# LRDI - 2

Career Launcher

Workshop

**Number of Questions : 32**

**WSP–0017/18**

**Directions for questions 1 to 5:** Answer the questions on the basis of the information given below.

Sunil and his wife (Nivedita) throw a dinner party and invite four other married couples Mrs. and Mr. A, Mrs. and Mr. B, Mrs. and Mr. C, Mrs. and Mr. D. Once everyone arrives, various people shake hands. No person shakes hands with himself and no married couple shakes hands with each other. Sunil asks his wife and everyone else at the party that with how many people did they shook hand with and is shocked to find that every answer he received was different.
Following table lists the answers given by some of them

| Mr. A | Mr. B | Mr.C | Mr. D | Nivedita | Mrs. A | Mrs. B | Mrs. C | Mrs. D |
|---|---|---|---|---|---|---|---|---|
| 8 | | | 6 | 0 | 2 | 4 | 7 | |

- Everyone in the party either always lies or always tells the truth.
- Some ladies always lie but men always tell the truth.
- Mr. B had more handshakes than Mr. C.
- In the party Mrs. C said "Nivedita is lying about her number of handshakes."
- It is known that everyone of the 9 people, who answered, actually shook hand with different number of persons.

1. How many of the ladies always lie definitely?
(1) 1 (2) 2 (3) 3 (4) 4

2. How many people did Nivedita shake hands with?
(1) 3 (2) 4 (3) 5 (4) 1

3. What was Mr. B's answer?
(1) 4 (2) 3 (3) 5 (4) Either 3 or 5

4. For how many of the couples out of – A, B, C, D – number of handshakes of both husband and wife can be correctly determined?
(1) 4 (2) 3 (3) 2 (4) 1

5. Which of the following did not shake hands with anyone in the party?
(1) Mrs. A (2) Mr. C (3) Mrs. D (4) Mrs. B

**Directions for questions 6 to 9:** Answer the questions on the basis of the information given below.

Each of eight friends – Avinash, Bimal, Chandan, Dhruv, Emli, Farhan, Ganesh and Harjeet – belongs to a city among Patna, Delhi, Mumbai, Chennai, Kolkata, Ranchi, Noida and Varanasi not necessarily in that order. They are Doctor, Engineer, Teacher, Architect, Army man, Police, Manager and Businessman, in any order and earn Rs. 50,000, Rs. 87500, Rs. 57500, Rs. 62500, Rs. 55000, Rs. 1, 25,000, Rs. 1 lakh, Rs. 1,12,500 per month not necessarily in that order. It was also know that:

I. Avinash, who is from Mumbai, is neither Architect nor Army man. Emli, who is from Kolkata, earns double as that of the friend who is from Varanasi.

II. The sum of the earnings of Chandan and Dhruv is equal to that of Ganesh and Harjeet. Chandan is neither from Delhi nor Noida.

III. The total earnings of the friends from Chennai and Ranchi is Rs. 1.50 lakh and they are police and Manager in any order.

IV. The income of friend who is Manager was less than that of the friend who is police. The income of Dhruv is less than that of Harjeet whose income is less than that of Ganesh.

V. The income of Bimal is more than that of at least three friends but less than that of at least one friend and he is from Patna. Farhan is from Chennai.

VI. The income of an Engineer is higher than that of a Teacher which in turn is higher than that of each of Architect and Army man.

VII. The income of Doctor and Businessman is the highest and the lowest among them.

6. The income of Farhan is
(1) Rs. 62,500 (2) Rs. 87,500 (3) Rs. 1, 12, 500 (4) Rs. 50,000

7. Who is from Ranchi?
(1) Chandan (2) Ganesh (3) Harjeet (4) Dhruv

8. For how many friends is it possible to determine their income?
(1) 5 (2) 6 (3) 7 (4) 8

9. The friend who earns Rs. 55,000 is from
(1) Delhi (2) Noida (3) Varanasi (4) Either (1) or (2)

**Directions for questions 10 to 13:** Answer the questions on the basis of the information given below.

Employees from 4 departments of "CL Educate" participated in an inter-department sports meet, organized on the occasion of CL-Day. There were many sports events and in each event, only 1 gold, only 1 silver and only 1 bronze medal were awarded to the participants acquiring 1st, 2nd and 3rd positions respectively in that event. There were no tie for any position in any event.
The 4 departments, who took part in the meet, were - Acads, Marketing, Operations and HR. Only one participant from each of the 4 departments can participate in any event.
Following is the information about the number of medals won by the participants of the 4 departments with some information missing:

| Departments | Gold | Silver | Bronze |
|---|---|---|---|
| Acads | 9 | 1 | - |
| Marketing | 1 | 6 | - |
| Operations | - | 2 | 4 |
| HR | - | 1 | 3 |

Following is the list of all the employees who won at least 1 medal in the meet, with some information missing:

| Name of Participant | Gold | Silver | Bronze |
|---|---|---|---|
| Vikrant | 2 | - | - |
| Sanoujam | 3 | 1 | - |
| Soral | 2 | 0 | 0 |
| Shilpa | - | 2 | 2 |
| Priyanka | - | 1 | 0 |
| Shashank | 1 | 3 | 1 |
| Manoj | 1 | - | - |
| Anuj | - | - | 0 |
| Naveen | 1 | - | - |
| Vaibhav | - | 0 | - |
| Aman | 0 | 0 | 3 |
| Nishant | 0 | 0 | 2 |

10. How many participants from the marketing department of CL Educate won atleast one medal?
(1) 1 (2) 2 (3) 3 (4) Cannot be determined

11. Which employee won the highest number of medals?
(1) Shashank (2) Shilpa (3) Sanoujam (4) Cannot be determined

12. What is the number of silver medals won by Anuj?
(1) 1 (2) 2 (3) 3 (4) Cannot be determined

13. Who among the following is from Operations department?
(1) Anuj (2) Vaibhav (3) Nishant (4) Cannot be determined

**Directions for questions 14 to 16:** Answer the questions on the basis of the following information.

At 12:00 noon, I am 14$^{th}$ in a queue at a movie ticket counter. The queue increases at the rate of 1 person every minute and the counter clerk takes 3 minutes to entertain a person. There is one woman after every 2 men in the queue. The lunch break of 15 minute is at 12: 30 pm. The first person is a male and the person behind me is a woman. The ratio of male to female gets interchanged after the 15th person. The fourth woman took two tickets (i.e. 6 minute).

14. At what time shall I be at the counter?
(1) 12 : 39 (2) 12 : 57 (3) 12 : 42 (4) 12 : 54

15. At which position will I be at 12:30 pm, if the third lady decides to take two tickets?
(1) 4th (2) 5th (3) 6th (4) 14th

16. If it rains during the lunch time, then how many men will come in wet?
(1) 6 (2) 8 (3) 9 (4) 5

**Direction for questions 17 to 20:** Answer the questions on the basis of the information given below.

5 students appeared in a MBA mock, conducted by CL, containing 5 subjects. The marks obtained by each of them in every subject are integers and lie between 40 and 100. The following table provides the partial information about the marks obtained by these students.

| Students | Subject | | | | | Total |
|---|---|---|---|---|---|---|
| | DI | LR | QA | VA | GK | |
| Sachin | | | | | | 320 |
| Yuvi | | 50 | | 96 | | 320 |
| Viru | | | | | | 351 |
| MSD | | 82 | 94 | | 88 | |
| Virat | 75 | 50 | | | 75 | |
| Total | 400 | 272 | | 402 | | |

- Sachin got equal marks, which is not the square of any natural number, in VA and Gk, and got distinct marks, which are squares of a natural number, in the remaining 3 subjects.
- Viru's marks in VA was 4 more than that in DI. Also, his marks in QA was 6 more than that in LR.
- Sachin scored highest marks in DI and MSD scored highest marks in QA.
- Yuvi scored highest marks in VA.
- In VA, among all the five students, Viru scored the highest marks.
- The average of marks obtained by Virat in QA and VA was 50.
- Marks scored by Viru were prime numbers in all subjects except DI.
- Yuvi scored equal marks in QA and GK.
- Virat scored 10 marks more in VA than that in QA.
- MSD's average marks in the 5 subjects was 88.

17. How many marks did Yuvi score in GK?

18. Sum of the marks scored by Viru in QA and MSD in VA is

19. What is the difference between the highest and the lowest marks scored by Sachin?

20. How many more marks did MSD score in DI as compared to the marks obtained by Yuvi in the same subject?

**Direction for questions 21 to 24:** Answer the questions on the basis of the information given below.

There were 5 students in a class out of which four had a certain number of chocolates, each number being a distinct integer than any other number. The teacher asked the 5th student Alena, who didn't have any chocolates, to tell her the number of chocolates with each of the remaining 4 students. Instead of giving the number of chocolates each individual had, she gave partial information about the sum of the number of chocolates with every two students at a time. She gave the following table to the teacher:

| Variable | Sum of number of chocolates taken two at a time |
|---|---|
| A | 55 |
| B | 53 |
| C | |
| D | |
| E | |
| F | 44 |

The numbers from A to F are in decreasing order.

21. If one of the missing values in the table, submitted by Alena to the teacher, is 47, then which of the following can be the number of chocolates with a student?
(1) 23 (2) 24 (3) 25 (4) 26

22. What is the sum of the values of E and F submitted by Alena to her teacher?
(1) 90 (2) 87 (3) 89 (4) Cannot be determined

23. It was observed that C was the addition of the maximum number of chocolates and the minimum number of chocolates, out of the 4 students who had chocolates. What is the value of D?

24. If all 4 students, with chocolates, were asked to stand in descending order as the number of their chocolates, then what can be the maximum number of chocolates with the 3rd student from the top?

**Directions for questions 25 to 28:** Answer the questions on the basis of the information given below.

Seven telecommunications companies – BSNL, Airtel, Aircel, Reliance Communications, Vodafone, Reliance Jio and Idea – distributed a total of 6,28,000 new mobile connections in the month of September 2017. These companies provide two types of connections – Prepaid and Postpaid, in rural and urban areas both.

The table given below shows the ratios of the number of connections given by different pairs of companies.

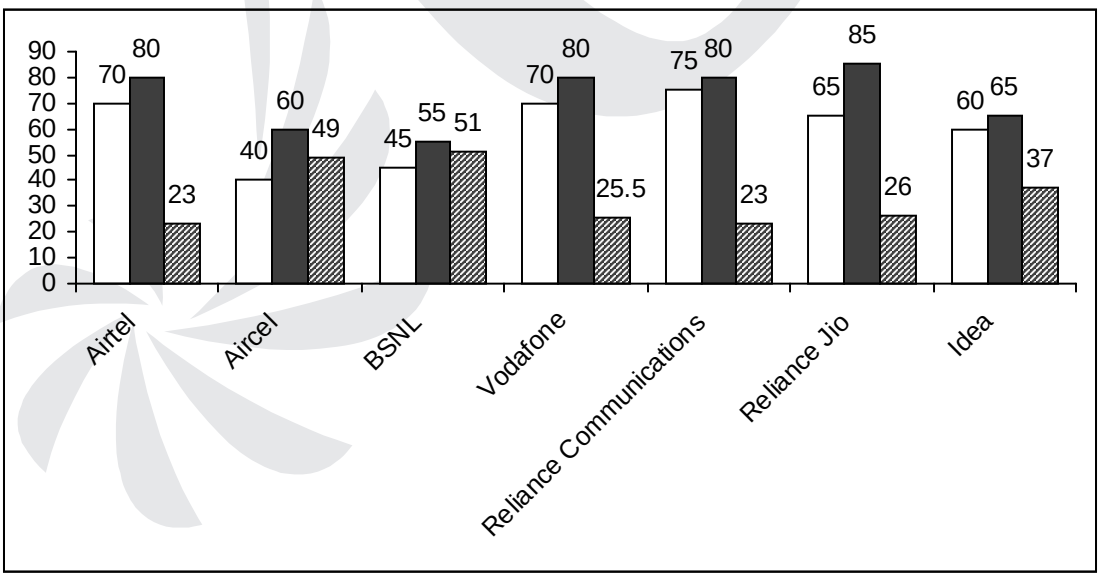
| Company | Ratio |
|---|---|
| Airtel : Aircel | 21 : 11 |
| Vodafone : Reliance Communications | 11 : 5 |
| Aircel : BSNL | 11 : 14 |
| Reliance Jio : Idea | 22 : 5 |
| BSNL : Vodafone | 35 : 44 |
| Reliance Communications : Reliance Jio | 2 : 11 |

For any company:

(i) Total given connections = Connections given in rural area ($C_R$) + Connections given in Urban area ($C_U$)

(ii) $C_R$ = Prepaid connections given in rural area [$(Prep)_R$] + Postpaid connections given in rural area [$(Post)_R$]. The same is true for $C_U$ also.

Prepaid and postpaid connections given in urban areas are represented by $(Prep)_U$ and $(Post)_U$ respectively. The Bar graph given below shows the percentage of the Prepaid connections given in rural and urban areas both for each company. The percentage of Postpaid connections given in both areas together is also shown in the graph.




where, ☐ represents $(Prep)_R$ as a percentage of $C_R$.

■ represents $(Prep)_U$ as a percentage of $C_U$.

▨ represents the number of total Postpaid connections as a percentage of total connections given by the company.

25. By what percentage (approximately) was the number of postpaid connections given in rural area by all the companies put together more than that in urban area by all the companies put together?
(1) 33.33% (2) 55.88% (3) 71.55% (4) 66.66%

26. How many connections were given in urban area by BSNL, Idea and Vodafone put together?
(1) 112200 (2) 96200 (3) 97600 (4) 92200

27. For which of the following companies was the value of $\frac{(Prep)_U}{(Prep)_R}$ the second highest among all the companies?
(1) Airtel (2) Aircel (3) Idea (4) Reliance Jio

28. The minimum absolute difference between the number of postpaid connections given by a company in rural and that by the same company in urban area was
(1) 2750 (2) 2800 (3) 2500 (4) 5250

**Directions for questions 29 to 32:** These questions are based on the following information.

Four salesmen – A, B, C and D – of company X, which deals in sales of cars, together sold 24 cars in a week. The cars sold by the 4 salesmen were of types - P, Q, R and S, in no specific order.
Further, the following is known:
(i) No two types of cars are equal in number and no two salesmen sold equal number of total cars.
(ii) There are at least four cars of each type and each person sold at least four cars.
(iii) D sold eight cars and total seven cars of type S were sold.
(iv) B and D sold equal number of cars of type R, and both B and D sold at least one car of each type.
(v) A and C did not sell any car of type R.
(vi) C sold three cars of type Q and two cars of type S.
(vii) Least number of cars of type P were sold by A only.

29. How many cars of type Q did D sell?
(1) 1 (2) 2 (3) 3 (4) Cannot be determined

30. How many total cars did B sell?
(1) 5 (2) 7 (3) 8 (D)Cannot be determined

31. If D sold only one car of type S, then how many cars of type S did A sell?
(1) 0 (2) 1 (3) 2 (4) 3

32. How many cars of type P were sold by all the four salesmen taken together?
(1) 4 (2) 5 (3) 8 (4) Cannot be determined

# LRDI - 2
# Answers and Explanations

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 3 | **2** | 2 | **3** | 4 | **4** | 2 | **5** | 1 | **6** | 2 | **7** | 1 | **8** | 4 | **9** | 4 | **10** | 3 |
| **11** | 1 | **12** | 3 | **13** | 4 | **14** | 2 | **15** | 2 | **16** | 4 | **17** | 54 | **18** | 138 | **19** | 32 | **20** | 19 |
| **21** | 3 | **22** | 1 | **23** | 48 | **24** | 25 | **25** | 2 | **26** | 3 | **27** | 2 | **28** | 3 | **29** | 4 | **30** | 1 |
| **31** | 4 | **32** | 2 | | | | | | | | | | | | | | | | |

**For questions 1 to 5:**
As per the given information, men always speak the truth.
Also, number of handshakes for Mr. B > number of handshakes for Mr. C
Since all numbers are different, the number of handshakes is from 0 to 8.
Now, Mr. A is shaking with all, so Mrs. A only can have 0 handshake as all others are shaking hands with Mr. A
So, Mrs. A is lying and Nivedita is also lying.
Hence, Mrs. C is telling the truth so, Mrs. C is having 7 hands shakes with all except Mr. C and Mrs. A. So, all except Mr. C and Mrs. A will have at least 2 handshakes.
So, Mr. C has only 1 handshake
Now, the table becomes

| **Mr. Sunil** | **Mrs. Nivedita** |
|---|---|
| Mr. A – 8 | Mrs. A – 0 |
| Mr. B | Mrs. B – 4 (Not sure yet) |
| Mr. C – 1 | Mrs. C – 7 |
| Mr. D – 6 | Mrs. D |

Now, proceeding similarly for the rest or we can observe from the table, the couples are having 8 handshakes in total.
So, Handshakes by Mrs. B $\neq$ 4 (As Mr. B = 4 is not possible).
So, Mr. and Mrs. B will have 3 or 5 handshakes.
So, Nivedita will have 4 handshakes.
The final table becomes is

| | Sunil | A | B | C | D |
|---|---|---|---|---|---|
| Mr. | | 8 | (3/5) | 1 | 6 |
| Mrs. | 4 | 0 | (5/3) | 7 | 2 |

1. 3 3 of the ladies always lie.

2. 2 4

3. 4 Either 3 or 5

4. 2 3

5. 1 Mrs. A

**For questions 6 to 9:**
**From statement VII:** The income of Doctor and Businessman is Rs. 1,12,500 and Rs. 50,000 respectively.
**From statement III & IV:** We can conclude that the income of police and Manager is Rs. 87,500 and Rs. 62,500 respectively and they are from Chennai and Ranchi not necessarily in that order.
**From statement VI:** We can conclude that the income of Engineer and Teacher is Rs. 1,12,500 and Rs. 1,00,000 respectively. The income of Architect and Army man is Rs. 57,500 and Rs. 55,000 in any order.
**From statement I:** It can be concluded that Emli who is from Kolkata earns Rs. 1,00,000 and the friend from Varanasi earns Rs. 50,000.
**From statement V:** The income of Bimal is Rs. 1,12,500.
**From statement II & IV:** It can be concluded that the income of Chandan, Dhruv, Ganesh and Harjeet is Rs. 62,500, Rs. 50,000, Rs. 57,500 and Rs. 55,000 respectively.

Further analysis leads to the following table:

| **Name** | **Profession** | **Place** | **Income** |
|---|---|---|---|
| Avinash | Doctor | Mumbai | 1,25,000 |
| Bimal | Engineer | Patna | 1,12,500 |
| Emli | Teacher | Kolkata | 1,00,000 |
| Farhan | Police | Chennai | 87,500 |
| Chandan | Manager | Ranchi | 62,500 |
| Ganesh | Architect/Army man | Delhi/Noida | 57,500 |
| Harjeet | Army man/Architect | Noida/Delhi | 55,000 |
| Dhruv | Businessman | Varanasi | 50,000 |

6. 2 The income of Farhan is Rs. 87,500.

7. 1 Chandan is from Ranchi.

8. 4

9. 4

**For questions 10 to 13:**
Since a total of 10 silver medals are won, this implies the total number of gold medals won = the total number of bronze medals won = 10, which also implies that the total number of events is also 10.

Since, there were a total of 10 events and in each event, there is only 1 participant from each of the 4 departments that means no department can win more than 10 medals combining Gold, Silver and Bronze.
So, department wise medal tally would be

| | Gold | Silver | Bronze |
|---|---|---|---|
| Acads | 9 | 1 | 0 |
| Marketing | 1 | 6 | 3 |
| Operation | 0 | 2 | 4 |
| HR | 0 | 1 | 3 |
| Total | 10 | 10 | 10 |

That means all the employees except 1 who won gold medals belong to Acads and since shashank won a gold medal and 3 silver medals that means he belongs to Marketing (as Marketing is the only other department with a gold medal)
Now since Vikrant, Sanonjam, Saral, Manoj and Naveen are the other participant who won gold medals that means they belong to Acads, with Vikrant, Saral, Manoj and Naveen having no silver and no bronze medal among them. So this leaves only Anuj to have won the remaining 3 silver medals. That means Anuj belongs to marketing. And this leaves only Vaibhav to have won the remaining 2 bronze medals. Since Shilpa won 2 silver that means Shilpa belongs to operations. So, 2 bronze medals each need to be allocated to marketing and operations, that means one of Vaibhav and Nishant belong to Marketing and the other to Operations. That leaves Aman to HR

| Department | Name of Participant | Gold | Silver | Bronze |
|---|---|---|---|---|
| Acads | Vikrant | 2 | 0 | 0 |
| Acads | Sonoujam | 3 | 1 | 0 |
| Acads | Soral | 2 | 0 | 0 |
| Operations | Shilpa | 0 | 2 | 2 |
| HR | Priyanka | 0 | 1 | 0 |
| Marketing | Shashank | 1 | 3 | 1 |
| Acads | Manoj | 1 | 0 | 0 |
| Marketing | Anuj | 0 | 3 | 0 |
| Acads | Naveen | 1 | 0 | 0 |
| Operations/ Marketing | Vaibhav | 0 | 0 | 2 |
| HR | Aman | 0 | 0 | 3 |
| Marketing/ Operations | Nishant | 0 | 0 | 2 |

10. 3 11. 1 12. 3 13. 4

14. 2 Till 12:30, 10 people would have left the counter. After that, 15 min lunch i.e., 12:45. Now, i have four people standing before me (actually, there are three people, but that lady is having two tickets, which will be same as introducing one extra person), so, these four people will take 12 minutes after 12:45. So I will be at the counter at 12 : 57.

15. 2 Since 3rd lady, who is 9th in queue, decides to take two tickets, she is the last one to buy tickets before 12:30 pm. So, there are four people left standing before me at 12:30 pm.
Therefore, I will be at 5th position at 12:30 pm.

16. 4 The lunch time would be for 15 minutes. Secondly, we know that one people is coming every minute and it is also given that the ratio of men : women, which was initially 2 : 1 gets changed to 1 : 2. Therefore, out of 15 people joining in the duration of lunch 10 will be women and 5 will be men and hence, these 5 will come in wet.

**For questions 17 to 20:**

- From first point, Sachin's score is 49, 64 and 81 (squares of natural numbers) in DI, LR and QA (in any order).
- MSD's highest score is in QA, which is 94.
- Since Sachin's score is 49, 64, 81 in DI, LR and QA and it is given that he got same marks in VA and GK.
  ∴ 49 + 64 + 81 = 194 is total is 320
  ∴ Sum of his marks in VA and GK = 320 – 194 = 126.
  ∴ Sachin's score in VA = 63
  and Sachin's score in GK = 63
- Sachin's score in DI = 81, since he got highest in DI.
- Sum of Virat's score in QA and VA = 100.
  ∴ H is total = 75 + 50 + 100 + 75 = 300.
- All score of Viru are prime numbers except DI and it is given that Viru was the highest scorer in VA among all the students. Since Yuvi got 96 in VA,
  ∴ Viru's score in VA = 97 (a prime number)
  ∴ In DI, Viru's score = 93.
  Now, LR's column add upto 272. Till now 50 + 82 + 50 = 182
  ∴ Balance = 90 which means sum of scores of Sachin and Viru in LR = 90. For Sachin, it could be 64 or 49, but it can't be 64 so it has to be 49.
  ∴ Viru's LR score = 41.
  ∴ Viru's QA score = 41 + 6 = 47.
- Since Yuvi scored equal mark in QA and Gk, i.e. $\frac{108}{2} = 54$.

| Students | Subject | | | | | |
|---|---|---|---|---|---|---|
| | DI | LR | QA | VA | GK | Total |
| Sachin | 81 | 49 | 64 | 63 | 63 | 320 |
| Yuvi | 66 | 50 | 54 | 96 | 54 | 320 |
| Viru | 93 | 41 | 47 | 97 | 73 | 351 |
| MSD | 85 | 82 | 94 | 91 | 88 | 440 |
| Virat | 75 | 50 | 45 | 55 | 75 | 300 |
| Total | 400 | 272 | | 402 | | |

17. 54 marks were scored by Yuvi in GK.

18. Required sum = 47 + 91 = 138

19. Difference between Sachin's highest and lowest score = 81 - 49 = 32

20. 19

**For questions 21 to 24:**

Let the number of chocolates with 4 students be a, b, c, d such that a > b > c > d.

Then sum of number of chocolates with students taken two at a time is as:

$A \rightarrow a + b$

$B \rightarrow a + c$

$C \rightarrow b + c$ or $a + d$

$D \rightarrow a + d$ or $b + c$

$E \rightarrow b + d$

$F \rightarrow c + d$

$\therefore$ $a + d = 55 \Rightarrow a \geq 28$ and $d \leq 27$ … (i)

$a + c = 53 \Rightarrow a \geq 27$ and $c \leq 26$ … (ii)

$c + d = 44 \Rightarrow c \geq 23$ and $d \leq 21$ … (iii)

Using (ii) and (iii), we get $23 \leq c \leq 26$.

$\Rightarrow$ $c = \underbrace{23, 24, 25, 26}_{\text{any value}}$ … (iv)

So, keeping above all the 4 points, we can conclude following possibilities:

Table (I):

| | a | b | c | d |
|---|---|---|---|---|
| Case 1: | 30 | 25 | 23 | 21 |
| Case 2: | 29 | 26 | 24 | 20 |
| Case 3: | 28 | 27 | 25 | 19 |

Can't take c = 26 as a > b

Following table gives you the possible values which were submitted by Alena to the teacher:

Table (II):

| CASES | Sum of number of chocolates taken two at a time | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| I | 55 | 53 | 51 | 48 | 46 | 44 |
| II | 55 | 53 | 50 | 49 | 46 | 44 |
| III | 55 | 53 | 52 | 47 | 46 | 44 |

21.3 Case III has 47 as one of the values.
$\therefore$ From table I, one of the students has 25 chocolates.

22.1 As per table II, required sum is 46 + 44 = 90.

23. This happens in case I of table II, where C = 30 + 21 = 51
$\therefore$ D = 48.

24. As can be seen from table I, c = 25 is the maximum possible.

**For questions 25 to 28:**

From the table given in the question, we can say that the ratio of the total number of given connections by all the companies is as following:

Airtel : Aircel : BSNL: Vodafone : Reliance communications: Reliance Jio : Idea = 105 : 55 : 70 : 88 : 40 : 220 : 50

Hence, total connections given by Aircel

$$= \frac{105}{105+55+70+88+40+220+50} \times 628000 = 1,05,000$$

Similarly, we can find the number of connections given by all the companies. The same is tabulated below:

| Company | No. of connections given |
|---|---|
| Airtel | 105000 |
| Aircel | 55000 |
| BSNL | 70000 |
| Vodafone | 88000 |
| Reliance communications | 40000 |
| Reliance Jio | 220000 |
| Idea | 50000 |

From the bar graph,

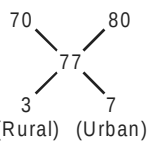
Percentage of postpaid connections given by Airtel = 23%

Percentage of prepaid connections given by Airtel = 100 – 23 = 77%

Percentage of prepaid connections given in rural areas by Airtel = 70%.

Percentage of prepaid connections given in urban areas by Airtel = 80%

By using alligation, we get




Therefore, for Airtel:

$$C_R = \frac{3}{3+7} \times 105000 = 31,500$$

$$C_U = \frac{7}{3+7} \times 105000 = 73,500$$

Similarly, we can find $C_R$ and $C_U$ for all the companies, when $C_R$ is known, then we can find $(Prep)_R$ also.

$(Prep)_R$ for Airtel $= 31500 \times \frac{7}{100} = 22050$

$(Post)_R$ for Airtel = 31500 – 22050 = 9450

Similarly, $(Prep)_U$ for Airtel $= 73,500 \times \frac{80}{100} = 58800$

$(Post)_U$ for Airtel = 73500 – 58800 = 14700

The following table shows $(Prep)_R$, $(Prep)_U$, $(Post)_R$ and $(Post)_U$ values for the given companies:

| Company | $(Prep)_R$ | $(PreP)_U$ | $(Post)_R$ | $(Post)_U$ |
|---|---|---|---|---|
| Airtel | 22050 | 58800 | 9450 | 14700 |
| Aircel | 9900 | 18150 | 14850 | 12100 |
| BSNL | 18900 | 15400 | 23100 | 12600 |
| Voda fone | 33880 | 31680 | 14520 | 7920 |
| Reliance Communication | 18000 | 12800 | 6000 | 3200 |
| Reliance Jio | 78650 | 84150 | 42350 | 14850 |
| Idea | 12000 | 19500 | 8000 | 10500 |

25. 2 Total number of Postpaid connections given in rural area = 1,18,270
Total number of Postpaid connections given in urban area = 75,870
Therefore, the required percentage

$$= \frac{118270 - 75870}{75870} \times 100 \approx 55.88\%$$

26. 3 Required number = 12600 + 7920 + 10500 + 15400 + 31680 + 19500 = 97,600.

27. 2 Clearly, the required company is Aircel.

28. 3 Required number = 10500 – 8000 = 2500.

**For questions 29 to 32:**
From the given information, we can see that the total number of cars sold was 24. From (iii), we can say that, since D sold eight cars and both of them sold at least four cars each , so, the only combination possible is (4, 5, 7 and 8). Similarly, the number of cars of each type is a distinct number and there are a minimum of four cars of each type. In addition, from (iii), since, there are seven cars of type S, we can say that this combination is also (4, 5, 7 and 8). From (iv), B and D sold equal number of cars of type R and From (v), A and C did not sell any R, so, there can be either four or eight cars of type R were sold. From (vi) and the above information, we get the following cases:

Case (a):

| | P | Q | R | S | |
|---|---|---|---|---|---|
| A | | | 0 | | 4 |
| B | | | 2 | | |
| C | | 3 | 0 | 2 | |
| D | | | 2 | | 8 |
| | | | 4 | 7 | 24 |

Case (b):

| | P | Q | R | S | |
|---|---|---|---|---|---|
| A | | | 0 | | 4 |
| B | 1 | 1 | 4 | 1 | 7 |
| C | 0 | 3 | 0 | 2 | 5 |
| D | | | 4 | | 8 |
| | 4 | 5 | 8 | 7 | 24 |

From (vii), A sold the minimum cars of type P. Hence, case (ii), can be eliminated. In case (i), C sold seven cars as C cannot sell zero cars of type P (from (vii)). Hence we get the following sub-cases:
Case (a1):

| | P | Q | R | S | |
|---|---|---|---|---|---|
| A | 0 | 3 | 0 | 1 | 4 |
| B | 1 | 1 | 2 | 1 | 5 |
| C | 2 | 3 | 0 | 2 | 7 |
| D | 2 | 1 | 2 | 3 | 8 |
| | 5 | 8 | 4 | 7 | 24 |

Case (a2):

| | P | Q | R | S | |
|---|---|---|---|---|---|
| A | 0 | 1 | 0 | 3 | 4 |
| B | 1 | 1 | 2 | 1 | 5 |
| C | 2 | 3 | 0 | 2 | 7 |
| D | 2 | 3 | 2 | 1 | 8 |
| | 5 | 8 | 4 | 7 | 24 |

Case (a3):

| | P | Q | R | S | |
|---|---|---|---|---|---|
| A | 0 | 2 | 0 | 2 | 4 |
| B | 1 | 1 | 2 | 1 | 5 |
| C | 2 | 3 | 0 | 2 | 7 |
| D | 2 | 2 | 2 | 2 | 8 |
| | 5 | 8 | 4 | 7 | 24 |

29. 4 D sold either one or two or three cars of type Q.

30. 1 B sold five cars.

31. 4 If D sold only one car of type S, then A sold three cars of type S.

32. 2 Five cars of type P were sold in total.