12 D) 7/12

E) None of these

5. What approximate value should come in the place of question mark (?) in the following question?

96.98+709.99-142.93= 3.98 x ?

A) 154 B) 150

C) 166 D) 160

E) 172

6. What should come in place of the question mark (?) in the following questions?

$(16)^9 \div (16)^4 \times (16)^3 = (16)^?$

A) 6.75 B) 8

C) 10 D) 12

E) None of these

7. What should come in place of the question mark (?) in the following questions?

$\sqrt{7921}$+(?)² = 4% Of 1000 + 98

A) 7 B) 49

C) 6 D) 36

E) None of these

8. what will come in place of the question mark (?) in the following question?

2/7 of 5/8 of 7/9 of 6048 =?

A) 504 B) 820

C) 168 D) 480

E) None of these

9. What should come in place of question marks (?) in the following question?

25 ÷ 5 x 15 (10 - 5) ÷ 25 + 75 =?

A) $4\frac{3}{4}$ B) 90

C) 1/900 D) 125

E) None of these

10. What approximate value should come in place of question mark (?) in the following question? (You are not expected to calculate the exact value.)

$(9.979)^3 - (23.99)^2 + (1.99)^5 = ?$

A) 350 B) 490

C) 390 D) 420

E) 450

11. Simplify: $\frac{2}{5}\ of\ \frac{3}{5}\ of\ \frac{30}{7}\ of\ \frac{49}{12}\ of\ 36 - \frac{18}{5}\ of\ \frac{1}{3}$

A) 125 B) 140

C) 150 D) 140

E) 1502

12. What should come in place of question mark (?) in the following question? $(200 - 10^2) \div 5 - 2000\%$ of $15 \div 300\%$ of $10 = ?$

A) 5 B) -5

C) 10 D) 0

E) None of these

13. Simplify: $108 \div 36\ of\ \frac{1}{4} + \frac{2}{5} \times 3\frac{1}{4}$

A) $13\frac{7}{10}$ B) $13\frac{3}{10}$

C) $11\frac{3}{10}$ D) $12\frac{1}{10}$

E) $12\frac{7}{10}$

14. What should come in place of question mark (?) in the following question?

512 x 0.5 = 1024 ÷ ? x 4

A) 128 B) 8

C) 32 D) 28

E) 16

15. What approximate value should come in place of question mark (?) in the following questions? (You are not expected to calculate the exact value)

? = 4005.33 ÷ 19.89 x 1.9

A) 470 B) 300

C) 400 D) 360

E) 500

16. What approximate value will come in the place of the question mark '?' in the following question?

(? ÷ 9.97) × 12.08 = 20.12% of 1319.98

A) 220 B) 260

C) 250 D) 200

E) 240

17. What approximate value will come in the place of the question mark '?' in the following question?

34.03% of 550.08 ÷ ? = 297.08 +$\sqrt{728.97}$ -$\sqrt{89998}$

A) 14
B)21
C) 8
D)17
E) 12

18. What approximate value will come in the place of the question mark '?' in the following question?

339.98 ÷ ? = $\sqrt{143.98}$ + $\sqrt{64.02}$

A) 20
B) 17
C) 10
D) 23
E) 40

19. What approximate value will come in the place of the question mark '?' in the following question?

$2^{?}$ = 32.01 ÷ 128.01 x 1023.97 ÷ 7.97

A) 7
B) 3
C) 5
D) 9
E) 6

20. What approximate value should come in place of question mark (?) in the following question?

2 (11.925 x 6.05) + (5 x 85.87) = ?

A) 569 B) 468

C) 574 D) 497

E) 523

Directions (Q.Nos. 21-25) In each of these questions, two Equations I and Il are given. You have to solve both the equations and give answer.

Give Answer

a. If $x > y$ b. If $x \geq y$

b. If $x < y$ d. If $x \leq y$

e. If x = y or no relation can be established between x and y.

21. I. $x^2 - 13x + 40 = 0$

II. $2y^2 - y - 15 - 0$

22. I. $5x^2 + 17x + 6 = 0$

II. $2y^2 + 11y + 12 = 0$

23. I. $7x^2 - 19x + 10 = 0$

II. $8y + 2y - 3=0$

24. I. $x^2 - 8x + 15 = 0$

II. $y^2 - 3y + 20$

25. I. $3x^2 - 7x + 4 =0$

II. $2y^2 - 9y + 10 = 0$

Directions (Q. Nos.26-31) In each question two quantities are given. You need to solve them and give answer accordingly.

26. **Quantity I** Vessel A contains (Q+36) litter mixture of milk and water in the ratio of 7 : 2, while vessel B contains (2Q+42) litter mixture of milk and water in the ratio of 2 : 3. If 40% and 46% of mixture from vessel A and B taken out respectively, then remaining mixture in vessel B is 150% of remaining mixture in vessel A.

Find the total initial quantity of milk in mixture of vessel A and vessel B together.

Quantity II - Two vessels contains mixture of mango juice and orange juice in the ratio of 5 : 3 and 5:4, respectively. If 40 litter mixture from first vessel taken out and mixed in second vessel, so new ratio of mango juice and orange juice in second vessel becomes 25. Find initial quantity of mixture in second vessel?

मात्रा I - बर्तन A **में दूध और पानी का (**Q+36**) लीटर मिश्रण** 7:2 **के अनुपात में है, जबकि बर्तन** B **में (**2Q+42**) लीटर दूध और पानी का मिश्रण** 2:3 **के अनुपात में है। यदि बर्तन** A **और** B **से क्रमशः** 40% **और** 46% **मिश्रण निकाला जाता है, तो बर्तन** B **में शेष मिश्रण बर्तन** A **में शेष मिश्रण का** 150% **है। बर्तन** A **और बर्तन** B **के मिश्रण में दूध की कुल प्रारंभिक मात्रा ज्ञात कीजिए।**

मात्रा II - दो बर्तनों में आम के रस और संतरे के रस का मिश्रण क्रमशः 5:3 **और** 5:4 **के अनुपात में है। यदि पहले बर्तन से** 40 **लीटर मिश्रण निकालकर दूसरे बर्तन में मिलाया जाता है, तो दूसरे बर्तन में आम के रस और**

संतरे के रस का नया अनुपात 25 हो जाता है। दूसरे बर्तन में मिश्रण की प्रारंभिक मात्रा ज्ञात कीजिए?

(a) Quantity I > Quantity II (b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II (d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or no relation

27. **Quantity I** A can complete a task in 24 days and B can do same task in 18 days. Another two persons C and D complete $58\frac{1}{3}\%$ of the same task in 7 days and efficiency of D is 40% more than that of C. Find in how many days A, B and D will be complete the task together?

Quantity II - Ankit is 60% less efficient than Satish and complete a piece of work in 22.5 days. Ankit and Satish start work together and after 4.5 days both left the work, if veer complete the remaining of work in 4.5 days then find in how many days the whole work will be completed, if all three work together?

मात्रा I - A **एक कार्य को** 24 **दिनों में पूरा कर सकता है और** B **उसी कार्य को** 18 **दिनों में कर सकता है। अन्य दो व्यक्ति** C **और** D **समान कार्य का** $58\frac{1}{3}\%$ 7 **दिनों में पूरा करते हैं और** D **की दक्षता** C **की तुलना में** 40%

अधिक है। ज्ञात कीजिए कि A, B और D मिलकर कार्य को कितने दिनों में पूरा करेंगे?

मात्रा II - अंकित सतीश से 60% कम कुशल है और एक कार्य को 22.5 दिनों में पूरा करता है। अंकित और सतीश एक साथ काम करना शुरू करते हैं और 4.5 दिनों के बाद दोनों काम छोड़ देते हैं, अगर वीर शेष काम को 4.5 दिनों में पूरा करता है, तो पूरा काम कितने दिनों में पूरा होगा, अगर तीनों एक साथ काम करते हैं?

(a) Quantity I > Quantity II (b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II (d) Quantity I ≤ Quantity II

(e) Quantity | Quantity II or no relation

28. $5y^2 + 21y + 18 = 0$ and

$16^{(x+2)} \div 4^{(x+3)} = 64^{(x+3)} \times 4^{(x+4)}$

Quantity I: Value of y.

Quantity II: Value of x.

(a) Quantity I > Quantity II (b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II (d) Quantity I ≤ Quantity II

(e) Quantity 1 = Quantity II or no relation

29. **Quantity I** A shopkeeper has two articles A and B. Marked price of article B is 20% more than marked price of article A, shopkeeper sold article A at 25% discount and article B at 20% discount. He made 20% loss on article A and $6\frac{2}{3}$% profit on article B. If total loss of shopkeeper was 765, then find marked price of article B?

Quantity II - A shopkeeper gives a discount of 24% on marked price of shirt and cost price of jeans is 25% more than selling price of shirt. If shopkeeper sold jeans at 10 % profit and selling price of Jeans was 1140 ₹ more than selling price of shirt, then find the cost price of article Jeans?

मात्रा I. एक दुकानदार के पास दो वस्तुएँ A **और** B **हैं। वस्तु** B **का अंकित मूल्य वस्तु** A **के अंकित मूल्य से** 20% **अधिक है, दुकानदार ने वस्तु** A **को** 25% **छूट पर और वस्तु** B **को** 20% **छूट पर बेचा। उसने वस्तु** A **पर** 20% **की हानि और वस्तु** B **पर** $6\frac{2}{3}$% **का लाभ कमाया। यदि दुकानदार की कुल हानि** 765 **थी, तो वस्तु** B **का अंकित मूल्य ज्ञात करें**?

मात्रा II - एक दुकानदार शर्ट के अंकित मूल्य पर 24% **की छूट देता है और जींस का क्रय मूल्य शर्ट के विक्रय मूल्य से** 25% **अधिक है। यदि दुकानदार ने जीन्स को** 10% **लाभ पर बेचा और जीन्स का विक्रय मूल्य शर्ट के विक्रय मूल्य से** 1140 ₹ **अधिक था, तो वस्तु जीन्स का क्रय मूल्य ज्ञात कीजिए**?

(a) Quantity I > Quantity II(b) Quantity I < Quantity II

(c) Quantity 1≥ Quantity II(d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or no relation

30. **Quantity I-** A bag contains four green balls, three red balls and five blue balls. If three balls taken out at random what is probability of at least one ball is green and at least one ball is blue color.

Quantity II -There are five red toys and six green toys in a cartoon. What will be the probability of selection of four toys which contains at least two green toys.

मात्रा I- एक बैग में चार हरी गेंदें, तीन लाल गेंदें और पांच नीली गेंदें हैं। यदि तीन गेंदों को यादृच्छया निकाला

जाता है, तो कम से कम एक गेंद के हरे और कम से कम एक गेंद के नीले रंग के होने की प्रायिकता क्या है?

मात्रा II - एक कार्टून में पांच लाल खिलौने और छह हरे खिलौने हैं। ऐसे चार खिलौनों के चयन की प्रायिकता क्या होगी जिनमें कम से कम दो हरे रंग के खिलौने हों।

(a) Quantity I > Quantity II (b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II (d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or no relation

31. **Quantity I** Six years ago ratio between age of P and Q was 7 : 8, while six years hence ratio between $\frac{1}{6}^{th}$ of P age and $\frac{1}{3}^{rd}$ of Q age will be 9 :20. The age of P two years licence will be .

Quantity II Ratio between age of A, B and C is 16: 9 : 7. Three years hence average of all three age will be 35 years. The age of A two years hence will be?

मात्रा I - छह साल पहले P और Q की आयु के बीच का अनुपात 7:8 था, जबकि छह साल बाद P की आयु के 1/6 और Q की आयु के 1/3 के बीच का अनुपात 9:20 होगा। P की आयु दो वर्ष होगी।

मात्रा II - A, B **और** C **की आयु के बीच का अनुपात** 16:9:7 **है। तीन वर्ष बाद तीनों आयु का औसत** 35 **वर्ष होगा। दो वर्ष बाद** A **की आयु क्या होगी**?

(a) Quantity I > Quantity II (b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II (d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or no relation

32. What will come in place of question mark (?) in the following series?

1, 3, 7, 13, 21, 31, ?

A) 43 B) 33

C) 41 D) 45

E) None of these

33. What will come in place of question mark '?' in the given

number series?

2, 3, 7, 22, 89, ?

A) 446 B) 412

C) 324 D) 319

E) 298

34. What will come in place of question mark?' in the given

number series?

14, ?, 7, 14, 56, 448

A) 7 B)9

C) 12 D)25

E) 14

35. What will come in place of question mark '?' in the following question?

17, 22, 32, 47, 67, 92, ?

A) 112 B) 132

C) 111 D) 122

E) None of these

36. What will come in place of question mark in the following number series?

10080, 1440, ?, 48, 12, 4

A) 660 B) 240

C) 120 D) 280

E) 360

37. What should come in place of question mark '?' in the following number series?

1, 8, 27, 64, 125, ?, 343

A) 212 B) 196

C) 225 D) 216

E) None of these

38. What should come in place of question mark ?' in the following number series?

3, 11, 31, 69, 131, 223, ?

A) 351 B) 350

C) 349 D) 270

E) 288

39. What should come in place of question mark '?' in the following number series?

2, 3, 10, 15, 26, 35, 50, ?

A) 65 B) 69

C) 63 D) 86

E) 36

40 What will come in place of question mark '?' in the following question?

0, 2, 6, 12, ?, 30, 42

A) 26 B) 26

C) 34 D) 20

E) 30

41. What will come in the place of the question mark '?' in the following number series '?

5 12 26 54 110 (?)

A) 202 B) 213

C) 333 D) 222

E) 228

42. What should come in place of the question mark '?' in the following number series?

8, 104, 1144, 8008, ?, 120120

A) 30040 B) 40040

C) 50050 D) 20040

E) None of these.

43. What should come in place of the question mark ?' in the following number series?

15, 16, 68, 621, 9952, ?

A) 19904 B) 398080

C) 248825 D) 128825

E) None of these

44. What should come in place of the question mark '?' in the following number series?

5, 10, 30, 105, 440, ?

A) 920 B) 1325

C) 1840 D) 2125

E) 2225

45. What should come in place of the question mark '?' in the following number series?

5, 6, 13, 40, 161, ?

A) 987 B) 806

C) 876 D) 888

E) 654

46. What should come in place of the question mark '?' in the following number series?

1680, 210, 30, 5, ?, 0.25

A) 4 B) 2

C) 3 D) 1

E) 5

47. In the following series one number is wrong, Find out the wrong number.

60, 30, 150, 75, 375, 187.5, 935.5

A) 30 B) 150

C) 75 D) 375

E) 935.5

48. In the following series one number is wrong, Find out the wrong number.

448, 225, 226, 340, 682,1703.5

A) 225 B) 226

C) 340 D) 682

E) 1703.5

49. In the following series one number is wrong, Find out the wrong number.

59, 60, 56, 65, 47, 74

A) 47 B) 74

C) 56 D) 60

E) 65

50. Find the wrong term in the following series.

0.7, 0.7, 2.1, 10.5, 72.5, 661.5

A) 0.7 (1st) B) 10.5

C) 72.5 D) 661.5

E) 2.1

51. In each of the following number series, the wrong number is given, find out that number.

7, 12, 33, 130, 635, 3804

A) 12 B) 33

C) 635 D) 130

E) 3804

52. Find the missing number in the series

2, 1, 1, 1.5, 3, ?

A) 5.5 B) 6.5

C) 7.5 D) 6

E) 7

53. Find the missing number in the series

1, 11, 99, 693, 3465, ?

A) 8946 B) 11296

C) 10395 D) 12974

E) 10296

54. Find the wrong number in the given series.

9/14, 11/14, 13/14, 8/7, 17/14, 19/14, 3/2

A) 13/14 B) 8/7

C) 17/14 D) 19/14

E) 3/2

55. Find the wrong term in the following series.

62, 87, 187, 412, 811, 1437

A) 62 B) 811

C) 187 D) 87

E) None of these

56. Find the wrong term in the following series.

119, 176, 260, 371, 509, 675

A) 675 B) 119

C) 176 D) 371

E) 509

57. Find out the wrong number in the series:

41, 45, 54, 72, 95

A) 45 B) 54

C) 72 D) 95

E) 41

58. Find out the wrong number in the series:

1, 6, 14, 39, 88, 209

A) 6 B) 14

C) 39 D) 88

E) 209

59. Find out the wrong number in the series:

17, 38, 80, 168, 332, 668, 1340

A) 38 B) 80

C) 168 D) 332

E) 668

60. In each of the following number series, the wrong number is given, find out that number.

4, 9, 28, 111, 566, 3397

A) 28 B) 3397

C) 566 D) 111

E) 9

61. In the following number series, a wrong number is given. Find out the wrong number.

330, 80, 280, 120, 250, 130, 240

A) 330 B) 280

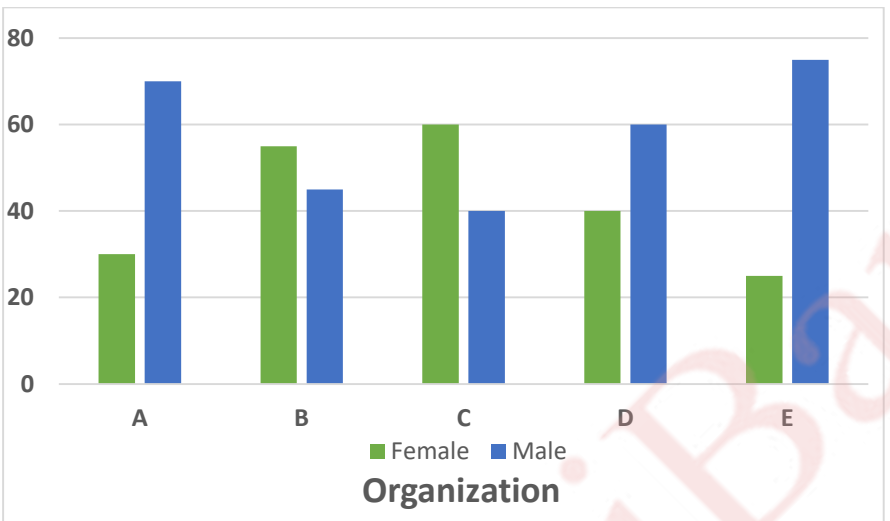
C) 250 D) 130

E) 240

Directions: Study the following graph and pie – chart carefully to answer the questions that follow.

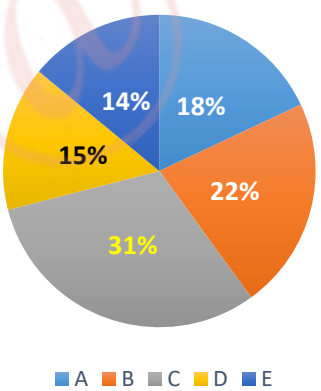
The following Bar graph shows the data of the Percentage of people working in different organization

निम्नलिखित बार ग्राफ विभिन्न संगठनों में काम करने वाले लोगों के प्रतिशत का डेटा दिखाता है



Percentage Breakup of Employees in Five Different Organizations [Total number (N) = 35000

पांच अलग-अलग संगठनों में कर्मचारियों का प्रतिशत विभाजन [कुल संख्या = 35000



62. Total number of employees in Organization A is what per cent of total number of employees in Organization D?

संगठन A **में कर्मचारियों की कुल संख्या, संगठन** D **में कर्मचारियों की कुल संख्या का कितना प्रतिशत है**?

A) 137 B) 179

C) 120 D) 122

E) 203

63. What is the total number of males in organization A and C together?

संगठन A **और** C **में मिलाकर पुरुषों की कुल संख्या कितनी है**?

A) 7250 B) 8400

C) 8025 D) 8750

E) None of these

64. What is the difference between the number of females in Organization B and the number of females in Organization E?

संगठन B **में महिलाओं की संख्या और संगठन** E **में महिलाओं की संख्या के बीच कितना अंतर है**?

A) 1210 B) 3010

C) 1700 D) 3000

E) None of these

65. What is the number of females in Organization D?

संगठन D **में महिलाओं की संख्या कितनी है**?

A) 2120 B) 2200

C) 2540 D) 2375

E) None of these

Direction: Study the following table carefully and answer the questions below.

The number of books published by six companies and the percentage of books distributed equally among distributors working with the company is given in the table below:

छह कंपनियों द्वारा प्रकाशित पुस्तकों की संख्या और कंपनी के साथ काम करने वाले वितरकों के बीच समान रूप से वितरित पुस्तकों का प्रतिशत नीचे तालिका में दिया गया है:

Publishers	Number of books published	Percentage of books distributed among distributors	Number of distributors working with the company
Company A	4900	95	8
Company B	6300	90	10
Company c	5600	85	11
Company D	3600	70	5
Company É	5500	80	8
Company F	7200	75	6

66. What is the average number of books published by companies A, C, and D together?

कंपनियों A, C **और** D **द्वारा मिलाकर प्रकाशित पुस्तकों की औसत संख्या कितनी है**?

A) 5700 B) 5900

C) 5500 D) 5300

E) 4700

67. What percent (approximately) of the number of books distributed by company B to distributors is the number of books distributed by company E?

कंपनी B **द्वारा वितरकों को वितरित पुस्तकों की संख्या का कितना प्रतिशत (लगभग) कंपनी** E **द्वारा वितरित पुस्तकों की संख्या है**?

A) 136 B) 126

C) 132 D) 129

E) 124

68. Among the total number of books distributed by company D to distributors the respective ratio of academic and non-academic books was 5: 4. What was the number of non-academic books distributed by company D?

कंपनी D **द्वारा वितरकों को वितरित पुस्तकों की कुल संख्या में शैक्षणिक और गैर-शैक्षणिक पुस्तकों का संबंधित अनुपात** 5:4 **था। कंपनी** D **द्वारा वितरित गैर-शैक्षणिक पुस्तकों की संख्या कितनी थी**?

A) 1230 B) 1800

C) 1120 D) 1550

E) 1600

69. What was the respective ratio between the total number of books distributed by Company B among distributors and the total number of books distributed by company C among distributors?

वितरकों के बीच कंपनी B **द्वारा वितरित पुस्तकों की कुल संख्या और वितरकों के बीच कंपनी** C **द्वारा वितरित पुस्तकों की कुल संख्या के बीच संबंधित अनुपात क्या था**?

A) 531: 882

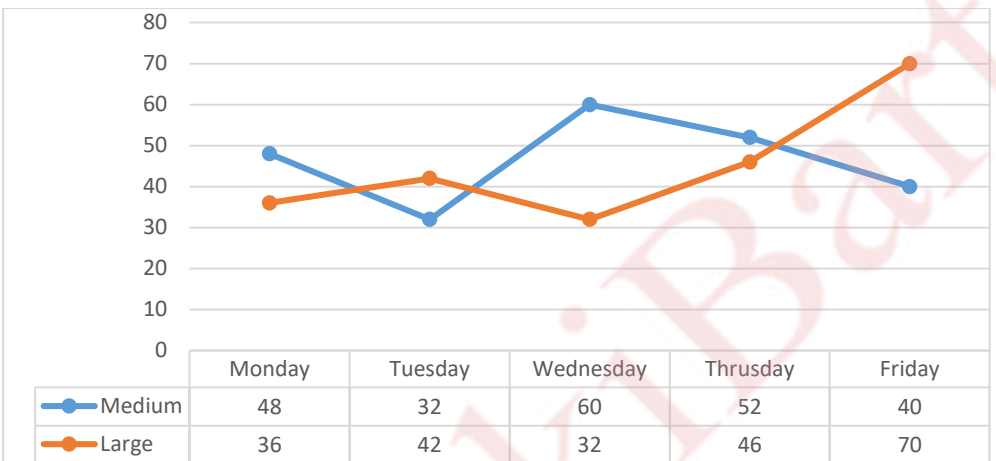
B) 81:68

C) 567: 475

D) 494: 227

E) 476: 567

Direction: Sale of wox boxes on different days by ABC company.



	Monday	Tuesday	Wednesday	Thrusday	Friday
Medium	48	32	60	52	40
Large	36	42	32	46	70

70. How many large size wox boxes were sold on all the days?

सभी दिनों में कितने बड़े आकार के वोक्स बॉक्स बेचे गए?

A) 226

B) 216

C) 206

D) 196

E) 236

71. Total boxes sold on Monday are what percent of total boxes sold on Thursday?

सोमवार को बेचे गए कुल डिब्बे, गुरुवार को बेचे गए कुल बक्सों का कितना प्रतिशत है?

A) 75.7%

B) 77.7%

C) 87.5%

D) 95.7%

E) 85.7%

72. What is the average of medium size wox box sold on Monday, Thursday and Friday?

सोमवार, गुरुवार और शुक्रवार को बेचे गए मध्यम आकार के वोक्स बॉक्स का औसत क्या है?

A) 45.67

B) 47.67

C) 44.67

D) 46.67

E) 48.67

73. Find the ratio between large size wox box sold on Wednesday and medium size wox box sold on Tuesday.

बुधवार को बेचे गए बड़े आकार के वोक्स बॉक्स और मंगलवार को बेचे गए मध्यम आकार के वोक्स बॉक्स के बीच का अनुपात ज्ञात कीजिए।

A) 1:2

B) 2:1

C) 1:3

D) 2:3

E) 1:1

74. Boxes sold on Tuesday of both sizes are what percent of Marge size boxes sold on Friday?

दोनों आकारों के मंगलवार को बेचे गए बॉक्स, शुक्रवार को बेचे गए मार्ज आकार के बॉक्स का कितना प्रतिशत है?

A) 100%

B) 105.71%

C) 110%

D) 115.71%

E) 105%

75. What is the difference between medium size wox box sold on Monday and large size wox box sold on Thursday?

सोमवार को बेचे गए मध्यम आकार के वोक्स बॉक्स और गुरुवार को बेचे गए बड़े आकार के वोक्स बॉक्स के बीच क्या अंतर है?

A) 2

B) 1

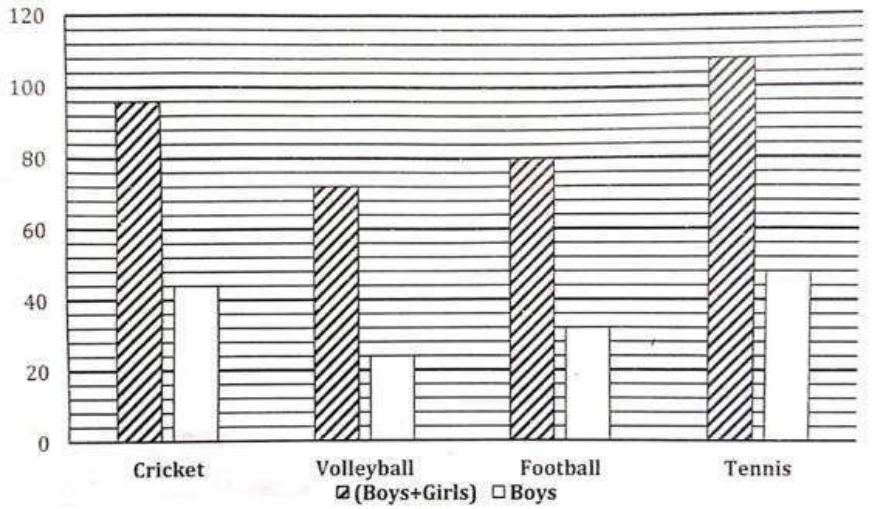
C) 0

D) 3

E) 4

Direction (76-80): - Bar graph given below shows total students (Boys+Girls) who play four different games and number of boys who plays these games respectively. Study the data carefully and answer the following questions.

नीचे दिया गया बार ग्राफ कुल छात्रों (लड़कों + लड़कियों) को दिखाता है जो क्रमशः चार अलग-अलग खेल खेलते हैं और इन खेलों को खेलने वाले लड़कों की संख्या को दर्शाते हैं। डेटा का ध्यानपूर्वक अध्ययन करें और निम्नलिखित प्रश्नों के उत्तर दें।



76. Find the ratio between total number of students (Boys+Girls) who play Cricket, Volleyball and Tennis to total number girls who play Volleyball and Football?

क्रिकेट, वॉलीबॉल और टेनिस खेलने वाले छात्रों (लड़के+लड़कियों) की कुल संख्या का वॉलीबॉल और फुटबॉल खेलने वाली लड़कियों की कुल संख्या से अनुपात ज्ञात कीजिये?

(a) None of the given options (b) 21:8

(c) 23:16 (d) 23:8

(e) 21:16

77. Total number of boys who play Cricket and Football is how much less than total students (Boys+Girls) who play Football and Tennis?

क्रिकेट और फुटबॉल खेलने वाले लड़कों की कुल संख्या फुटबॉल और टेनिस खेलने वाले कुल छात्रों (लड़के+लड़कियों) से कितनी कम है?

(a) 112

(b) 116

(c) 118

(d) None of the given options

(e) 114

78. Total number of boys who play Volleyball and Tennis is what percent of the total girls who play same game?

वॉलीबॉल और टेनिस खेलने वाले लड़कों की कुल संख्या समान खेल खेलने वाली लड़कियों की कुल संख्या का कितना प्रतिशत है?

(a) $33\frac{1}{3}\%$

(b) None of the given options

(c) $66\frac{2}{3}\%$

(d) 50%

(e) 25%

79. Out of total boys and girls play Football, 50% and $33\frac{1}{3}$%respectively qualified for nationals. Find total students (Boys+Girls) who were disqualified for nationals is what percent of total students (Boys+Girls) who play this game?

फुटबॉल खेलने वाले कुल लड़कों और लड़कियों में से क्रमश: 50% **और** $33\frac{1}{3}$%% **ने राष्ट्रीय स्तर के लिए क्वालीफाई किया। कुल छात्रों (लड़के+लड़कियों) का पता लगाएं, जिन्हें राष्ट्रीय स्तर पर अयोग्य घोषित किया गया था, इस खेल को खेलने वाले कुल छात्रों (लड़के+लड़कियों) का कितना प्रतिशत है**?

(a) 40%

(b) 60%

(c) 50%

(d) None of the given options

(e) 80%

80. Find the average number of girls who play Volleyball, Football and Tennis?

वॉलीबॉल, फुटबॉल और टेनिस खेलने वाली लड़कियों की औसत संख्या ज्ञात कीजिए?

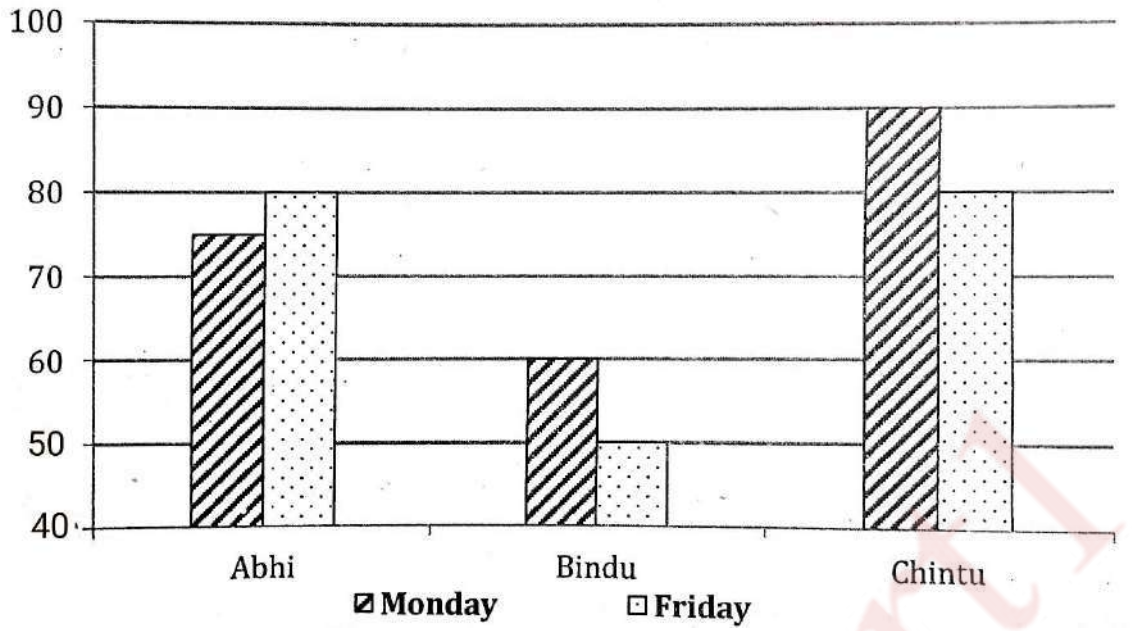
(a) 54 (d) 56

(c) None of the given options (b) 52

(e) 50

Direction (81-85): The given bar graph shows the percentage of query resolved by three people Abhi, Bindu and Chintu on Monday and Friday with respect to total calls received by them.

दिया गया बार ग्राफ तीन लोगों अभि, बिंदु और चिंटू द्वारा सोमवार और शुक्रवार को उनके द्वारा प्राप्त कुल कॉलों के संबंध में हल की गई क्वेरी का प्रतिशत दर्शाता है।



81. No. of query resolved by Abhi and Chintu on Friday is 360. What could be maximum number of calls that were not resolved by Abhi on Friday?

शुक्रवार को अभि और चिंटू द्वारा हल की गई क्वेरी की संख्या 360 **है। शुक्रवार को अभि द्वारा हल नहीं की गई कॉलों की अधिकतम संख्या कितनी हो सकती है**?

(a) 89 (b) 40

(c) 12 (d) 100

(e) None of these

82. Number of queries resolved by Bindu on Monday is 180 and call received by him is 25% more than query resolved by Abhi on that day. Find the number of calls received by Abhi on Monday.

बिंदु द्वारा सोमवार को हल किए गए प्रश्नों की संख्या 180 है और उसके द्वारा प्राप्त कॉल उस दिन अभि द्वारा हल किए गए प्रश्न से 25% अधिक है। अभि द्वारा सोमवार को प्राप्त कॉलों की संख्या ज्ञात कीजिए।

(a) 260
(b) 440
(c) 360
(d) 400
(e) 320

83. If 20% calls increased from Monday to Friday for Bindu and Chintu and average number of query resolved by them on Friday is 30 more than that of Monday. Find call received by Chintu on Friday is how much more than that of received on Monday by him.

यदि बिंदू और चिंटू के लिए सोमवार से शुक्रवार तक 20% कॉल बढ़ जाती हैं और शुक्रवार को उनके द्वारा हल की गई क्वेरी की औसत संख्या सोमवार की तुलना में 30 अधिक है। ज्ञात कीजिए कि चिंटू को शुक्रवार को प्राप्त कॉल, सोमवार को प्राप्त कॉल से कितनी अधिक है।

(a) 125
(b) 220

(c) 120 (d) 200

(e) 250

84. What is the ratio of calls received by Abhi, Bindu and Chintu on Friday. If the number of query resolved by them is in the ratio of 3:4:2.

शुक्रवार को अभि, बिंदु और चिंटू द्वारा प्राप्त कॉलों का अनुपात कितना है? यदि उनके द्वारा हल की गई क्वेरी की संख्या 3:4:2 **के अनुपात में है।**

(a) 12:33:19 (b) 14:32:11

(c) 15:32:10 (d) 10:35:12

(e) 8:7:9

85. Query resolved by Chintu on Monday is 60% of the query resolved by him on Friday. Query resolved by Abhi on Friday is equal to the sum of the query resolved by Chintu on both days. Call received by Abhi on Friday is what % more than that of Chintu on Monday.

सोमवार को चिंटू द्वारा हल की गई क्वेरी उसके द्वारा शुक्रवार को हल किए गए प्रश्न का 60% **है। अभि द्वारा शुक्रवार को हल की गई क्वेरी दोनों दिनों में चिंटू द्वारा हल की गई क्वेरी के योग के बराबर है। अभि को शुक्रवार**

को प्राप्त कॉल, सोमवार को चिंटू की कॉल से कितने प्रतिशत अधिक है।

(a) 100%
(b) 200%
(c) 250%
(d) 300%
(e) 120%

86. Difference of the compound interest received in first year and second year at 20% per annum at CI is 1200, then find the sum.

चक्रवृद्धि ब्याज पर 20% प्रति वर्ष की दर से पहले वर्ष और दूसरे वर्ष में प्राप्त चक्रवृद्धि ब्याज का अंतर 1200 है, तो राशि ज्ञात कीजिए।

A. 25000
b. 36000
c. 35000
d. 24000
e 30000

87. Find the total distance covered by boat in each upstream and downstream in 7 h if the speed of boat in still water and speed of current is 21 km/h and 3 km/h respectively.

यदि नाव की गति शांत जल में और धारा की गति क्रमशः 21 **किमी/घंटा और** 3 **किमी/घंटा है, तो प्रत्येक धारा के प्रतिकूल और धारा के अनुकूल नाव द्वारा** 7 **घंटे में तय की गई कुल दूरी ज्ञात कीजिए।**

a. 280 km

b. 294 km

c. 315 km

d. 301 km

e. 322 km

88. Ratio of income of A to that of B is 5:9, If expenditure of A is $\frac{3}{8}^{th}$ of his income and expenditure of B is $\frac{4}{9}^{th}$ of his income and sum of their saving is ₹1950, then find the difference between their income.

A **की आय का** B **से अनुपात** 5:9 **है, यदि** A **का व्यय उसकी आय का** 3/8**वां है और** B **का व्यय उसकी आय का** 4/9**वां है और उनकी बचत का योग** ₹1950 **है, तो दोनों के बीच का अंतर ज्ञात कीजिए। उनकी आय।**

a. ₹900

B. ₹1000

c. ₹880

d. ₹960

e. ₹920

89. A alone can do a work in 12 days while A and B together can do that work in 7.5 days. Find the time taken by C alone to dothat work if C takes 3 days more than that of B alone to do that work?

A अकेला एक काम को 12 दिनों में कर सकता है जबकि A और B मिलकर उस काम को 7.5 दिनों में कर सकते हैं। यदि C अकेले उस कार्य को करने में B से 3 दिन अधिक लेता है, तो उस कार्य को करने के लिए अकेले C द्वारा लिया गया समय ज्ञात कीजिए?

a. 33 days
b. 30 days
c. 23 days
d. 27 days
e. 28 days

90. Ratio of base and perpendicular side of a right-angled triangle is 3 : 4 and its base is equal to the side of a square having area 81 cm^2. Find the perimeter of the triangle.

एक समकोण त्रिभुज के आधार और लंबवत भुजा का अनुपात 3 : 4 है और इसका आधार 81 सेमी2 क्षेत्रफल वाले

वर्ग की भुजा के बराबर है। त्रिभुज का परिमाप ज्ञात कीजिए।

a. 30 cm
b. 36 cm
c. 33 cm
d. 4cm
e. 40 2cm

91. A person travels half of the distance at the speed of x km/h and remaining half of the distance at 4x km/h. Find the value of 'x' if the average speed is 36.8 km/h.

एक व्यक्ति आधी दूरी x **किमी/घंटा की गति से और शेष आधी दूरी** 4x **किमी/घंटा की गति से तय करता है। यदि औसत गति** 36.8 **किमी/घंटा है, तो** 'x' **का मान ज्ञात कीजिए।**

a. 21
b. 25
c. 24
d. 23
e. 20

92. A, B and C invested a ratio of 1:8:5 in a business. They got an annual profit of ₹136800. If A and C withdrew their amount at the end of 3 months and 7

months respectively. Then, find the difference between A and Cs share of profit.

A, B और C एक व्यवसाय में 1:8:5 के अनुपात में निवेश करते हैं। उन्हें ₹136800 का वार्षिक लाभ हुआ। यदि A और C ने क्रमशः 3 महीने और 7 महीने के अंत में अपनी राशि वापस ले ली। फिर, लाभ के A और C हिस्से के बीच का अंतर ज्ञात कीजिए।

a. ₹ 12600
b. ₹ 11500
c. ₹ 13500
d. ₹ 10500
e. ₹ 13000

93. Retailer sold one article at $33\frac{1}{3}\%$ profit and another at 100% profit. Find his overall profit percentage if the selling price of both the article is same?

फुटकर विक्रेता ने एक वस्तु को $33\frac{1}{3}\%$ लाभ पर तथा दूसरी वस्तु को 100% लाभ पर बेचा। यदि दोनों वस्तुओं का विक्रय मूल्य समान है, तो उसका कुल लाभ प्रतिशत ज्ञात कीजिए?

a. 60%
b. 55%

c. $66\frac{2}{3}\%$ d. 75%

e. $56\frac{2}{3}\%$

94. A mixture has milk and water in the ratio 4: 1. When 50% of the mixture is taken out and replaced by 24 L of water then the ratio of milk to water in the mixture becomes 1 : 1. Find initial quantity of mixture.

एक मिश्रण में दूध और पानी का अनुपात 4:1 **है। जब** 50% **मिश्रण को निकाल कर** 24 **लीटर पानी से बदल दिया जाता है तो मिश्रण में दूध और पानी का अनुपात** 1:1 **हो जाता है। मिश्रण की प्रारंभिक मात्रा ज्ञात कीजिए।**

a. 80 L b. 45 L

c. 70 L d. 60 L

e. 75 L

95. 4 yr ago, ratio of Shivam's age to Deepak's age was 2:3 and ratio of Shivam's age 4 yr ago to Deepak's age 5 yr hence is 8 : 15. Find present age of Shivam.

4 **वर्ष पहले, शिवम की आयु का दीपक की आयु से अनुपात** 2:3 **था और** 4 **वर्ष पहले शिवम की आयु का**

दीपक की 5 वर्ष की आयु से अनुपात 8:15 है। शिवम की वर्तमान आयु ज्ञात कीजिए।

a. 32 yr b. 28 yr

c. 40 yr d. 24 yr e. 36 yr

Directions (Q. Nos. 96 and 97) Three milkman A, B and C have mixture of milk and water in the quantity of (X+24) liters, (X+54) liters and (X+84) liters and milk and water in the ratio of 23.8.7 and 13:5, respectively.

निर्देश (प्र संख्या 96 और 97) तीन दूधवाले ए, बी और सी के पास (X+24) लीटर, (X+54) लीटर और (X+84) लीटर और दूध की मात्रा में दूध और पानी का मिश्रण है और क्रमशः 23.8.7 और 13:5 के अनुपात में पानी।

96. If A sold 50 liters of his mixture and 8 liters of milk added in remaining mixture, new ratio of a milk and water becomes 6 : 7. What quantity of water should be added by B and C, so new ratio of their mixture becomes 5:7 and 5:4 respectively?

यदि A अपने मिश्रण का 50 लीटर और शेष मिश्रण में 8 लीटर दूध मिलाता है, तो दूध और पानी का नया अनुपात

6: 7 हो जाता है। B और C को कितनी मात्रा में पानी मिलाना चाहिए, तो उनके मिश्रण का नया अनुपात 5 हो जाता है। :7 और 5:4 क्रमशः?

(a) 56 liters and 40 liters (b) 54 liters and 42 liters

(c) 50 liters and 30 liters (d) 60 liters and 50 liters

(e) 64 liters and 30 liters

97. B Sold 40% of his mixture and C sold 50% of his mixture, remaining mixture of both became equal. If all three charge ₹2 for one liter of water and production cost of milk for A, B and C in the ratio of 5:6:7 and total mixture, which all three milkmen have cost ₹3644. Find production cost of milk per liter for A, B and C respectively?

B ने अपने मिश्रण का 40% बेचा और C ने अपने मिश्रण का 50%, शेष मिश्रण को बेच दिया दोनों के बराबर हो गया। यदि तीनों एक लीटर पानी के लिए ₹2 चार्ज करते हैं और ए, बी और सी के लिए दूध की उत्पादन लागत 5:6:7 के अनुपात में और कुल मिश्रण, जो तीनों दूधवाले

की लागत ₹3644 **है। क्रमशः** A, B **और** C **के लिए प्रति लीटर दूध की उत्पादन लागत ज्ञात कीजिए**?

(a) ₹ 6, ₹ 7 and ₹ 8 (b) ₹ 25, ₹ 30 and ₹ 36

(c) ₹ 10, ₹12 and ₹ 16 (d) ₹ 10 ₹ 12 and ₹14

(e) ₹ 10, ₹ 14 and ₹15

98. In an election survey, $83\frac{1}{3}\%$ of total voters took part in survey, 50% then claims to votes for candidate P, 10% are uncertain and rest says to vote for Q. If all of them voted according to their commitments on the day of election and those who were not part of survey, voted to P and Q in ratio of 2 : 1. All the people who are uncertain in survey, voted to P: Q in the ratio of 1:4 in election. If P won by 640 votes then find total number of votes in election.

एक चुनाव सर्वेक्षण में, कुल मतदाताओं में से $83\frac{1}{3}\%$ **ने सर्वेक्षण में भाग लिया**, 50% **फिर उम्मीदवार पी के लिए वोट का दावा करते हैं**, 10% **अनिश्चित हैं और बाकी लोग क्यू को वोट देने के लिए कहते हैं। यदि उन सभी ने अपनी प्रतिबद्धताओं के अनुसार मतदान किया। चुनाव के**

दिन और जो सर्वेक्षण का हिस्सा नहीं थे, उन्होंने 2: 1 के अनुपात में P और Q को वोट दिया। सर्वेक्षण में अनिश्चित सभी लोगों ने चुनाव में 1:4 के अनुपात में P: Q को वोट दिया। यदि P 640 मतों से जीता है तो चुनाव में कुल मतों की संख्या ज्ञात कीजिए।

(a) 6000 (b) 5000

(c) 9000 (d) 7200

(e) 6750

Directions (Q.Nos. 99 and 100) A sale conducted on mobile store where cost price of three types mobiles A, B and C the ratio of 5:7:9. Store owner made mark price of mobile A and C, 30% above cost price and mobile B, 40% above cost price. Discounts allowed by store on mobiles A, B and Care $15\frac{2}{13}$%, $21\frac{3}{7}$% and $11\frac{1}{9}$%, respectively.

मोबाइल स्टोर पर आयोजित एक बिक्री जहां तीन प्रकार के मोबाइल A, B और C का लागत मूल्य 5:7:9 के अनुपात में है। स्टोर के मालिक ने मोबाइल A और C का अंकित

मूल्य, लागत मूल्य से 30% अधिक और मोबाइल B, लागत मूल्य से 40% अधिक अंकित किया। मोबाइल ए, बी और केयर पर स्टोर द्वारा छूट क्रमश: $15\frac{2}{13}\%$, $21\frac{3}{7}\%$ और $11\frac{1}{9}\%$, है।

99. A man purchased fourteen type A mobile, twenty type B mobile and fifteen type C mobile in sale. If store owner made a total profit of ₹17500 on all type A mobile, purchased by man than find total profit made by store owner on type B and type C mobiles, which was purchased by man?

एक आदमी ने चौदह टाइप ए मोबाइल, बीस टाइप बी मोबाइल और पंद्रह टाइप सी मोबाइल बिक्री में खरीदा। यदि स्टोर के मालिक ने आदमी द्वारा खरीदे गए सभी प्रकार के मोबाइल पर ₹17500 का कुल लाभ कमाया, तो स्टोर के मालिक द्वारा टाइप बी और टाइप सी मोबाइल पर किए गए कुल लाभ की तुलना में, जिसे आदमी ने खरीदा था?

(a) ₹82500
(b) ₹84500
(c) ₹78500
(d) ₹87500

(e) ₹88500

100. Store decided to give no discount on purchase of any type of mobile it will be given two mobiles free on purchase of six type A mobiles, one mobile free on purchase of five type B mobiles and three mobiles free on purchase of ten type C mobiles. A retailer come to purchase mobile and take away 48 type A mobile, 36 type B mobiles and 39 type C mobiles. Find overall loss percentage of store owner in this transaction?

स्टोर ने किसी भी प्रकार के मोबाइल की खरीद पर कोई छूट नहीं देने का निर्णय लिया है, छह प्रकार के मोबाइल खरीदने पर दो मोबाइल मुफ्त, पांच प्रकार के बी मोबाइल की खरीद पर एक मोबाइल और दस प्रकार के सी मोबाइल की खरीद पर तीन मोबाइल मुफ्त दिए जाएंगे। एक फुटकर विक्रेता मोबाइल खरीदने आता है और 48 **टाइप ए मोबाइल**, 36 **टाइप बी मोबाइल और** 39 **टाइप सी मोबाइल ले लेता है। इस लेन-देन में स्टोर के मालिक का कुल नुकसान प्रतिशत ज्ञात करें**?

(a) $10\frac{28}{281}\%$

(b) $8\frac{28}{281}$

(c) $4\frac{76}{281}\%$ (d) $14\frac{28}{281}\%$

(e) $9\frac{28}{281}\%$

Solution

01. Given expression is,

$\Rightarrow 4.5\ \%\ \text{of}\ 900 + 8.5 = 8^2 - ?$

$\Rightarrow \frac{4.5}{100} \times 900 + 8.5 = 8^2 - ?$

$\Rightarrow 40.5 + 8.5 = 8^2 - ?$

$\Rightarrow 49 = 64 - ?$

$\Rightarrow ? = 64 - 49 = 15$

$\Rightarrow ? = 15$

02. Given expression:

$405.03 \div 9.08 \times 14.94 = ?$

$\Rightarrow 405 \div 9 \times 15 = ?$

$\Rightarrow 45 \times 15 = ?$

$\Rightarrow ? = 675$

03. $59.89\%\ \text{of}\ 4500 + 39.96\%\ \text{of}\ 6500 - 79.87\%\ \text{of}\ 5500 = ?$

$\Rightarrow 60\%\ \text{of}\ 4500 + 40\%\ \text{of}\ 6500 - 80\%\ \text{of}\ 5500 = ?$

$\Rightarrow 2700 + 2600 - 4400 = ?$

$\Rightarrow 5300 - 4400 = ?$

$\Rightarrow ? = 900$

04. $\Rightarrow 1\frac{3}{4}+1\frac{5}{6}-2\frac{1}{8}=?+1\frac{1}{12}$

$\Rightarrow \frac{7}{4}+\frac{11}{6}-\frac{17}{8}-\frac{13}{12}=?$

$\Rightarrow ?=\frac{7\times6+11\times4-17\times3-13\times2}{24}$

$\Rightarrow ?=\frac{42+44-51-26}{24}$

$\Rightarrow ?=9/24$

05. $96.98+709.99-142.93=3.98\times ?$

$\Rightarrow (97+7\ 10)-143=(4\times ?)$

$\Rightarrow 807-143=(4\times ?)$

$\Rightarrow ?=(807-143)/4=664/4=166$

06. Then, $(16)^9\div(16)^4\times(16)^3=(16)^n$

$\Rightarrow (16)^5\times(16)^3=(16)^n$

$\Rightarrow (16)^8=16^n$

Since base of these two numbers are same so we can equate the powers of these two numbers.

$\Rightarrow n=8$

07. $\sqrt{7921}+(?)^2=4\%\ \text{Of}\ 1000+98$

$\Rightarrow 89+(?)^2=4/100\times1000+98$

$\Rightarrow (?)^2=40+98-89$

$\Rightarrow ?=\sqrt{49}=7$

08. **Sol 59.**

2/7 of 5/8 of 7/9 of 6048 = 2/7 × 5/8 × 7/9 × 6048 = 840

09

Follow BODMAS Rule –

$\Rightarrow ? = (25/5) \times 15\ (5) \div 25 + 75$

$= 5 \times (75/25) + 75$

$= 5 \times 3 + 75$

$= 15 + 75$

$= 90$

10. Given expression:

$\Rightarrow (9.979)^3 - (23.99)^2 + 2^5$

$\Rightarrow 10^3 - 24^2 + 2^5 = 1000 - 576 + 32$

$\Rightarrow 456 \approx 450$

11. The given expression is: $\frac{2}{5} of \frac{3}{5} of \frac{30}{7} of \frac{49}{12} of\ 36 - \frac{18}{5} of \frac{1}{3}$

The given expression can be rewritten as

$$\left(\frac{2}{5} \times \left(\frac{3}{5} \times \left(\frac{30}{7} \times \left(\frac{49}{12} \times 36\right)\right)\right)\right) - \left(\frac{18}{5} \times \frac{1}{3}\right)$$

$$= \left(\frac{2}{5} \times \left(\frac{3}{5} \times \left(\frac{30}{7} \times (49 \times 3)\right)\right)\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{2}{5} \times \left(\frac{3}{5} \times \left(\frac{30}{7} \times (49 \times 3)\right)\right)\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{2}{5} \times \left(\frac{3}{5} \times (30 \times 21)\right)\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{2}{5} \times (3 \times 6 \times 21)\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{2}{5} \times 378\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{2}{5} \times 378\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{756}{5}\right) - \left(\frac{6}{5}\right)$$

$$= \left(\frac{750}{5}\right) = 150$$

12. The given expression is,
$(200 - 10^2) \div 5 - 2000\%$ of $15 \div 300\%$ of 10
$= (200 - 100) \div 5 - 2000\%$ of $15 \div 300\%$ of 10
$= 100 \div 5 - (2000/100) \times 15 \div (300/100) \times 10$
$= 20 - 300 \div 30$
$= 20 - 10$
$= 10 = ?$

13. Given expression:

$$108 \div 36 \ of \frac{1}{4} + \frac{2}{5} \times 3\frac{1}{4}$$
$$\Rightarrow 108 \div (36 \times \frac{1}{4}) + \frac{2}{5} \times \frac{13}{4}$$
$$\Rightarrow 108 \div 9 + \frac{13}{10}$$
$$\Rightarrow 12 + \frac{13}{10}$$
$$\Rightarrow \frac{120+13}{10}$$
$$\Rightarrow \frac{133}{10} = 13\frac{3}{10}$$

14. Now, the given expression,
$512 \times 0.5 = 1024 \div ? \times 4$
$\Rightarrow 256/4 = 1024/?$
$\Rightarrow ? = 1024/64$
$\Rightarrow ? = 16$

15. $4005.33 \approx 4000$
$19.89 \approx 20$
$1.9 \approx 2$
∴Now, given expression:
$4005.33 \div 19.89 \times 1.9$
$\approx (4000/20) \times 2$
$\approx 200 \times 2$
≈ 400

16.

(? ÷ 9.97) × 12.08 = 20.12% of 1319.98
By approximation;
(? ÷ 10) × 12 = 20% of 1320
? ÷ 10 × 12 = 264
⇒ ? = 264 × 10/12 = 220

17.

34.03% of 550.08 ÷ ? = 297.08 + √728.97 - √89998
By approximation;
⇒ 34% of 550 ÷ ? = 297 + √729 - √90000
187 ÷ ? = 297 + 27 - 300 = 24
⇒ ? = 8 (approx.)

18.

339.98 ÷ ? = √143.98 + √64.02
By approximation;
⇒ 340 ÷ ? = √144 + √64 = 20
⇒ ? = 340/20 = 17

19.

$2^{?}$ = 32.01 ÷ 128.01 × 1023.97 ÷ 7.97
By approximation;
⇒ $2^{?}$ = 32 ÷ 128 × 1024 ÷ 8 = 32 ÷ 128 × 128
$2^{?}$ = 32 = 2^{5}
⇒ ? = 5

20. Given expression,
2(11.925 × 6.05) + (5 × 85.87) = ?
⇒ 2(12 × 6) + (5 × 86) = ?
⇒ 2 × 72 + 430 = ?
⇒ 144 + 430 = ?
⇒ ? = 574

21. *(a)* I. $x^2 - 13x + 40 = 0$

$\Rightarrow x^2 - 8x - 5x + 40 = 0$

$\Rightarrow x(x - 8) - 5(x - 8) = 0$

$\Rightarrow (x - 8)(x - 5) = 0$

$\therefore x = 8, 5$

II. $2y^2 - y - 15 = 0$

$\Rightarrow 2y^2 - 6y + 5y - 15 = 0$

$\Rightarrow 2y(y - 3) + 5(y - 3) = 0$

$\Rightarrow (y - 3)(2y + 5) = 0 \quad \therefore y = 3, -\frac{5}{2}$

Hence, $x > y$.

22. *(e)* I. $5x^2 + 17x + 6 = 0$

$\Rightarrow 5x^2 + 15x + 2x + 6 = 0$

$\Rightarrow 5x(x + 3) + 2(x + 3) = 0$

$\Rightarrow (x + 3)(5x + 2) = 0 \quad \therefore x = -3, \frac{-2}{5}$

II. $2y^2 + 11y + 12 = 0$

$\Rightarrow 2y^2 + 8y + 3y + 12 = 0$

$\Rightarrow 2y(y + 4) + 3(y + 4) = 0$

$\Rightarrow (y + 4)(2y + 3) = 0$

$\therefore y = -4, \frac{-3}{2}$

Hence, no relation can be established between x and y.

23. *(a)* I. $7x^2 - 19x + 10 = 0$

$\Rightarrow 7x^2 - 14x - 5x + 10 = 0$

$\Rightarrow 7x(x - 2) - 5(x - 2) = 0$

$\Rightarrow (x - 2)(7x - 5) = 0$

$\therefore x = 2, \frac{5}{7}$

II. $8y^2 + 2y - 3 = 0$

$\Rightarrow 8y^2 + 6y - 4y - 3 = 0$

$\Rightarrow 2y(4y + 3) - 1(4y + 3) = 0$

$\Rightarrow (4y + 3)(2y - 1) = 0$

$\therefore y = \frac{-3}{4}, \frac{1}{2}$

24. *(a)* I. $x^2 - 8x + 15 = 0$

$\Rightarrow x^2 - 5x - 3x + 15 = 0$

$\Rightarrow (x - 5)(x - 3) = 0$

$\therefore x = 3, 5$

II. $y^2 - 3y + 2 = 0$

$\Rightarrow y^2 - 2y - y + 2 = 0$

$\Rightarrow (y - 2)(y - 1) = 0$

$\therefore y = 1, 2$

Hence, $x > y$

25. *(c)* I. $3x^2 - 7x + 4 = 0$

$\Rightarrow 3x^2 - 3x - 4x + 4 = 0$

$\Rightarrow (x - 1)(3x - 4) = 0$

$\therefore x = 1, \frac{4}{3}$

II. $2y^2 - 9y + 10 = 0$

$\Rightarrow 2y^2 - 5y - 4y + 10 = 0$

$\Rightarrow (2y - 5)(y - 2) = 0$

$\therefore y = \frac{5}{2}, 2$

Hence $x < y$.

26. (b) **Quantity I**

According to the question,

150% of remaining mixture in vessel A = Remaining mixture in vessel B

$\Rightarrow (Q + 36) \times \frac{60}{100} \times \frac{150}{100} = (2Q + 42) \times \frac{54}{100}$

$\Rightarrow (Q + 36) = (2Q + 42) \times \frac{6}{10}$

$\Rightarrow 10Q + 360 = 12Q + 252 \Rightarrow 2Q = 108$

$\Rightarrow Q = 54$

Total initial quantity of milk in mixture of vessel A and B together

$= (54 + 36) \times \frac{7}{9} + (108 + 42) \times \frac{2}{5}$

$= 70 + 60 = 130$ liters

Quantity II Let mixture of mango juice and orange juice in second vessel be $5x$ liter and $4x$ liter respectively.

According to the question,

$$\frac{5x + 40 \times \frac{5}{8}}{4x + 40 \times \frac{3}{8}} = \frac{25}{19} \Rightarrow \frac{x + 5}{4x + 15} = \frac{5}{19}$$

$\Rightarrow \quad 19x + 95 = 20x + 75 \Rightarrow x = 20$

$\therefore$ Initial quantity of mixture in second vessel

$= (5x + 4x) = 9 \times 20$

$= 180$ liters

Hence, Quantity I < Quantity II

27. (a) **Quantity I**

Let 1 day work of $D = \frac{1}{x}$

$\therefore$ 1 day work of $C = \frac{1}{x} \times \frac{100}{140} = \frac{5}{7x}$

According to the question,

$$\frac{1}{x} + \frac{5}{7x} = \frac{58\frac{1}{3}}{100 \times 7} \Rightarrow \frac{1}{x} = \frac{7}{144}$$

$\therefore$ 1 day work of A, B and D

$$= \frac{1}{24} + \frac{1}{18} + \frac{7}{144} = \frac{6 + 8 + 7}{144}$$

$$= \frac{21}{144} = \frac{7}{48}$$

$\therefore$ A, B and D together will be complete the work

$$= \frac{48}{7} = 6\frac{6}{7} \text{ days}$$

Quantity II Ratio of efficiency Satish and Ankit's

$= 100 : 40 = 5 : 2$

$\therefore$ Total work $= 22.5 \times 2x = 45x$ units

According to the question,

Work of 4.5 days Ankit's and Satish's

$= (5x + 2x) \times 4.5 = 31.5x$ units

Remaining work $= 45x - 31.5x = 13.5x$

$\therefore$ Veer efficiency $= \frac{13.5}{4.5} = 3$ units/day

$\therefore$ Satish, Ankit and Veer together will complete the work $= \frac{45x}{5x + 2x + 3x} = 4.5$ days

Hence, Quantity I > Quantity II

28. (a) **Quantity I,** $5y^2 + 21y + 18 = 0$

$\Rightarrow \quad 5y^2 + 6y + 15y + 18 = 0$

$\Rightarrow \quad (5y + 6)(y + 3) = 0$

$\therefore \quad y = -3, -\frac{6}{5}$

Quantity II,

$16^{(x+2)} + 4^{(x+3)} = (64)^{x+3} \times 4^{(x+4)}$

$\Rightarrow \quad (4)^{2x+4-x-3} = (4)^{3x+9+x+4}$

$[\because a^m \div a^n = a^{m-n}$ and $a^m \times a^n = a^{m+n}]$

$\Rightarrow \quad x + 1 = 4x + 13$

$[\because$ on comparing$]$

$\Rightarrow \quad 3x = -12 \Rightarrow x = -4$

Hence, Quantity I > Quantity II

29. (a) **Quantity I,**

Let mark prize of B be x.

$\therefore$ Marked price of $A = x \times \frac{100}{120} = \frac{5x}{6}$

Selling price of $A = \frac{5x}{6} \times \frac{75}{100} = \frac{5x}{8}$

Selling price of $B = x \times \frac{80}{100} = \frac{4x}{5}$

According to the question,

$$\left(\frac{5x}{8} \times \frac{100}{80} + \frac{4x}{5} \times \frac{100 \times 3}{320}\right) - \left(\frac{5x}{8} + \frac{4x}{5}\right) = 765$$

$$\Rightarrow \left(\frac{25x}{32} + \frac{3x}{4}\right) - \frac{(25x + 32x)}{40} = 765$$

$$\Rightarrow \frac{49x}{32} - \frac{57x}{40} = 765 \Rightarrow x = \frac{765 \times 160}{17} = ₹\ 7200$$

Quantity II Marked price of shirt $= 100x$

Selling price of shirt $= 100x \times \frac{76}{100} = 76x$

Cost price of jeans $= 76x \times \frac{125}{100} = 95x$

Selling price of jeans $= 95x \times \frac{110}{100}$

$$\left[\because \text{SP} = \text{CP} \times \frac{100 + \text{Profit\%}}{100}\right]$$

$= 104.5x$

According to the question,

$104.5x - 76x = 1140 \Rightarrow 28.5x = 1140$

$\Rightarrow \quad x = \frac{1140}{28.5} = 40$

$\therefore$ Cost price of jeans $= 95 \times 40 = ₹\ 3800$

Hence, Quantity I > Quantity II.

30.

(b) **Quantity I**

In beg, Green balls = 4, Red balls = 3 and Blue balls = 5

Required probability = P (1 Green, 1 Red, 1 Blue) + P (2 Green, 1 Blue) + P (1 Green, 2 Blue)

$$= \frac{{}^4C_1 \times {}^3C_1 \times {}^5C_1}{{}^{12}C_3} + \frac{{}^4C_2 \times {}^5C_1}{{}^{12}C_3} + \frac{{}^4C_1 \times {}^5C_2}{{}^{12}C_3}$$

$$= \frac{3}{11} + \frac{3}{22} + \frac{2}{11} = \frac{13}{22}$$

Quantity II Red toys = 5, Green toys = 6

Required probability = P (2 Green, 2 Red) + P (3 Green, 1 Red) + P (4 Green)

$$= \frac{{}^6C_2 \times {}^5C_2}{{}^{11}C_4} + \frac{{}^6C_3 \times {}^5C_1}{{}^{11}C_4} + \frac{{}^6C_4}{{}^{11}C_4}$$

$$= \frac{15 \times 10}{330} + \frac{20 \times 5}{330} + \frac{15}{330} = \frac{265}{330} = \frac{53}{66}$$

Hence, Quantity I < Quantity II

31.

Consecutive even numbers(starting from 2) have been added to the terms to get the next term.

i.e.

1 + 2 = 3

3 + 4 = 7

7 + 6 = 13

13 + 8 = 21

21 + 10 = 31

31 + 12 = 43 = ?

= 16 × 3 + 2 = 50 years

Hence, Quantity I = Quantity II

32.

The pattern is:

⇒ 2 × 1 + 1 = 3

⇒ 3 × 2 + 1 = 7

⇒ 7 × 3 + 1 = 22

⇒ 22 × 4 + 1 = 89

⇒ 89 × 5 + 1 = 446 = ?

33.

The pattern is:

⇒ 14 × (1/2) = 7

⇒ 7 × 1 = 7

⇒ 7 × 2 = 14

$\Rightarrow 14 \times 4 = 56$
$\Rightarrow 56 \times 8 = 448$

34.

The pattern of the given series is:
$\Rightarrow 17 + 5 \times 1 = 22$
$\Rightarrow 22 + 5 \times 2 = 32$
$\Rightarrow 32 + 5 \times 3 = 47$
$\Rightarrow 47 + 5 \times 4 = 67$
$\Rightarrow 67 + 5 \times 5 = 92$
$\Rightarrow 92 + 5 \times 6 = 122$

35.

The pattern of the given series is as:
$\Rightarrow 10080/7 = 1440$
$\Rightarrow 1440/6 = 240$
$\Rightarrow 240/5 = 48$
$\Rightarrow 48/4 = 12$
$\Rightarrow 12/3 = 4$
Hence, the required missing term is 240.

36.

The pattern of the given series:
$\Rightarrow 1^3 = 1$
$\Rightarrow 2^3 = 8$
$\Rightarrow 3^3 = 27$
$\Rightarrow 4^3 = 64$
$\Rightarrow 5^3 = 125$
$\Rightarrow 6^3 = 216$
$\Rightarrow 7^3 = 343$
$\therefore ? = 216$

37.

If we look at the numbers carefully, they follow the pattern,
$\Rightarrow 3 = 1^3 + 2$
$\Rightarrow 11 = 2^3 + 3$
$\Rightarrow 31 = 3^3 + 4$
$\Rightarrow 69 = 4^3 + 5$
$\Rightarrow 131 = 5^3 + 6$
$\Rightarrow 223 = 6^3 + 7$
According to the pattern, the next number should be,
$\Rightarrow 7^3 + 8 = 351$
$\therefore ? = 351$

38.

The pattern of the given number series is as following:

$\Rightarrow 1^2 + 1 = 2,$

$\Rightarrow 2^2 - 1 = 3,$

$\Rightarrow 3^2 + 1 = 10,$

$\Rightarrow 4^2 - 1 = 15,$

$\Rightarrow 5^2 + 1 = 26,$

$\Rightarrow 6^2 - 1 = 35,$

$\Rightarrow 7^2 + 1 = 50,$

$\Rightarrow 8^2 - 1 = 63$

Hence, the required number in place of question mark is 63.

39.

$0 + 0^2 = 0$

$1 + 1^2 = 2$

$2 + 2^2 = 6$

$3 + 3^2 = 12$

$4 + 4^2 = 20 = ?$

$5 + 5^2 = 30$

$6 + 6^2 = 42$

40.

In this series we can observe that,

$5 + 7 = 12$

$12 + 14 = 26$ [$14 = 7 \times 2$]

$26 + 28 = 54$ [$28 = 14 \times 2$]

$54 + 56 = 110$ [$56 = 28 \times 2$]

$\therefore$ The next term in the series $\Rightarrow 110 + 112 = 222$ [$56 \times 2 = 112$]

41.

The pattern of the above series is as follows,

Multiplication by prime numbers.

$8 \times 13 = 104$

$104 \times 11 = 1144$

$1144 \times 7 = 8008$

$8008 \times 5 = 40040 = ?$

$40040 \times 3 = 120120$

42.

The pattern of the above series is as follows,

$15 \times (1)^2 + (1)^2 = 16$

$16 \times (2)^2 + (2)^2 = 68$

$68 \times (3)^2 + (3)^2 = 621$

$621 \times (4)^2 + (4)^2 = 9952$

$9952 \times (5)^2 + (5)^2 = 248825$

43.

The pattern of the above series is as follows,

$5 \times 1 + 5 = 10$

$10 \times 2 + 10 = 30$

$30 \times 3 + 15 = 105$

$105 \times 4 + 20 = 440$

$440 \times 5 + 25 = 2225$

44.

$5 \times 1 + 1 = 6$

$6 \times 2 + 1 = 13$

$13 \times 3 + 1 = 40$

$40 \times 4 + 1 = 161$

$161 \times 5 + 1 = 806$

45.

$1680/8 = 210$

$210/7 = 30$

$30/6 = 5$

$5/5 = 1$

$1/4 = 0.25$

46.

The pattern is as follows:

The logic used in the series is the division of the number by 2 and multiplication of the number by 5 alternatively.

$\Rightarrow 30 = 60 \div 2$

$\Rightarrow 150 = 30 \times 5$

$\Rightarrow 75 = 150 \div 2$

$\Rightarrow 375 = 75 \times 5$

$\Rightarrow 187.5 = 375 \div 2$

$\Rightarrow$ Next term will be $187.5 \times 5 = 937.5$

$\therefore$ 935.5 is the wrong term in the series

47.

The pattern is as follows:

$\Rightarrow 225 = (448 \times 1/2) + 1$

$\Rightarrow 226 = (225 \times 1) + 1$

$\Rightarrow 340 = (226 \times 3/2) + 1$

$\Rightarrow 682 \neq (340 \times 2) + 1$ (not following the pattern, it should be 681 instead)

$\Rightarrow 1703.5 = (681 \times 5/2) + 1$

$\therefore$ 682 is the wrong term in the series.

48.

The series follows the following pattern:

$59 + 1^2 = 60$

$60 - 2^2 = 56$

$56 + 3^2 = 65$

$65 - 4^2 = 49$

$49 + 5^2 = 74$

∴ The wrong term in the series is 47.

49

0.7 0.7 2.1 10.5 72.5 661.5

×1 ×3 ×5 ×7 ×9

But, 10.5 × 7 = 73.5

Hence, 72.5 does not follow the logic

50.

7

7 × 2 − 2 = 12

12 × 3 − 3 = 33

33 × 4 − 4 = 128 ≠ 130

128 × 5 − 5 = 635

635 × 6 − 6 = 3804

51.

2 × 1/2 = 1

1 × 2/2 = 1

1 × 3/2 = 1.5

1.5 × 4/2 = 3

3 × 5/2 = 7.5

52.

1 × 11 = 11

11 × 9 = 99

99 × 7 = 693

693 × 5 = 3465

3465 × 3 = 10395

53.

The given number series is an arithmetic progression of the form

a, (a + d), (a + 2d), ..., [a + (n - 1)d]

In the given series,

First term = a = 9/14

Common difference = d = 11/14 - 9/14 = 1/7

⇒ 1^{st} term = 9/14

⇒ 2^{nd} term = 9/14 + 1/7 = 11/14

⇒ 3^{rd} term = 11/14 + 1/7 = 13/14

⇒ 4^{th} term = 13/14 + 1/7 = 15/14

⇒ 5^{th} term = 15/14 + 1/7 = 17/14

⇒ 6^{th} term = 17/14 + 1/7 = 19/14

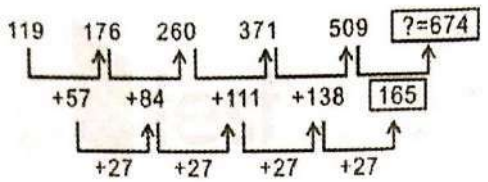
⇒ 7^{th} term = 19/14 + 1/7 = 3/2

∴ Wrong number = 4^{th} term = 8/7

54.

The given series,
62 + square of 5, 10, 15... = next number
⇒ 62 + 25 = 87
⇒ 87 + 100 = 187
⇒ 187 + 225 = 412
⇒ 412 + 400 = 812
⇒ 812 + 625 = 1437

55.



56.

⇒ 41 + 4 = 45
⇒ 45 + 9 = 54
⇒ 54 + 16 = 70 (not 72)
⇒ 70 + 25 = 95

57.

⇒ $1 + 2^2 = 5$ (not 6)
⇒ $5 + 3^2 = 14$

⇒ $14 + 5^2 = 39$
⇒ $39 + 7^2 = 88$
⇒ $88 + 11^2 = ? = 209$

58.

17 × 2 + 4 = 38
38 × 2 + 4 = 80
80 × 2 + 4 = 164 (not 168)
164 × 2 + 4 = 332
332 × 2 + 4 = 668
668 × 2 + 4 = 1340

59.

The series follows the following pattern:
4 × 2 + 1 = 9
9 × 3 + 1 = 28
28 × 4 + 1 = 113
113 × 5 + 1 = 566
566 × 6 + 1 = 3397
∴ The wrong term in the series is 111.

60.

330 – 80 = 250
⇒ 280 – 80 = 200
⇒ 280 – 120 = 160
⇒ 250 – 120 = 130
⇒ 250 – 140 = 110 (not 130)
⇒ 240 – 140 = 100
(250 – 200 = 50, 200 – 160 = 40, 160 – 130 = 30, 130 – 110 = 20, 110 – 100 = 10)
∴ Wrong number in series = 130

61.

Total number of candidates applied for company A in 2010 and 2014 = 3 + 5 = 8 lac
Total number of candidates applied for company B in 2011 and 2013 together = 6 + 12 = 18 lac
Required ratio = 8 : 18 = 4 : 9

62.

Employees in organization A = 18% of 35,000 = 6300
Employees in organization D = 15% of 35,000 = 5250
∴ Percentage of total number of employees in organization A to that in organization D =
(6300/5250) × 100 = 120

63.

No. of males in organization A = 70% × 18% × 35,000 = 4410
No. of males in organization C = 40% × 31% × 35,000 = 4340
∴ Total number of males in A and C organizations together = 4410 + 4340 = 8750

64.

No. of females in organization B = 55% × 22% × 35,000 = 4235
No. of females in organization E = 25% × 14% × 35,000 = 1225
∴ Difference between the number of females in Organization B and the number of females in Organization E = 4235 - 1225 = 3010

65.

No. of females in organization D = 40% × 15% × 35,000 = 2100

66.

Average number of books published by A, C, and D = $\frac{4900+5600+3600}{3} = 4700$
∴ Average number of books published = 4700

67.

Number of books distributed by company B = 0.9 × 6300 = 5670

Number of books distributed by company E = 0.8 × 5500 = 4400
∴ Required % = $\frac{5670}{4400} \times 100 = 128.86 \approx 129\%$

68.

Total number of books distributed by company D among distributors = 0.7 × 3600 = 2520
Total number of distributed books = 4x + 5x = 9x
⇒ 9x = 2520
⇒ x = 2520/9 = 280
∴ Number of non-academic books = 4 × 280 = 1120

69.

Number of books distributed by company B = 0.9 × 6300 = 5670
Number of books distributed by company C = 0.85 × 5600 = 4760
∴ Required Ratio = 5670 : 4760 = 567 : 476 = 81 : 68

70.

Large size wox box sold on Monday = 36
Large size wox box sold on Tuesday = 42
Large size wox box sold on Wednesday = 32
Large size wox box sold on Thursday = 46
Large size wox box sold on Friday = 70
∴ Total number of large size wox boxes sold on all the days = 226

71.

Total wox boxes sold on Monday = 48 + 36 = 84
Total wox boxes sold on Thursday = 52 + 46 = 98
∴ Required percent = 84/98 × 100 = 85.7%

72.

Medium wox box sold on Monday = 48
Medium wox box sold on Thursday = 52
Medium wox box sold on Friday = 40
⇒ Total boxes = 140
∴ Average = 140/3 = 46.67

73.

Large six wox box sold on Wednesday = 32
Medium size wox box sold on Tuesday = 32
∴ Required Ratio = 1 : 1

74.

Boxes of both sizes sold on Tuesday = 32 + 42 = 74
Large boxes sold on Friday = 70
∴ Required percent = 74/70 × 100 = 105.7%

75.

Medium size wox box sold on Monday = 48
Large six wox box sold on Thursday = 46
∴ Required difference = 2

76. **(d);** Required ratio $= \frac{96+72+108}{(72-24)+(80-32)} = \frac{276}{48+48} = \frac{276}{96} = \frac{23}{8}$

77. **(a);** Total number of boys who play Cricket and Football
$= 44 + 32 = 76$
Total students who play Football and Tennis
$= 80 + 108 = 188$
Required difference $= 188 - 76 = 112$

78. **(c);** Total number of boys who play Volleyball and Tennis $= 24 + 48 = 72$
Total number of girls who play Volleyball and Tennis $= 72 - 24 + 108 - 48 = 48 + 60 = 108$
Required % $= \frac{72}{108} \times 100 = 66\frac{2}{3}\%$

79. **(b);** Total number of boys who play Football = 32
Total number of boys who qualified for nationals
$= 32 \times \frac{50}{100} = 16$
Total number of girls who play Football
$= 80 - 32 = 48$
Total number of girls who play qualified for nationals $= 48 \times \frac{100}{300} = 16$
Total students who were disqualified for nationals
$= 32 - 16 + 48 - 16 = 16 + 32 = 48$
Required % $= \frac{48}{80} \times 100 = 60\%$

80. **(b);** Total number of girls who play Volleyball
$= 72 - 24 = 48$
Total number of girls who play Football
$= 80 - 32 = 48$
Total number of girls who play Tennis
$= 108 - 48 = 60$
Required average $= \frac{1}{3}(48 + 48 + 60) = \frac{156}{3} = 52$

81. **(a);** Let Abhi and Chintu received 100x & 100y calls respectively
So ATQ
$80x + 80y = 360$
$x + y = 4.5$
Total calls $= 100x + 100y = 450$
Abhi could receive maximum calls = 445
As Chintu resolved 80% of calls, and therefore, we will get an integer value when he atleast get 5 calls.
So maximum calls that were not resolved
$\Rightarrow 445 \times \frac{20}{100} = 89$

82. **(e);** Call received by Bindu on monday $= \frac{180}{60} \times 100 = 300$

Query resolved by Abhi on Monday

$\frac{300}{5} \times 4 = 240$

Calls received by Abhi on Monday

$\Rightarrow \frac{240}{75} \times 100 = 320$

83. **(d);** Let calls received by Bindu and Chintu on Monday be 100x and 100y respectively.

Calls received by them on Friday 120x and 120y respectively.

Now query resolved

Monday $\rightarrow 60x + 90y$

Friday $\rightarrow 60x + 96y$

ATQ,

$\frac{60x+96y}{2} - \frac{60x+90y}{2} = 30$

$3y = 30$

$y = 10$

Required answer $\rightarrow 10 \times 20 = 200$

84. **(c);** Let query resolved by Abhi, Bindu and Chintu 300x, 400x and 200x respectively

Required ratio

$\Rightarrow \frac{300x}{80} \times 100 : \frac{400x \times 100}{50} : \frac{200x \times 100}{80}$

$15 : 32 : 10$

85. **(b);** Let call received by Chintu on Monday $\rightarrow 100x$

Query resolved by Chintu on Monday $\rightarrow 90x$

Query resolved by Chintu on Friday $\rightarrow \frac{90x}{60} \times 100$

$= 150x$

Query resolved by Abhi on Friday $\Rightarrow 90x + 150x$

$\Rightarrow 240x$

Call received by Abhi on Friday $=$

$\frac{240x}{80} \times 100 = 300x$

Required % $= \frac{300x-100x}{100x} \times 100 = 200\%$

86. *(e)* Let, the sum be ₹ P. Here, $r = 20\%$

CI of first year $= \frac{P \times 20 \times 1}{100} = \frac{P}{5}$

[∵ CI and SI for 1 yr are same]

CI of second year $= \frac{\left(P + \frac{P}{5}\right) \times 20 \times 1}{100}$

[∵ Sum for second year = P + CI of first year]

$= \frac{6P}{5} \times \frac{1}{5} = \frac{6P}{25}$

According to the question,

$\frac{6P}{25} - \frac{P}{5} = 1200 \Rightarrow \frac{6P - 5P}{25} = 1200$

$\Rightarrow P = 1200 \times 25 = ₹\,30000$

87. *(b)* Given, speed of boat in still water = 21 km/h

Speed of current = 3 km/h

Upstream speed = 21 − 3 = 18 km/h

Downstream speed = 21 + 3 = 24 km/h

Total covered distance

= 7 × upstream speed + 7 × downstream speed

[∵ Distance = Time × Speed]

= 7 × 18 + 7 × 24

= 126 + 168 = 294 km

88. *(d)* Let, income of A and B are $5x$ and $9x$ respectively.

Expenditure of $A = \frac{3}{8}$ of $5x = \frac{15}{8}x$

Expenditure of $B = \frac{4}{9}$ of $9x = 4x$.

According to the question,

Saving of A + Saving of $B = 1950$

$$\left(5x - \frac{15}{8}x\right) + (9x - 4x) = 1950$$

$$\Rightarrow \frac{25x}{8} + 5x = 1950$$

$$\Rightarrow 25x + 40x = 1950 \times 8$$

$$\Rightarrow 65x = 1950 \times 8$$

$$\Rightarrow x = \frac{1950 \times 8}{65} = 240$$

∴ Difference of their income

$= 9x - 5x = 4x = 4 \times 240 = ₹ 960$

89. *(c)* A's 1 day's work $= \frac{1}{12}$

$(A + B)$'s 1 day's work $= \frac{1}{7.5} = \frac{2}{15}$

$\therefore B$'s 1 day's work $= \frac{2}{15} - \frac{1}{12}$

$= \frac{8-5}{60} = \frac{1}{20}$

$\therefore B$ alone to do that work $= \frac{1}{\frac{1}{20}}$ days

$= 20$ days

$\therefore C$ alone to do that work $= 20 + 3$

$= 23$ days

90. *(b)* Let, the base and perpendicular of a right-angled triangle be $3x$ and $4x$ respectively.

$\therefore$ Hypotenuse $= \sqrt{(\text{Base})^2 + (\text{Perpendicular})^2}$

$= \sqrt{9x^2 + 16x^2} = \sqrt{25x^2} = 5x$

Area of square $= (\text{Side})^2 = 81$

Side $= 9$ cm

[$\because$ base of triangle = side of square {given}]

$\therefore \quad 3x = 9 \Rightarrow x = 3$

$\therefore$ Perimeter of the triangle

$= 3x + 4x + 5x = 12x$

$= 12 \times 3 = 36$ cm

91. *(d)* Here, $v_1 = x$ km/h

$v_2 = 4x$ km/h

$\therefore$ Average speed $= \frac{2v_1v_2}{v_1 + v_2}$

$\Rightarrow \quad 36.8 = \frac{2 \times x \times 4x}{x + 4x}$

$\Rightarrow \quad x = \frac{36.8 \times 5}{8} = 4.6 \times 5 \Rightarrow x = 23$

92. *(a)* The ratio of profit A, B and C = The ratio of annual investment

$= 7x \times 3 : 8x \times 12 : 5x \times 7$

$= 21x : 96x : 35x$

Total profit $= 21x + 96x + 35x$

$\Rightarrow 136800 = 152x$

$\Rightarrow \quad x = \dfrac{136800}{152} = 900$

$\therefore$ Difference between A and C's share of profit $= 35x - 21x = 14x$

$= 14 \times 900 \qquad [\because x = 900]$

$= ₹\ 12600$

93. *(a)* Let the selling price of each article be 100.

Cost price of first article

$$= \text{Selling price} \times \left[\frac{100}{100 + \text{Profit}\%}\right]$$

$$= 100 \times \left[\frac{100}{100 + 33\frac{1}{3}}\right]$$

$$= 100 \times \frac{300}{400} = 75$$

Cost price of second article

$$= 100 \times \left[\frac{100}{100 + 100}\right]$$

$$= 100 \times \frac{100}{200} = 50$$

Total cost price $= 75 + 50 = 125$

Total selling price

$= 100 + 100 = 200$

$\therefore$ Overall profit = Total selling price − Total cost price $= 200 - 125 = 75$

Overall profit percentage

$$= \frac{\text{Overall profit}}{\text{Total cost price}} \times 100$$

$$= \frac{75}{125} \times 100 = \frac{3}{5} \times 100 = 60\%$$

94. *(a)* Let, quantity of mixture be x.

Taken out quantity of mixture

$= 50\%$ of x

$= x \times \frac{50}{100} = \frac{x}{2}$

Remain quantity of mixture

$= x - \frac{x}{2} = \frac{x}{2}$

$\therefore$ Quantity of milk in remain mixture

$= \frac{x}{2} \times \frac{4}{5} = \frac{2x}{5}$

and quantity of water in remain mixture

$= \frac{x}{2} \times \frac{1}{5} = \frac{x}{10}$

Total quantity of water, after 24 L mixed $= \frac{x}{10} + 24$

According to the question,

$$\frac{\frac{2}{5}x}{\frac{x}{10} + 24} = \frac{1}{1}$$

$$\Rightarrow \quad \frac{2}{5}x = \frac{x}{10} + 24$$

$$\Rightarrow \quad \left(\frac{2}{5} - \frac{1}{10}\right)x = 24$$

$$\Rightarrow \quad \left(\frac{4-1}{10}\right)x = 24$$

$$\Rightarrow \quad x = \frac{24 \times 10}{3} = 80 \text{ L}$$

Hence, initial quantity of mixture is 80 L.

95. *(b)* Let Shivam's present age $= x$ yr

Deepak's present age $= y$ yr

According to the question,

$$\frac{x-4}{y-4} = \frac{2}{3}$$

$$\Rightarrow \quad 3x - 12 = 2y - 8$$

$$\Rightarrow \quad 3x - 2y = 4 \qquad \ldots(i)$$

and $\frac{x-4}{y+5} = \frac{8}{15}$

$$\Rightarrow \quad 15x - 60 = 8y + 40$$

$$\Rightarrow \quad 15x - 8y = 100 \qquad \ldots(ii)$$

Solving Eqs. (i) and (ii), we get

$x = 28$

$y = 40$

Hence, present age of Shivam is 28 yr.

96. (b) In 50 liters sold mixture of A,

milk $= 50 \times \frac{2}{5} = 20$ liters and water $= 30$ liters

According to the question,

$$\Rightarrow \quad \frac{\frac{2}{5}(X + 24) - 20 + 8}{\frac{3}{5}(X + 24) - 30} = \frac{6}{7}$$

$$\Rightarrow \quad 14X - 84 = 18X - 468$$

$$\Rightarrow \quad 4X = 384 \Rightarrow X = 96$$

$\therefore$ Mixture which B have

$$= X + 54 = 96 + 54 = 150 \text{ liters}$$

For B, milk $= 150 \times \frac{8}{15} = 80$ liters and water

$$= 150 \times \frac{7}{15} = 70 \text{ liters}$$

$\because$ Mixture which C have

$$= X + 84 = 96 + 84 = 180 \text{ liters}$$

For C, milk $= 180 \times \frac{13}{18} = 130$ liters, water

$$= 180 \times \frac{5}{18} = 50 \text{ liters}$$

Let B added K liters of water, then

$$\frac{80}{70 + k} = \frac{5}{7} \Rightarrow 560 = 350 + 5k$$

$$\Rightarrow \quad k = \frac{210}{5} = 42 \text{ liters}$$

Again, let C added m liters of water, then

$$\frac{130}{50 + m} = \frac{5}{4} \Rightarrow 250 + 5m = 520$$

$$\Rightarrow \quad m = \frac{270}{5} = 54 \text{ liters}$$

Hence, water must be added 42 liters and 54 liters by B and C, respectively.

97. (d) According to the question,

$$(X + 54) \times \frac{(100 - 40)}{100}$$

$$= (X + 84) \times \frac{100 - 50}{100}$$

$$\Rightarrow \quad 6X + 324 = 5X + 420$$

$\Rightarrow$ $X = 96$ liters

Let production cost for A, B and C be ₹ $5x$, ₹ $6x$ and $7x$ respectively.

According to the question,

$(48 \times 5x + 72 \times 2) + (80 \times 6x + 70 \times 2) + (130 \times 7x + 50 \times 2) = 3644 - 144 - 140 - 100$

$\Rightarrow (240x + 480x + 910x) = 3644 - 144 - 140 - 100$

$\Rightarrow 1630x = 3260 \Rightarrow x = 2$

$\therefore$ Production cost for A $= 5 \times 2 =$ ₹ 10

Production cost for B $= 6 \times 2 =$ ₹ 12

Production cost for C $= 7 \times 2 =$ ₹ 14

98. (d) Let total votes be $6x$.

People who took part in survey

$$= 83\frac{1}{3}\% \text{ of } 6x$$

$$= 6x \times \frac{250}{300} = 5x$$

Number of people claims to vote for P

$$= 5x \times \frac{50}{100} = \frac{25}{10}x$$

Uncertain $= 5x \times \frac{10}{100} = \frac{5}{10}x$

People who did not took part in survey

$$= 6x - 5x = x$$

Total votes for $P = \frac{25}{10}x + \frac{2}{3}x + \frac{5x}{10} \times \frac{1}{5}$

$$= \frac{25x}{10} + \frac{2x}{3} + \frac{x}{10} = \frac{(75 + 20 + 3)x}{30} = \frac{98x}{30}$$

Total votes for $Q = 6x - \frac{98x}{30}$

$$= \frac{(180 - 98)x}{30} = \frac{82x}{30}$$

According to the question,

$$\frac{98x}{30} - \frac{82x}{30} = 640$$

$\Rightarrow$ $16x = 640 \times 30 \Rightarrow x = 1200$

$\therefore$ Total votes in election $= 6 \times 1200 = 7200$

Sol. (Q.Nos. 99-100) Let cost prize of A, B and C type of mobile be ₹ $5x$, ₹ $7x$ and ₹ $9x$.

Marked price of type A mobile

$$= 5x \times \frac{130}{100} = ₹\ 6.5x$$

Marked price of type B mobile

$$= 7x \times \frac{140}{100} = ₹\ 9.8x$$

Marked price of type C mobile

$$= 9x \times \frac{130}{100} = ₹\ 11.7x$$

Selling price of type A mobile

$$= 6.5x \times \frac{\left(100 - 15\frac{5}{13}\right)}{100} = 6.5x \times \frac{11}{13} = 5.5x$$

$$\left[\because \text{SP} = \text{MP} \times \frac{100 - \text{Discount \%}}{100}\right]$$

Selling price of type B mobile

$$= 9.8x \times \frac{100 - 21\frac{3}{7}}{100} = 9.8x \times \frac{11}{14} = 7.7x$$

Selling price of type C mobile

$$= 11.7x \times \frac{100 - 11\frac{1}{9}}{100} = 11.7x \times \frac{8}{9} = 10.4x$$

99. (d) Total cost price of 14 type A mobile

$$= 14 \times 5x = 70x$$

Total selling price of 14 type A mobile

$$= 14 \times 5.5x = 77x$$

$\therefore$ Total profit of all type A mobile = ₹17500

$$\Rightarrow \quad 77x - 70x = 17500 \qquad [\because \text{Profit} = \text{SP} - \text{CP}]$$

$$\Rightarrow \quad x = \frac{17500}{7} = ₹2500$$

Total profit made by store owner on type B and C mobile

$$= 20 \times (7.7x - 7x) + 15 \times (10.4x - 9x)$$

$$= (20 \times 0.7 + 15 \times 1.4)\, x \qquad [\because x = 2500]$$

$$= 35 \times 2500 = ₹\ 87500$$

100. (c) Total cost of type A, B and C mobiles

$$= 48 \times 5x + 36 \times 7x + 39 \times 9x$$

$$= 240x + 252x + 351x = 843x$$

Total effective cost price of type A, B and C mobiles

$$= 36 \times 6.5x + 30 \times 9.8x + 30 \times 11.7x$$

($\because$ 12 on 48, 6 on 36 and 9 on 39, mobiles gift will be get)

$$= 234x + 294x + 351x = 879x$$

$\therefore$ Loss of store owner

$$= \frac{879x - 843x}{843x} \times 100 = 4\frac{76}{281}\%$$