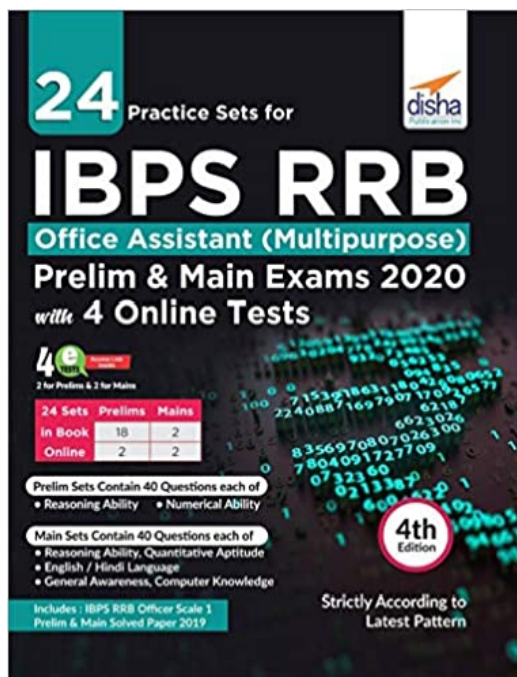


IBPS RRB Office Assistant Prelim Solved Paper - 2019

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IBPS RRB Office Assistant Prelim Solved Paper - 2019

Based on Memory

REASONING ABILITY

DIRECTIONS (Qs. 1-4): In each of the question, relationships between some elements are shown in the statements. These statements are followed by conclusions numbered I and II. Read the statements and give the answer.

- (a) If only conclusion I follows.
(b) If only conclusion II follows.
(c) If either conclusion I or II follows.
(d) If neither conclusion I nor II follows.
(e) If both conclusions I and II follow..

1. **Statements:** $Q < R \leq M = L > W \leq V > Z$

Conclusions:

I. $L > Q$ **II.** $W > R$

2. **Statements:** $P \geq Q > D = F < R \leq S$

Conclusions:

I. $Q > R$ **II.** $D < S$

3. **Statements:** $A = E \geq H \geq C < S \leq B$

Conclusions:

I. $C < A$ **II.** $A = C$

4. **Statements:** $Y \geq N = O > P \leq R > T$

Conclusions:

I. $R < Y$ **II.** $N < R$

DIRECTIONS (Qs. 5-9): Study the following information carefully and answer the question given below:

Seven people viz. Ayush, Biren, sanjeet, Rohan, Rahul, Shyam and Pinku lives in a building on seven different floors such as ground floor is numbered 1, the floor just above is numbered 2 and so on till top floor numbered as seven but not necessarily in the same order. There are less than three floors above Ayush. Only one person lives between Sanjeet and Ayush. Pinku lives immediately below Rohan. Rohan lives on an even number floor. Biren lives immediately above Ayush. Shyam lives above Rahul. Shyam does not lives on the 5th floor. Shyam does not live on an even number floor.

5. Four of the following five belongs to a group find the one that does not belongs to that group?
- (a) Sanjeet- Rohan
(b) Rahul- Sanjeet
(c) Shyam- Biren
(d) Ayush-Biren
(e) Pinku- Sanjeet

6. Who among the following lives on the top floor?
(a) Rahul (b) Biren
(c) Shyam (d) Rohan
(e) None of these
7. Number of persons lives above Shyam is same as the number of persons below __ ?
(a) Biren (b) Rohan
(c) Sanjeet (d) Pinku
(e) None of these
8. How many floors are there above the floor on which Pinku lives?
(a) One (b) Two
(c) Three (d) More than Four
(e) Four
9. Who lives immediately below Ayush?
(a) Rohan (b) Rahul
(c) Shyam (d) Sanjeet
(e) None of these

DIRECTIONS (Qs. 10-14): Study the following sequence and answer the given questions.

R @ 6 % 4 G N M \$ 2 & 6 L H S ♫ 9 8 3 Q Y P 1 7 % A O G * 2 I S 2 U &

10. Which of the following element is fourth to the left of the twentieth element from the left end of the given arrangement?
(a) 2 (b) &
(c) N (d) G
(e) None of these
11. If all the symbols are dropped from the series, which element will be sixth to the right of the one which is twelfth from the right end?
(a) G (b) 2
(c) O (d) I
(e) None of these
12. How many such numbers are there in the given series which are immediately preceded by a symbol and followed by a letter?
(a) None (b) One
(c) Two (d) Three
(e) Four
13. Four of the following five are alike in a certain way and forms a group find the one that does not belongs to that group?
(a) 6G% (b) R%2
(c) M&\$ (d) H9S
(e) Y7P

14. What should come in place of question mark (?) in the following series based on the above arrangement?
64% N\$M 6HL 8Q3?

(a) %OA (b) 7P%
(c) O%R (d) R%O
(e) A %7

DIRECTIONS (Qs. 15-19): Study the following information carefully and answer the question given below-

Seven people viz. Prakash, Rahul, Rohit, Shyam, Tinku, Shantu and Vikram are sitting around a circular table having equal distance between them. All of them are facing inside. Prakash sits immediate right of Rahul. Only one person sits between Prakash and Shyam (either from left or right). Shantu sits third to the right of Shyam. Tinku is an immediate neighbor of Shantu. Rohit sits second to the left of Vikram.

15. If all the persons are arranged according to the alphabetical order in clockwise direction starting from Prakash, then how many persons position will remain unchanged (except Prakash)?
(a) Three (b) One
(c) Two (d) None
(e) None of these
16. How many persons sits between Rahul and Shantu, if counted from the right of Rahul?
(a) Four (b) Two
(c) Three (d) Five
(e) None of these
17. Who sits third to the right of Tinku?
(a) Prakash (b) Rahul
(c) Rohit (d) Shyam
(e) None of these
18. Four of the following five belongs to a group find the one that does not belongs to that group?
(a) Vikram-Rahul (b) Prakash-Vikram
(c) Rohit-Tinku (d) Shyam-Shantu
(e) Tinku-Rahul
19. Who among the following sits second to the left of the one who sits 4th to the right of Vikram?
(a) Shantu (b) Tinku
(c) Rohit (d) Shyam
(e) None of these

DIRECTIONS (Qs. 20-22): In each of the questions below are given some statements followed by two conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts. Give answer

20. **Statements:** Only a few bag are bottles.
No bottle is book.

Conclusions

- I. Some books are definitely not bags.
II. All bags can never be books.

- (a) Both I and II follow
(b) Either I or II follows
(c) Only II follows.
(d) Only I follow.
(e) Neither I nor II follows

21. **Statements:** All books are pens.
No books is a pencil.

Conclusions:

- I. Some pens are pencil.
II. No pens are pencil.
(a) Both I and II follow
(b) Either I or II follows
(c) Only II follows.
(d) Only I follows.
(e) Neither I nor II follows

22. **Statements:** Only a few boys are girls.
All pillows are girls.

Conclusions:

- I. At least some pillows are boys.
II. All boys can never be pillow.
(a) Both I and II follow
(b) Either I or II follows
(c) Only II follows.
(d) Only I follow.
(e) Neither I nor II follows

DIRECTIONS (Qs. 23-27): Study the following information carefully and answer the question given below-

There are ten boys are sitting in two parallel row such that five persons are sitting in each row. Mohan, Sohan, Rohan, Shyam and Vinod are sitting in row 1 and faces north and Pramod, Piyush, Santosh, Sanjeev and Rajeev are sitting in row 2 and faces south such that persons sitting in row 1 faces the persons sitting row 2. Sohan sits immediate right of Mohan. Neither Mohan nor Sohan sits at the extreme ends. Two person sits between Sanjeev and Piyush. Sohan faces the one who sits on the immediate left of Sanjeev. Pramod sits on the immediate right of Rajeev. Rohan sits at the end of the row. Shyam sits on the left of Vinod. Shyam does not face Rajeev.

23. Four of the following five belongs to a group find the one that does not belongs to that group?
(a) Santosh (b) Rohan
(c) Shyam (d) Sanjeev
(e) Piyush
24. Who among the following sits second to the right of the one who faces Sohan?
(a) Rajiv (b) Piyush
(c) Santosh (d) Pramod
(e) None of these
25. How many persons sits on the Right of piyush?
(a) One (b) Two
(c) Four (d) Three
(e) None of these
26. How many persons sits between Shyam and Vinod?
(a) One (b) Two
(c) Three (d) No One
(e) Can't be determined

27. Who among the following faces Sohan?
(a) Pramod (b) Piyush
(c) Santosh (d) Rajiv
(e) None of these
28. If 'He will Say' is coded as '1 3 9' and 'Say To Him' is coded as '3 5 2' and 'He May Do' is coded as '8 7 9' then what will be the code of 'will'?
(a) 3 (b) 1
(c) 9 (d) 8
(e) Can't be determined
29. How many pairs of letters are there in the word "MINUTE" each of which have as many letters between them in the word as they have between them in the English alphabetical series?
(a) Three (b) One
(c) Two (d) More than three
(e) None

DIRECTIONS (Qs. 30-33): Study the following information carefully and answer the question given below-

There are six boys i.e. Rahul, Mohit, Vikas, Gopi, Ayush and Aditya who all are of different weight. No two persons have same weight. Only two persons are lighter than Rahul. Mohit is heavier than Rahul but lighter than Vikas and Gopi. Aditya is heavier than Ayush but lighter than Gopi. Gopi is not the heaviest. The weight of 2nd heaviest person is 230 kg and the weight of lightest is 128 kg.

30. How many persons are heavier than Rahul?
(a) One (b) Two
(c) Three (d) Four
(e) None of these
31. If the sum of weight of Ayush and Rahul is 262 and the sum of weight of Gopi and Mohit is 426, then what is the sum of weight of Rahul and Mohit?
(a) 343 (b) 340
(c) 330 (d) 300
(e) None of these
32. Which among the following person is the 3rd heaviest?
(a) Rahul (b) Mohit
(c) Vikas (d) Gopi
(e) None of these
33. Which of the following statement is true?
I. Only two persons are heavier than Mohit.
II. Sum of weight of Gopi and Ayush is 358 Kg.
III. Weight of Ayush is 128 Kg.
(a) Only II (b) Both I and II
(c) Both III and II (d) All are True
(e) Only III

DIRECTIONS (Qs. 34-36): Study the following information carefully and answer the question given below-

Uncertain number of girls are sitting in a linear row facing north. Rashmi sits fifth to the left of Naina. Two persons sits between Rashmi and Monika. Monika sits second position from one of the extreme end. Five persons sits between Radhika and Naina. Radhika is not an immediate neighbor of Rashmi. As many as

persons sits between Naina and Radhika as between Radhika and Gita. As many as persons sits between Monika and Rashmi as between Rashmi and Aishwarya. Gita sits third position from the extreme end.

34. How many persons are sitting in the row?
(a) 21 (b) 23
(c) 20 (d) 26
(e) None of these
35. If Sneha sits 2nd to the right of Radhika, then what is the position of Sneha from right end?
(a) 7 (b) 9
(c) 8 (d) 6
(e) None of these
36. What is the position of Aishwarya with respect to Naina?
(a) Second to the right (b) Second to the left
(c) Third to the left (d) Fifth to the left
(e) None of these

DIRECTIONS (Qs. 37-39): Study the following information carefully and answer the question given below-

Point C is 15m west of point A. Point B is 21m north of point A. Point E is 12m south of point D. Point F is 17m west of point E. Point D is 31m east of point B. F is 16m south of point G.

37. Four of the following five belongs to a group find the one that does not belongs to that group?
(a) CB (b) AD
(c) AE (d) BG
(e) FB
38. In which direction point A with respect to point G?
(a) North-west (b) South-east
(c) South-west (d) North
(e) North-east
39. If Point S is 4m south of point G then what is the distance between point B and point S?
(a) 28m (b) 9m
(c) 8m (d) 16 m
(e) None of these
40. Find the odd one out?
(a) PSRQ (b) MONL
(c) ADCB (d) VYXW
(e) ILKJ

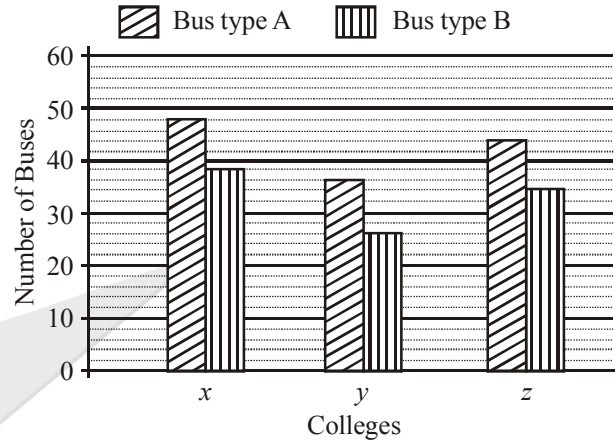
NUMERICAL ABILITY

DIRECTIONS (Qs. 41-44): Find the wrong number in the following number series.

41. 3, 4, 9, 28, 113, 586, 3397
(a) 9 (b) 113
(c) 28 (d) 586
(e) 3397
42. 6, 13, 27, 48, 76, 113, 153
(a) 13 (b) 48
(c) 76 (d) 113
(e) 153

43. 48, 56, 47, 55, 44, 54, 45
(a) 56 (b) 47
(c) 45 (d) 54
(e) 44
44. 6, 7, 11, 20, 36, 67, 97
(a) 67 (b) 36
(c) 97 (d) 20
(e) 11
45. A boat covers 32 km in upstream in 2 hours and 56 km in downstream in 4 hours. Find the speed of boat in still water?
(a) 21 km/h (b) 15 km/h
(c) 20.5 km/h (d) 20 km/h
(e) 19.5 km/h
46. Two inlet taps A and B can fill a tank in 32 minutes and 48 minutes respectively. Find the time taken by both the taps together to fill $\frac{1}{6}$ th of the tank?
(a) 4 minutes (b) $3\frac{3}{4}$ minutes
(c) $3\frac{1}{5}$ minutes (d) $3\frac{1}{3}$ minutes
(e) $2\frac{1}{3}$ minutes
47. If circumference of first circle is 44 cm and circumference of second circle is 66 cm, then find the difference between area of both the circle?
(a) 180.5 cm^2 (b) 194.3 cm^2
(c) 192.5 cm^2 (d) 184 cm^2
(e) 193.5 cm^2
48. In 80 liter of pure milk, 25 liter of water is mixed and then $\frac{1}{5}$ th of the mixture is taken out. When x litre of water is added again then ratio of water to that of the milk becomes 1 : 2. Find value of x ?
(a) 10 liter (b) 8 liter
(c) 12 liter (d) 6 liter
(e) 9 liter
49. Total cost of x pens and $(x - 2)$ pencils is ₹ 848. If one pencil and one pen costs ₹ 10 and ₹ 15 respectively, then find x ?
(a) 35 (b) 34
(c) 31 (d) 30
(e) 36
50. Rohan is 6 years younger than Sohan and ratio of present age of Sohan to Mohan is 12 : 5. If ratio of present age of Rohan to Mohan is 2 : 1, then find present age of Sohan?
(a) 20 years (b) 30 years
(c) 24 years (d) 18 years
(e) None of these

DIRECTIONS (Qs. 51-55): Given bar graph shows the data of two types of college buses A and B for three colleges x, y and z. Study the chart carefully and answer the following questions.



51. What is the average number of A type buses from college y and college z together?
(a) 40 (b) 45
(c) 50 (d) 42
(e) 38
52. A type buses from college x are how much more than that of A type buses from college y ?
(a) $55\frac{5}{19}\%$ (b) 25%
(c) $5\frac{5}{9}\%$ (d) $45\frac{5}{6}\%$
(e) $33\frac{1}{3}\%$
53. What is the average number of all the buses from college y?
(a) 43 (b) 39
(c) 31 (d) 54
(e) 59
54. What is the difference of average number of all buses from college x and average number of all buses from college z?
(a) 16 (b) 4
(c) 8 (d) 24
(e) 12
55. Which college has maximum number of buses ?
(a) college y (b) college z
(c) college x & college z (d) college x and y
(e) college x

DIRECTIONS (Qs. 56-60): Given below are two equations in each question, which you have to solve and give answer

- (a) if $x > y$
(b) if $x \geq y$
(c) if $y > x$
(d) if $y \geq x$
(e) if $x = y$ or no relation can be established

56. I. $4x^2 - 10x + 4 = 0$
II. $4y^2 - 18y + 14 = 0$
57. I. $4x^2 + 7x + 3 = 0$
II. $3y^2 + 27y + 60 = 0$
58. I. $x^2 - 9x + 14 = 0$
II. $y^2 - 16y + 63 = 0$
59. I. $3x^2 - 9x = 12$
II. $6y^2 + 36y + 48 = 0$
60. I. $4x^2 - 12x = 40$
II. $5y^2 + 35y + 50 = 0$

DIRECTIONS (Qs. 61-65): Following are the details of three shopkeepers and numbers of items sold by them on three different days.

| Shopkeepers | Monday | Tuesday | Wednesday |
|-------------|--------|---------|-----------|
| Rohit | 180 | 400 | 200 |
| Aditya | 300 | 200 | 300 |
| Ramesh | 100 | 300 | 250 |

61. Find the ratio of items sold by Rohit and Aditya on Monday to items sold by Aditya and Ramesh on Wednesday ?
(a) 7 : 8 (b) 8 : 9
(c) 48 : 55 (d) 55 : 48
(e) 50 : 48
62. Find the average number of items sold by all 3 shopkeepers on Wednesday ?
(a) 280 (b) 290
(c) 270 (d) 250
(e) 260
63. Item sold by Rohit and Aditya together on Tuesday is what percentage of items sold by Aditya and Ramesh on Wednesday ?
(a) 111% (b) 100%
(c) 109% (d) 107%
(e) 112%
64. Find the difference of number of items sold by Aditya on Monday and Tuesday together and items sold by Rohit on Tuesday and Wednesday?
(a) 80 (b) 60
(c) 50 (d) 70
(e) 100
65. Find the ratio of items sold by Aditya on all 3 days together to the items sold by Ramesh on all 3 days ?
(a) 6 : 5 (b) 10 : 6
(c) 18 : 8 (d) 18 : 10
(e) 16 : 13
66. Marked price of an article is ₹ 500 more than cost price of that article and it is sold at a discount of 15% on marked price. Find the cost price of the article if the profit percent earned is 27.5% ?
(a) 950 (b) 1000
(c) 900 (d) 980
(e) 990
67. In year 2015, ratio of boys to girls in a school is 72 : 38. And in year 2018, number of boys is increased by 1440 and number of girls is increased by 15%. If in 2018, there were total increase in the number of students is 1725, then find the increased number of boys in the school.
(a) 7240 (b) 5440
(c) 6040 (d) 4440
(e) 5040
68. If ratio of salary of Rahul to that of Vijay is 1 : 3 and each spends 15% of his salary on house rent. Find the house rent paid by Rahul if remaining amount with Rahul and Vijay together is ₹ 42500.
(a) ₹ 1800 (b) ₹ 1845
(c) ₹ 1785 (d) ₹ 1750
(e) ₹ 1875
69. Sanjay started a business by investing ₹ 5000. After 6 months Rohit joined him by investing ₹ 7500. After another 6 months Vikas joined with ₹ 12500. What is the ratio of profit shared after 2 years among Sanjay, Vikas and Rohit?
(a) 4 : 5 : 6 (b) 8 : 9 : 10
(c) 8 : 9 : 12 (d) 4 : 5 : 8
(e) None of these
70. At what rate will a sum of ₹ 10000 amounts to ₹ 12100 in 2 years at compound interest ?
(a) 10% (b) 9%
(c) 9.5% (d) 10.5%
(e) None of these

DIRECTIONS (Qs. 71-80): What should come in place of question mark (?) in the following questions ?

71. $?^2 = 60\% \text{ of } \frac{5}{11} \text{ of } 385 - 5$
(a) 12 (b) 10
(c) 11 (d) 8
(e) 9
72. $?^2 = (\sqrt{1444} + \sqrt{676}) \div 8$
(a) 6 (b) 16
(c) 8 (d) 10
(e) 12

73. $\left(\frac{?-0.5}{0.2}\right) = \frac{160}{4}$

- (a) 3.2 (b) 8.5
(c) 6 (d) 8
(e) 6.4

74. $40\% \text{ of } ? - \sqrt{121} = 222$

- (a) 540 (b) 570
(c) 580.5 (d) 582.5
(e) 600

75. $\frac{2^3 \times 3^2}{(90 \div ?)} = \sqrt{81}$

- (a) 12.25 (b) 11
(c) 11.25 (d) 11.5
(e) 12

76. $\sqrt{4 \times ?} = \frac{320}{20}$

- (a) 64 (b) 60
(c) 68 (d) 56
(e) 72

77. $\sqrt{9604} + \sqrt{5041} = (?)^2$

- (a) 17 (b) 21
(c) 15 (d) 13
(e) 11

78. $11\frac{1}{2} - 6\frac{1}{2} = \frac{50}{?}$

- (a) 8 (b) 5
(c) 15 (d) 12
(e) 10

79. $\left[\left(4 \times \frac{1}{2}\right) + 6\right] \times 12 = ? \times 10$

- (a) 9.3 (b) 9.6
(c) 9.4 (d) 9.1
(e) 9.2

80. $60\% \text{ of } (2.5 \times 4 + ?) = 36$

- (a) 51 (b) 60
(c) 50 (d) 45
(e) 53

HINTS & SOLUTIONS

Sol. (1-4):

1. (a) $Q < R \leq M = L > W \leq V > Z$
 I. $Q < R \leq M = L$ $L > Q$ (True)
 II. $R \leq M = L > W$ $W > R$ (False)
2. (b) $P \geq Q > D = F < R \leq S$
 I. $Q > D = F < R$ $Q > R$ (False)
 II. $D = F < R \leq S$ $D < S$ (True)
3. (c) $A = E \geq H \geq C < S \leq B$
 I. $A = E \geq H \geq C$ ($C < A$)
 either conclusion I or II follows.
 II. $A = E \geq H \geq C$ ($A = C$)
4. (d) $Y \geq N = O > P \leq R > T$
 I. $Y \geq N = O > P \leq R$ $R < Y$ (False)
 II. $N = O > P \leq R$ $N < R$ (False)

Sol. (5-9):

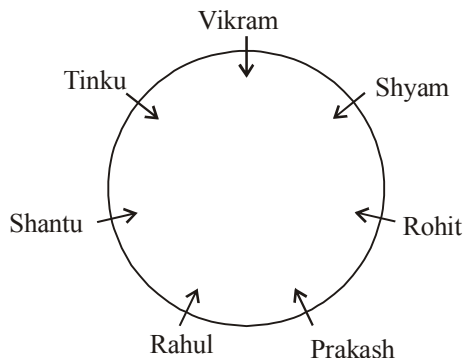
| Floors | Persons |
|--------|---------|
| 7 | Shyam |
| 6 | Biren |
| 5 | Ayush |
| 4 | Rahul |
| 3 | Sanjeet |
| 2 | Rohan |
| 1 | Pinku |

5. (e) 6. (c) 7. (d) 8. (d) 9. (b)

Sol. (10-14):

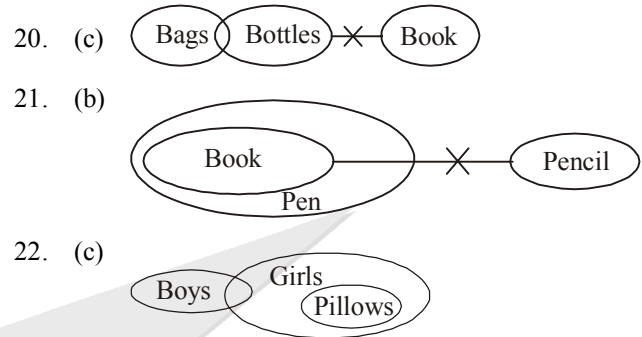
10. (e)
11. (a) G will be sixth to the right of the one which is twelfth from the right end.
12. (d) 13. (b)
14. (a) % OA should come in place of question mark(?)

Sol. (15-19):

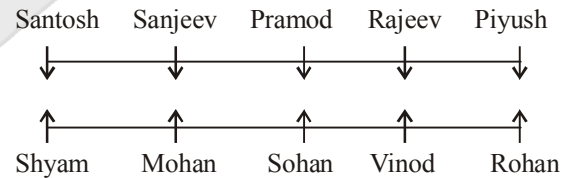


15. (b) 16. (d) 17. (a) 18. (e) 19. (a)

Sol. (20-22):



Sol. (23-27):



23. (d) 24. (c) 25. (c) 26. (b) 27. (a)
 28. (b) Codes are:

| Word | Code |
|---------|------|
| He | 9 |
| will | 1 |
| say | 3 |
| To/ him | 5/2 |
| May/Do | 8/7 |

Hence, code for 'well' is 1

29. (c) M I N U T E

Two pairs of letters.

Sol. (30-33):

Vikas > Gopi (230kg) > Mohit > Rahul > Aditya > Ayush (128kg)

30. (c)

31. (c) Sum of weight of Ayush + Rahul = 262 kg.

We have Ayush weight = 128 kg
 Hence Rahul weight = 262 - 128
 = 134 kg

And

Sum of weight of Mohit + Gopi = 426 kg
 we have Gopi = 230 kg
 Hence Mohit weight = 426 - 230
 = 196 kg

So, (Rahul + Mohit weight) = (134 + 196) kg = 330 kg

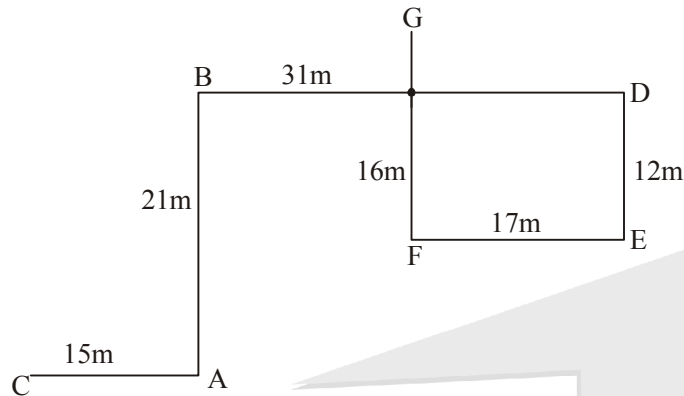
32. (b) 33. (d)

Sol: (34-36):

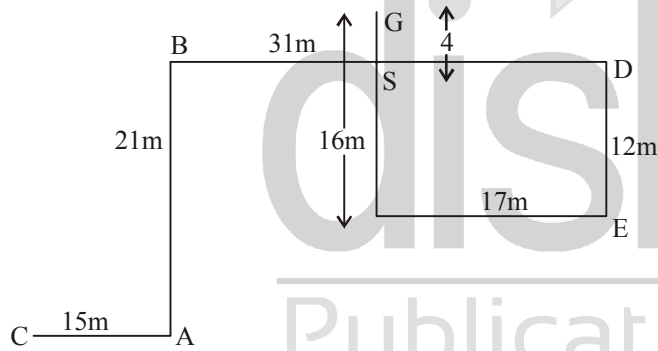
| | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------|---|---|--------|---|---|-----------|-------|----|----|----|----|----|---------|----|----|----|----|----|----|----|----|------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | Monika | | | Rashmi | | | Aishwarya | Naina | | | | | | Radhika | | | | | | | | | Gita |

34. (e) 35. (a) 36. (b)

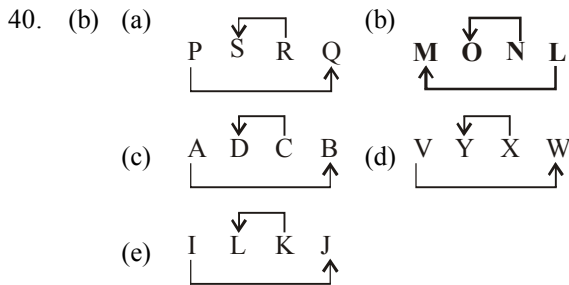
Sol: (37-39):



37. (e) 38. (c)
39. (e)



Distance between point B and S
BD = BS - SD = 31 - 17 = 14m



41. (d) The wrong no. is 586.

$$3 \times 1 + 1 = 4$$

$$4 \times 2 + 1 = 9$$

$$9 \times 3 + 1 = 28$$

$$28 \times 4 + 1 = 113$$

$$113 \times 5 + 1 = 566$$

$$566 \times 6 + 1 = 3397$$

So, there should be 566 instead of 586.

42. (d) The wrong no. is 113.

$$\begin{array}{ccccccc} 6 & 13 & 27 & 48 & 76 & 111 & 153 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +7 & +14 & +21 & +28 & +35 & +42 & \end{array}$$

So, there should be 111 instead of 113.

43. (e) The wrong no. is 44.

$$\begin{array}{ccccccc} 48 & 56 & 47 & 55 & 46 & 54 & 45 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +8 & -9 & +8 & -9 & +8 & -9 & \end{array}$$

So, there should be 46 instead of 44.

44. (a) The wrong no. is 67.

$$\begin{array}{ccccccc} 6 & 7 & 11 & 20 & 36 & 61 & 97 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +1 & +4 & +9 & +16 & +25 & +36 & \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\ 1^2 & 2^2 & 3^2 & 4^2 & 5^2 & 6^2 & \end{array}$$

So, there should be 61 instead of 67.

45. (b) Upstream speed of boat = 16 km/hr

Downstream speed of boat = 14 km/hr

$$\begin{aligned} \text{Speed of boat in still water} &= \frac{16 + 14}{2} \\ &= 15 \text{ km/hr} \end{aligned}$$

46. (c) Let the capacity of the tank be 96 units (LCM of 32 and 48)

Efficiency of tap A = 3 units/minute

Efficiency of tap B = 2 units/minute

$$\frac{1}{6} \text{ th of the tank} = 16 \text{ units}$$

$$\text{Required time} = \frac{16}{3+2} = 3\frac{1}{5} \text{ minutes}$$

47. (c) Radius of first circle = $\frac{44 \times 7}{2 \times 22} = 7 \text{ cm}$

$$\text{Area of first circle} = \frac{22}{7} \times 7 \times 7 = 154 \text{ cm}^2$$

$$\text{Radius of second circle} = \frac{66}{2 \times 22} \times 7 = 10.5 \text{ cm}$$

Area of second circle

$$= \frac{22}{7} \times 10.5 \times 10.5 = 346.5 \text{ cm}^2$$

$$\text{Required difference} = 192.5 \text{ cm}^2$$

48. (c) Ratio of milk to that of water in the initial mixture = 16 : 5

$$\frac{1}{5} \text{ th of the mixture} = 21 \text{ liter}$$

$$\frac{80 - 21 \times \frac{16}{21}}{25 - 21 \times \frac{5}{21} + x} = \frac{2}{1}$$

$$x = 12 \text{ liter}$$

49. (a) $15x + 10(x - 2) = 848$
 $\Rightarrow 15x + 10x - 20 = 848$

$$\Rightarrow x = \frac{868}{25} = 34.72 \approx 35$$

50. (e) Let present age of Sohan and Mohan be $12x$ years and $5x$ years respectively.

Then, present age of Rohan = $10x$ years

ATQ,

$$12x - 10x = 6$$

$$x = 3$$

Present age of Sohan = 36 years

51. (a) Average number of A type buses from college y and college z together = $\frac{36 + 44}{2} = 40$

52. (e) A type buses of college $x = 48$
A type buses of college $y = 36$

$$\text{Required value} = \frac{48 - 36}{36} \times 100 = 33\frac{1}{3}\%$$

53. (c) Average number of all the buses from college y
 $= \frac{36 + 26}{2} = 31$

54. (b) Average number of all the buses from college x
 $= \frac{48 + 38}{2} = 43$

Average number of all the buses from college z

$$= \frac{44 + 34}{2} = 39$$

$$\text{Required difference} = 43 - 39 = 4$$

55. (e) Total buses from college $x = 48 + 38 = 86$
Total buses from college $y = 36 + 26 = 62$
Total buses from college $z = 44 + 34 = 78$
Clearly, college x has maximum number of buses.

56. (e) I. $2(2x^2 - 5x + 2) = 0$
 $2x^2 - 4x - x + 2 = 0$
 $\Rightarrow 2x(x - 2) - 1(x - 2) = 0$
 $\Rightarrow (2x - 1)(x - 2) = 0$

$$\Rightarrow x = \frac{1}{2}, 2$$

$$\text{II. } 2(9y^2 - 9y + 7) = 0$$

$$2y^2 - 9y + 7 = 0$$

$$\Rightarrow 2y^2 - 7y - 2y + 7 = 0$$

$$\Rightarrow y(2y - 7) - 1(2y - 7) = 0$$

$$(2y - 7)(y - 1) = 0$$

$$\Rightarrow y = \frac{7}{2}, 1$$

\therefore No relation.

57. (a) I. $4x^2 + 3x + 4x + 3 = 0$
 $\Rightarrow 4x(x + 1) + 3(x + 1) = 0$
 $(4x + 3)(x + 1) = 0$

$$\Rightarrow x = -1, -\frac{3}{4}$$

$$\text{II. } 3(y^2 + 9y + 20) = 0$$

$$y^2 + 5y + 4y + 20 = 0$$

$$\Rightarrow y(y + 5) + 4(y + 5) = 0$$

$$(y + 4)(y + 5) = 0$$

$$\Rightarrow y = -4, -5$$

$$\therefore x > y$$

58. (d) I. $x^2 - 7x - 2x + 14 = 0$
 $x(x - 7) - 2(x - 7) = 0$
 $(x - 7)(x - 2) = 0$
 $x = 7, 2$

$$\text{II. } y^2 - 9y - 7y + 63 = 0$$

$$y(y - 9) - 7(y - 9) = 0$$

$$(y - 9)(y - 7) = 0$$

$$y = 9, 7$$

$$\therefore x \leq y$$

59. (a) I. $3(x^2 - 3x - 4) = 0$
 $x^2 - 4x + x - 4 = 0$
 $(x - 4)(x + 1) = 0$
 $x = 4, -1$

$$\text{II. } 6(y^2 + 6y + 8) = 0$$

$$y^2 + 2y + 4y + 8 = 0$$

$$(y + 2)(y + 4) = 0$$

$$y = -2, -4$$

$$\Rightarrow x > y$$

60. (b) I. $4(x^2 - 3x) = 10 \times 4$
 $x^2 - 3x - 10 = 0$
 $x^2 - 5x + 2x - 10 = 0$
 $(x - 5)(x + 2) = 0$
 $x = -2, 5$

$$\text{II. } 5(y^2 + 7y + 10) = 0$$

$$y^2 + 5y + 2y + 10 = 0$$

$$(y + 5)(y + 2) = 0$$

$$y = -2, -5$$

$$\Rightarrow x \geq y$$

61. (c) Items sold by Rohit and Aditya on Monday = $180 + 300 = 480$

$$\text{Item sold by Aditya and Ramesh on Wednesday} = 300 + 250 = 550$$

$$\therefore \text{Required ratio} = \frac{480}{550} = \frac{48}{55}$$

62. (d) Average of items sold by Rohit, Aditya and Ramesh on Wednesday

$$= \frac{200 + 300 + 250}{3} = \frac{750}{3} = 250$$

63. (c) Items sold by Rohit and Aditya on Tuesday = 400 + 200 = 600
Items sold by Aditya and Ramesh on Wednesday = 300 + 250 = 550

$$\therefore \text{Required percentage} = \frac{600 \times 100}{550} \approx 109\%$$

64. (e) Items sold by Aditya on Monday and Tuesday = 300 + 200 = 500
Items sold by Rohit on Tuesday and Wednesday = 400 + 200 = 600
 \therefore Required difference = 600 - 500 = 100

65. (e) Items sold by Aditya on all 3 days = 300 + 200 + 300 = 800
Items sold by Ramesh on all 3 days = 100 + 300 + 250 = 650

$$\therefore \text{Required ratio} = \frac{800}{650} = 16 : 13$$

66. (b) Let the marked price be ₹ 100x.
Then selling price = ₹ 85x

$$\text{Cost price} = 85x \times \frac{100}{127.5}$$

$$\text{Cost price} = ₹ \frac{200}{3}x$$

ATQ,

$$100x - \frac{200}{3}x = 500$$

$$x = 15$$

$$\text{Cost price} = ₹ 1000$$

67. (e) Let the number of students in the exam be 55x.
Then number of boys = 36x
Number of girls = 19x

ATQ,

$$55x + 1725 = (36x + 1440) + 19x \times 1.15$$

$$x = 100$$

$$\text{Increased number of boys} = 3600 + 1440 = 5040$$

68. (e) Let the salary of Rahul and Vijay be ₹ 100x and ₹ 300x respectively.

ATQ

$$\text{Remaining Amount} = 85x + 255x = 42500$$

$$x = 125$$

$$\text{House rent paid by Rahul} = 15x = 15 \times 125 = ₹ 1875$$

69. (b)
- | | Sanjay | Rohit | Vikas |
|-----------|--------|---------------|-------|
| Capital → | 5000 | 7500 | 12500 |
| Time → | 2 | $\frac{3}{2}$ | 1 |
| Profit → | 10000 | 11250 | 12500 |
- Required ratio = 8 : 9 : 10

70. (a) $\frac{12100}{10000} = \left(1 + \frac{r}{100}\right)^2$

$$\Rightarrow \left(1 + \frac{r}{100}\right)^2 = \left(\frac{110}{100}\right)^2$$

$$\Rightarrow \left(1 + \frac{r}{100}\right)^2 = \left(1 + \frac{10}{100}\right)^2$$

Thus on comparing, $r = 10\%$

71. (b) $?^2 = 60\% \text{ of } \frac{5}{11} \times 385 - 5$

$$\Rightarrow ?^2 = \frac{3}{5} \times \frac{5}{11} \times 385 - 5$$

$$\Rightarrow ?^2 = 100$$

$$\Rightarrow ? = 10$$

72. (c) $?^2 = \frac{(\sqrt{1444} + \sqrt{676})}{8} = \frac{38 + 26}{8}$

$$= \frac{64}{8} = 8$$

$$\Rightarrow ? = 8$$

73. (b) $\frac{160 \times 0.2}{4} = ? - 0.5$

$$\Rightarrow 8 + 0.5 = ?$$

$$\Rightarrow ? = 8.5$$

74. (d) $\frac{40}{100} \times ? - 11 = 222$

$$? = \frac{233 \times 100}{40} = 582.5$$

75. (c) $\frac{8 \times 9 \times ?}{90} = 9$

$$? = \frac{90 \times 9}{8 \times 9} = \frac{90}{8} = 11.25$$

76. (a) $\sqrt{4 \times ?} = 16$

$$4 \times ? = 256$$

$$? = 64$$

77. (d) $98 + 71 = ?^2$

$$169 = ?^2$$

$$? = 13$$

78. (e) $5 = \frac{50}{?}$

$$? = 10$$

79. (b) $8 \times 12 = ? \times 10$

$$\frac{8 \times 12}{10} = 9.6$$

80. (c) $\frac{60}{100} \times (10 + ?) = 36$

$$\Rightarrow 10 + ? = 60$$

$$\Rightarrow ? = 50$$