CHAPTER 6

Caselet

SOLVED EXAMPLES

Directions for examples 1 to 4: Answer the questions on the basis of the information given below.

Mr. Mathew teaches students of ten different classes – A through J. The number of students in the given classes is 1 through 10 respectively. No two classes have a common student. In a particular week, he did not teach the students of exactly two out of the ten classes. In the given week, he taught students of each of the remaining eight classes on exactly three different days. He did not teach the students of any class on Sunday, and on each of the remaining six days of the week, he taught the students of exactly four different classes. The number of students taught by him on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday was 18, 12, 23, 19, 32 and 25 respectively. It is also known that, in the given week, no student was absent in his/her respective class.

1. Students of which of the following classes were not taught by him in the given week?
(1) E and D (2) G and D (3) I and H (4) D and H

2. Students of which of the following classes were not taught by him on Friday of the week?
(1) F (2) I (3) G (4) None of these

3. On Saturday of the week, if Mr. Mathew did not teach students of class J but taught students of class C, then students of which of the following classes were not taught by him on two consecutive days of the week?
(1) C (2) E (3) A (4) G

4. On Saturday of the week, if Mr. Mathew did not teach students of class J but taught students of class C, then students of class F were taught on
(1) Tuesday, Friday and Saturday (2) Tuesday, Thursday and Friday
(3) Tuesday, Wednesday and Saturday (4) None of these

For examples 1 to 4:

Had Mr. Mathew taught each of the given ten classes on exactly three different days of the week, he would have taught a total of $(1 + 2 + 3 + \ldots + 9 + 10) \times 3 = 165$ students.

Total number of students taught by Mr. Mathew on the six days of the week = 18 + 12 + 23 + 19 + 32 + 25 = 129

Therefore, the total number of students in the two classes that were not taught by him = $\left(\frac{165 - 129}{3}\right) = 12$

So, the possible pairs of the two classes that were not taught by him could be (B and J), (C and I), (D and H) or (E and G).

On Tuesday the total number of students taught by him was 12.

This is possible in two cases:

Case I: He taught the classes A, B, C and F

Case II: He taught the classes A, B, D and E

From the two cases stated above, we can definitely conclude that he taught the classes A and B.

On Friday, the total number of students taught by him was 32.

This is possible in two cases:

Case III: He taught the classes E, H, I and J.

Case IV: He taught the classes F, G, I and J.

From the two cases stated above, we can definitely conclude that he taught the classes I and J and also, he taught either class E or G.

Therefore, the two classes that Mr. Mathew did not teach were D and H.

1. 4

2. 4 The classes taught by him on Friday were F, G, I and J. Hence, option (4) is the correct choice.

3. 1 It is given that on Saturday of the week Mr. Mathew did not teach class J but taught class C.

Since he did not teach class J on Saturday, he definitely taught class I on Saturday as on Saturday Mr. Mathew taught 25 students and only possible combination was (C, F, G, I).

Hence, he definitely taught class E on each of the three days namely Monday, Wednesday and Thursday as he did not teach class E on Friday, Saturday and Tuesday.

The possible combinations of the classes taught by him on Thursday is (E, I, C and B) or (E, A, C and J).

Therefore, he definitely taught the class C on Thursday.

The only possible combination of the classes taught by him on Monday was (A, B, E and J)

The final table is given below:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
A, B, E and J	A, B, C and F	(E, G, J and A) or (E, G, I and B)	(E, C, A and J) or (E, C, I and B)	F, G, I and J	C, I, F and G

Class C is not taught by him on two consecutive days of the week 'W'.

4. 1 By referring to the table given in the pervious question, it can be calculated that the required days were Tuesday, Friday and Saturday.

Directions for examples 5 to 7: Answer the questions based on the following information.

Four students — Rahul, Rohit, Pooja and Neha – took an exam consisting of four questions, with four options each. In the exam, each of them attempted all the questions and answered at least one question correctly, and no two of them answered the same number of questions correctly. The table given below shows the responses of the four students for the questions in the exam.

Question / Name	1	2	3	4
Rahul	a	d	b	a
Rohit	b	c	b	b
Pooja	a	c	d	d
Neha	a	c	d	a

5. Who answered exactly two questions correctly?

(1) Rahul (2) Rohit (3) Pooja (4) Neha

6. What was the correct option for the 4th question?

(1) a (2) b (3) c (4) d

7. If the marks assigned to 1st, 2nd, 3rd and 4th questions were 1, 2, 3 and 4 respectively and there was no negative marking for a wrong answer, then who scored the second highest marks?

(1) Rahul (2) Rohit (3) Pooja (4) Neha

For examples 5 to 7:

Assume Rahul attempted all the questions correctly. No two students answer the same number of questions correctly. On checking, we find that the condition given in the previous statement does not hold. Hence, Rahul did not answer all the question correctly.

On proceeding in the similar manner, we find that Neha answered all the questions correctly.

The number of questions answered correctly by:

Rahul = 2

Pooja = 3

Rohit = 1

The correct option for the 1st, 2nd, 3rd and 4th questions were 'a', 'c', 'd' and 'a' respectively.

5. 1 Rahul answered two questions correctly.

6. 1 The correct option for the 4th question was 'a'.

7. 3 According to the given marking scheme, the marks scored by:

Rahul = 5

Rohit = 2

Pooja = 6

Neha = 10

Directions for examples 8 to 11: Answer the questions on the basis of the information given below.

Six students – John, Steve, Hans, Brown, Peter and Eddy – took an exam, with the maximum marks as 100. Each student scored a different marks and none of them scored zero marks. It is also known that:

I. The marks scored by each student, except Brown, was the squares of a natural number.
II. The marks scored by John was equal to the sum of the marks scored by two other students in the group.
III. The marks scored by Brown, Peter and Eddy were the cubes of natural numbers.
IV. The product of the marks scored by John and Peter was an odd natural number.
V. The absolute difference between the marks scored by Eddy and Steve was equal to the marks scored by one of the students, except these two, in the group.

8. The marks scored by John was equal to the sum of the marks scored by
(1) Brown and Hans (2) Steve and Eddy (3) Brown and Peter (4) Eddy and Hans

9. The ratio of the marks scored by two students in the group was 1 : 4. Who out of the two scored the lesser marks?
(1) Peter (2) John (3) Hans (4) Eddy

10. Who scored the lowest marks?
(1) Steve (2) Brown (3) Hans (4) Peter

11. What was the sum of the marks scored by Hans and Brown?
(1) 37 (2) 72 (3) 65 (4) 44

For examples 8 to 11:

Let the respective initial letters namely J, S, H, B, P and E of the boys denote the marks scored by them.

From III, B, P and E are cubes of integers. From III and I, P and E are the squares of integers as well as cubes of integers.

Now none of the scores is zero and the cubes of integers in the range 1 to 100 are 1, 8, 27, 64. Out of these, 1 and 64 are squares of integers too. So P and E are 1 and 64, not necessarily in the same order.

From IV, J × P is an odd number. Hence, both J and P have to be odd natural numbers. This implies that P cannot be 64. So P is 1 and E is 64. Therefore, B = 8 or 27.

Now, from V, 64 – S or S – 64 is equal to either J, H, B or P. From I, the possible values of S are 4, 9, 16, 25, 36, 49, 81 and 100. The respective differences between these numbers and 64 are 60, 55, 48, 39, 28, 15, 17 and 36; out of these, except 36, none is either the cube or the square of an integer. This difference has to be 36 and hence S = 100. Since P cannot be 36 as it is 1, B cannot be 36 as it is either 8 or 27 and J cannot be 36 as it is an odd natural number, H is 36.

From II, J is either 9, 25, 49, 81. Out of these only 9 (i.e., 8 + 1) is possible sum of the marks obtain by the two other boys. Hence, J = 9 and B = 8.

So, P = 1, E = 64, S = 100, B = 8, H = 36, J = 9

8. 3
9. 2
10. 4
11. 4

Directions for examples 12 to 15: Answer the questions on the basis of the information given below.

Five boys — A, B, C, D and E — went on a shopping trip. Before shopping, three of the five boys had different amounts from among Rs. 100, Rs. 300 and Rs. 400, and the remaining two of them had the same amount which was Rs. 200. While shopping, they did not lend or borrow from each other. After the shopping, it was found that each of them was left with a different amount from among Rs. 165, Rs. 95, Rs. 70, Rs. 40 and Rs. 10, not necessarily in the same order. It is also known that:

I. A started with more money than what D started with.
II. B spent Rs. 15 more than what C spent.
III. E, who spent Rs. 35, started with more money than exactly one person in the group.
IV. C started with 66.67% of the money what B started with.
V. D was left with more money than what A was left with.

12. How much money did A spend?
(1) Rs. 205 (2) Rs. 190 (3) Rs. 35 (4) Rs. 360

13. What was the position of E in ascending order of spending?
(1) 1 (2) 2 (3) 4 (4) 5

14. Who was left with Rs. 40?

(1) A (2) B (3) C (4) D

15. What was the absolute difference between the amounts spent by B and D?

(1) Rs. 160 (2) Rs. 185 (3) Rs. 180 (4) None of these

For examples 12 to 15:

Since C started with 66.67% of the money that B started with, the ratio of amounts of C and B must have been in the ratio 2 : 3 and thus C started with Rs. 200 and B with Rs. 300. Since E started with money more than just one person, E must have started with Rs. 200. Since A has more money than D, A must have started with Rs. 400 and D with Rs. 100.

B and C started with Rs. 300 and Rs. 200 respectively, and B spent Rs. 15 more than C. Hence, the difference between the amounts left with B and C should have been Rs. 85. Out of the remaining amounts, only Rs. 95 and Rs. 10 satisfy this condition. Hence, B ended with Rs. 95 and C with Rs. 10. Since E spent Rs. 35, he ended with Rs. 165. Between A and D, D ended with more than A, and hence, D ended with Rs. 70 and A with Rs. 40.

The final table is given below:

Name	Started with	Ended with	Spent
A	400	40	360
B	300	95	205
C	200	10	190
D	100	70	30
E	200	165	35

12. 4

13. 2

14. 1

15. 4

Directions for examples 16 to 18: Answer the questions on the basis of the information given below.

In each of the five consecutive years – Year 1 through Year 5 – the sports department of a school organized a game in which exactly five students participated every year. Every year, at the end of the game, the five participants were given five different ranks – 1 through 5. The number of points awarded to the participants ranked 1, 2 and 3 were 5, 3 and 1 respectively. No points were awarded to the participants ranked 4 and 5.

A total of 9 different players participated in the game over the span of five years. The following table shows the total number of points garnered by each of the nine players.

Name of the Student	Points
Aman	5
Aabhas	5
Naveen	8
Urmi	2
Sameer	5
Rashmi	6
Sanjay	4
Kanika	10
Prashant	0

In Year 1, Aman, Aabhas, Naveen, Urmi and Sameer participated in the game. In Year 2, Rashmi replaced Aman; in Year 3, Sanjay replaced Aabhas; in Year 4, Kanika replaced Naveen; in Year 5, Prashant replaced Urmi. Once a player was replaced by another player, he/she did not participate in the game in the subsequent years. It is also known that Kanika was the only participant who was awarded points in two consecutive years.

16. If Sameer was given rank 3 in Year 3, then who was given Rank 2 in Year 3?

(1) Naveen (2) Rashmi (3) Sanjay (4) Either (1) or (2)

17. At the end of the game in Year 4, the total number of points awarded to how many participants, out of those who had participated in the game at least once, was lesser than the total number of points awarded to Rashmi?

(1) 7 (2) 8 (3) 5 (4) 6

18. In Year 5, what was the ratio of the number of points awarded to Sanjay to that of Sameer?

(1) 1 : 3 (2) 3 : 1 (3) 1 : 5 (4) Cannot be determined

For examples 16 to 18:

Since, Aman participated only in Year 1 and was awarded a total of 5 points, so we conclude that Aman was given Rank 1 in Year 1.

Aabhas participated only in Year 1 and Year 2 and was awarded a total of 5 points. This possible only if he was awarded either Rank 4 or Rank 5 in Year 1 and Rank 1 in Year 2.

Naveen participated in each of the three years viz. Year 1, Year 2 and Year 3 and was awarded a total of 8 points. This is possible only if he was awarded Rank 1 in Year 3 and Rank 2 in either of the two years Year 1 and Year 2.

Kanika played only in Year 4 and Year 5 and was awarded a total of 10 points and this is possible only if she was awarded Rank 1 in Year 4 as well as Year 5.

Further, the following conclusions can be drawn

Similarly, Sanjay was awarded 1 point in one of the years and 3 points in one of the years

Also, Sameer was awarded 1 point in two of the years and 3 points in one of the years.

Rashmi was awarded 3 points in two of the years.

Urmi was awarded 1 point in two of the years.

Sanjay was awarded points only in Year 3 and Year 5 because it is given that Kanika is the only participant who was awarded points in two consecutive years.

By the same logic, Sameer was awarded points only in Year 1, Year 3 and Year 5.

Therefore, Rashmi was awarded points only in Year 2 and Year 4.

Also, Naveen was awarded points only in Year 1 and Urmi was awarded points in Year 2 and Year 4.

Now, the possible ranks awarded to each of the given participants are listed in the table given below.

	Rank 1	**Rank 2**	**Rank 3**
Year 1	Aman	Naveen	Sameer
Year 2	Aabhas	Rashmi	Urmi
Year 3	Naveen	Sanjay/Sameer	Sanjay/Sameer
Year 4	Kanika	Rashmi	Urmi
Year 5	Kanika	Sanjay/Sameer	Sanjay/Sameer

16. 3 From the table given above we can easily conclude that if Sanjay was awarded Rank 3 in Year 3, then Sanjay was awarded Rank 2, in Year 3.

17. 4 At the end of the game in Year 4, every participant except Naveen has been awarded lesser number of points than Rashmi and Prashant did not participated till then.

So, there are a total of 6 participants were awarded lesser points than Rashmi at the end of the game in Year 4.

18. 4 From the table given above, the ratio of the number of points awarded to Sanjay and Sameer could be either 1 : 3 or 3 : 1.

Hence, option (4) is the correct choice.

PRACTICE EXERCISE – 1

Directions for questions 1 to 4: Answer the questions on the basis of the information given below.

Five friends – Chris, Matthew, Shane, Graham and Greame – bought 10 cookies and distributed them among themselves such that each of them received a different number of cookies, and one of them did not get any cookie. Each of them also likes biscuits of a different brand from among Hide & Seek, Bon-Bon, Maska & Chaska, Krackjack and Good day, and a different TV show from among Sportscenter, Raw, Wrestlemania, Smackdown and Hitz. Sportscenter and Hitz are sports shows and the others are wrestling shows. No two persons like the same brand of biscuits, and the same holds true for the TV shows. Following information is also given:

I. Shane, who didn't receive any cookies, does not like a wrestling show.

II. Chris, who received more cookies than Matthew, likes Maska & Chaska.

III. The absolute difference between the number of cookies received by Shane and Chris was equal to the absolute difference between the number of cookies received by Matthew and Graham.

IV. Greame did not receive the maximum number of cookies.

V. Matthew and Shane like TV shows starting with the same letter.

VI. The person who received the maximum number of cookies likes Krackjack and a wrestling show.

VII. The persons whose names start with the same letter like TV shows of the same genre.

VIII. Greame and Shane do not like Bon-Bon and Hide & seek respectively.

1. Which of the following pairs of TV show and biscuit cannot be liked by the same person?

(1) Hitz – Maska Chaska (2) Smackdown – Good Day

(3) Raw – Bon-Bon (4) Smackdown – Bon-Bon

2. Who received the maximum number of cookies?

(1) Matthew (2) Greame (3) Graham (4) Chris

3. The show liked by Chris is

(1) Sportscenter (2) Raw (3) Hitz (4) Wrestlemania

4. What is the sum of the number of cookies received by Greame and Chris?

(1) 5 (2) 7 (3) 6 (4) 3

Directions for questions 5 to 7: Answer the questions on the basis of the information given below.

In a group of five persons – Alex, Ben, Cedric, Paul and Smith – no two persons are of the same weight. Alex is heavier than Ben, who is heavier than Cedric. Paul is heavier than Smith.

5. Which of the following is not possible?

(1) Ben is the third in descending order of weights.

(2) Alex is not the heaviest and Cedric is the lightest.

(3) Paul is heavier than Ben, and Smith is lighter than Cedric.

(4) Alex is not the heaviest, and Cedric is the third in ascending order of weights.

6. Which of the following is possible?

(1) Paul is lighter than Ben and Smith is heavier than Cedric.

(2) Smith is the heaviest.

(3) Alex is not the heaviest, and Paul is lighter than Ben.

(4) Cedric is heavier than Paul, and Smith is heavier than Ben.

7. The number of persons who are heavier than Ben cannot be more than

(1) 4 (2) 3 (3) 2 (4) None of these

Directions for questions 8 to 11: Answer the questions on the basis of the information given below.

In a wildlife survey, it was found that each of the seven jungles - A, B, C, D, E, F and G - had a dominant animal from among Zakura, Fatura, Zathura and Tandura. Each of these jungles had either 2 or 3 animals out of the given ones. It is also known that:

i. No two jungles, out of the seven, had the same set of animals.

ii. The number of jungles in which Zathura, Zakura and Fatura were present was the same. Each of these three animals was dominant from exactly 2 jungles.

iii. In all those jungles in which there were exactly two animals and Zathura was one of them, Zathura was the dominant animal.

iv. Zakura, which was not present in D, was the dominant animal of G.

v. Tandura, which was not present in G, was the dominant animal of E. Zathura was not present in E.

vi. Fatura, which was present in F along with Zakura and Zathura, was the dominant animal of F.

vii. The number of jungles in which 3 animals were present was one more than that of those in which 2 animals were present.

viii. No two jungles out of A, B and D had the same dominant animal. The number of animals in each of B and C was 2 and that in E was 3.

ix. Fatura was not present in A.

8. Which of the following statements is definitely true?

(1) Zakura was the dominant animal of A. (2) Zathura was the dominant animal of B.

(3) Zathura was the dominant animal of D. (4) More than one of the above.

9. For how many jungles, could the names of animals present in them be determined uniquely?

(1) 5 (2) 4 (3) 3 (4) 7

10. Which of the following animals was present in C but was not the dominant animal of it?

(1) Fatura (2) Zakura (3) Both (a) and (b) (4) Cannot be determined

11. The number of jungles in which Tandura was present was

(1) 3 (2) 4 (3) 5 (4) 2

Directions for questions 12 to 14: Answer the questions on the basis of the information given below.

Seth Dhanpat Ram distributed 100 notes among 7 persons namely Lalu, Malu, Salu, Dalu, Kalu, Falu and Galu, such that except Galu, everyone received the same number of notes. Galu got 5 notes less than the others.

Then these persons exchanged notes as follows :

i. Lalu took 5 notes from Kalu.

ii. Dalu received notes from two of her friends.

iii. Malu gave 3 notes to Dalu and received one note from Galu.

iv. Two of them did not give any note and three of the others did not receive any note.

v. Falu was involved in only one transaction and received two notes.

vi. Lalu had 20 notes and Dalu and Falu had equal number of notes at the end of all the transactions.

vii. There were five transactions in all.

12. At the end of the fifth transaction, who had the least number of notes?

(1) Salu (2) Galu (3) Kalu (4) Salu and Kalu

13. At the end of the fifth transaction, what was the difference in the number of notes held by the person who had the maximum number of notes and the number of notes held by the person with the least number of notes?

(1) 11 (2) 12 (3) 9 (4) 8

14. Who had fewer notes than Malu?

(1) Kalu and Galu (2) Dalu and Falu

(3) Dalu, Falu and Galu (4) Salu and Dalu

Directions for questions 15 to 18: Answer the questions on the basis of the information given below.

Twelve professionals – P, Q, R, S, T, U, V, W, X, Y, Z and F – who belong to a company named PCL India Limited – attended the 'Annual Business Review Meet 2014' at Nainital. Among the twelve professionals, P, Q, R, S, T and V were Directors, and F, U, W, X, Y and Z were Senior Executives. During the meet, they stayed in two different resorts, with six members in each, facing each other, with a room in one resort facing exactly one room in the other resort. The table given below shows the information about the room numbers in the two resorts in which the twelve professionals stayed. In the table, the room numbers in same column face each other. For example, room number 18 in Riverside faces room number 32 in Jungleview.

Resorts	**Room numbers**					
Riverside	20	19	18	17	16	15
Jungleview	30	31	32	33	34	35

The following are some additional information:

I. S stayed in a room the room number of which was half the room number of the room in which P stayed.

II. U, who stayed in the same resort as that of Y, stayed in a room the room number of which had exactly 2 factors.

III. Exactly four directors stayed in Jungleview, and no two directors, except P and Q, stayed in adjacent rooms.

IV. V, who stayed in the same resort in which T stayed, stayed in a room the room number of which had the maximum number of factors.

V. T and R, who did not stay in the same resort, stayed in the corner rooms. X stayed at Riverside.

VI. W did not stay in a room that was adjacent to that of any of the directors.

15. If Y stayed in Riverside, in how many different ways could they have stayed?

(1) 6 (2) 8 (3) 12 (4) 24

16. For a quiz, the 12 professional were divided into 4 groups, with 3 members each, such that each group, all of its members staying in the same resort, comprised at least one Director and at least one Senior Executive, who among the following could not be a part of the group that included T in it?

(1) V (2) U (3) P (4) R

17. Which of the following is definitely false?

(1) Y occupied room number 19. (2) Z occupied room number 34.

(3) W's room was opposite to T's room. (4) U was in room number 17.

18. If the number of professionals each of whom stayed in a room adjacent to the room of a Director on one side and a Senior Executive on the otherside was X, find the value of (12 – X).

(1) 6 (2) 7 (3) 8 (4) 9

Directions for questions 19 to 21: Answer the questions on the basis of the information given below.

In the following grid, letters A, B, C and D represent four natural numbers less than 50, with A being the greatest. Each of these letters is a multiple 5. It also known that the sum of the letters in the cells along the two diagonals in the grid is 80.

A	B	C	D
B	C	D	A
C	D	A	B
D	A	B	C

19. What is the value of (A + C + D)?

(1) 35 (2) 40 (3) 30 (4) Either (1) or (3)

20. Which of the following is a possible value of A?

(1) 35 (2) 20 (3) 30 (4) None of these

21. What is the minimum possible value of 'B' for which (A + B + C + D) is a multiple of 4?

(1) 10 (2) 20 (3) 15 (4) 5

Directions for questions 22 to 25: Answer the questions on the basis of the information given below.

Sixteen consecutive natural numbers are to be filled into a 4 × 4 square matrix shown below, such that there is one number in a cell. Four of these 16 numbers are already shown in the matrix. The remaining 12 numbers are denoted by 12 letters – A through L. The numbers are filled in such a way that the sum of the numbers in the cells in each row, each column and each diagonal of the matrix is the same. It is also known that D + E + I = 66.

15	A	B	18
C	D	E	F
G	H	I	J
27	K	L	30

22. How many numbers used for filling the matrix are numerically greater than the number denoted by C?

(1) 4 (2) 5 (3) 6 (4) Cannot be determined

23. Find the numerical value of (A + I) – (B + H).

(1) 2 (2) 1 (3) 0 (4) 3

24. If we were to construct another 4 × 4 square matrix containing 16 consecutive natural numbers having the same properties as the given matrix, then which of the following could be a possible value of the sum of the numbers in the cells of any row of this matrix?

(1) 116 (2) 144 (3) 168 (4) 170

25. What is the value of C?

(1) 22 (2) 26 (3) 25 (4) 23

Directions for questions 26 to 29: Answer the questions based on the information given below:

Four families, each of which comprises a man, his wife and their pet dog, stay in 'HINDUSTAN' colony. Further information regarding them is given below:

- The four men are Peter, Qureshi, Ramanpreet and Shyam.
- The four wives are Radha, Pamela, Jaspinder and Ameena.
- The four pets are Boxer, Jacky, Tommy and Zorro.
- Peter's pet dog is Boxer and Qureshi's pet dog is not Jacky.
- Shyam's wife is not Jaspinder.
- Pamela's pet dog is neither Boxer nor Jacky.
- Tommy is the pet dog of Ameena, whose husband is either Peter or Ramanpreet.

26. Who is the husband of Radha?

(1) Peter (2) Qureshi (3) Ramanpreet (4) Shyam

27. Boxer is the pet dog of

(1) Radha (2) Pamela (3) Jaspinder (4) Ameena

28. Pet dog of Qureshi is

(1) Zorro (2) Tommy (3) Jacky (4) Either (1) or (2)

29. How many of the following are correct combinations of man – wife – pet dog?

i. Shyam – Radha – Tommy
ii. Peter – Ameena – Boxer
iii. Qureshi – Pamela – Zorro
iv. Ramanpreet – Jaspinder – Jacky

(1) None (2) 1 (3) 2 (4) More than 2

Directions for questions 30 to 32: Answer the questions on the basis of the information given below.

Six different birds – X_1 , X_2, X_3, X_4, X_5 and X_6 – are put into three cages, with two birds in each. X_1 and $X_{2\backslash}$ are not kept in the same cage; the same holds true for pairs X_2 and X_3, X_3 and X_4, X_4 and X_5, X_5 and X_6.

30. Which of the following can be put with X_1 in one of the cages so that the pairs in the remaining two cages can not be determined uniquely?

(1) X_3 (2) X_4 (3) X_5 (4) X_6

31. If a pair of birds kept in the same cage is known, what is the probability that the other two pairs of birds kept in the remaining two cages can be determined uniquely?

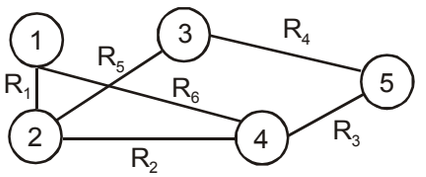
(1) $\frac{2}{5}$ (2) $\frac{1}{2}$ (3) $\frac{5}{11}$ (4) $\frac{3}{5}$

32. If birds kept in one of the cages are X_2 and X_4, then which of the following pairs of birds are not kept in the same cage?

(1) X_1, X_5 (2) X_3, X_5 (3) X_1, X_6 (4) X_1, X_3

Directions for questions 33 to 35: Answer the questions on the basis of the information given below.

The following diagram, comprising six roads namely R_1, R_2, R_3, R_4, R_5 and R_6, shows the route-network of five inter-connecting cities. It is also known that traffic can flow in either direction along each of the six roads. During a journey, a person travels along each road only once.



33. If a person starts from a city and wants to travel along each of the six roads, which of the following statements is necessarily true?

(1) There is no such route.

(2) She starts from from city 2 or ends at it.

(3) She ends at city 1.

(4) She definitely starts from city 5.

34. If a person starts from a city and wants to travel along each of the six roads, the number of differents routes that she can take is

(1) 4 (2) 6 (3) 8 (4) 12

35. If a person starts from a city and wants to travel along each of the six roads and she ends up in her starting city, the number of differents routes that she can take is

(1) 0 (2) 3 (3) 6 (4) 2

Directions for questions 36 to 38: Answer the questions on the basis of the information given below.

Table given below shows the month and year of birth of twelve children. Each child belongs to exactly one family from among Dahiya's, Ahuja's, Khanna's, Shrivas' and Bajpayee's. Each of the five familiees has at least two children and at most three children. The total number children with the five families is 12.

Child's age is counted in terms of number of years and months only. For example Aditya's age in May 2002 was 6 years and 2 months, irrespective of his date of birth.

Name	Month and year of Birth	
Afsana	February	**1991**
Sukrit	December	**1991**
Salim	September	**1992**
Akash	April	**1993**
Samaksh	July	**1994**
Anirudh	October	**1994**
Anjan	May	**1995**
Aditya	March	**1996**
Ansar	May	**1998**
Siddharth	October	**1998**
Sandy	June	**1999**
Sami	January	**2000**

36. If average age of children of Dahiya family in January 2001 was 6 years and 1 month, then how many of the following could belong to Dahiya family?

I. Ansar
II. Afsana
III. Anjan
IV. Samaksh
V. Siddharth

(1) 5 (2) 2 (3) 3 (4) 4

37. If with the birth of second child in Khanna family, the average age of children of Khanna family became equal to the average age of children of Ahuja family, who was the first child of Khanna family?

(1) Either Anjan or Anirudh
(2) Either Samaksh or Anjan
(3) Either Salim or Samaksh
(4) Either Salim or Aditya

38. At some instance, average age of three children of Bajpayee family was integer number of years. If names of all the children of Bajpayee family starts with the same letter, which of the following could be children of Bajpayee family?

(1) Sandy, Siddharth, Salim
(2) Akash, Anjan, Ansar
(3) Ansar, Afsana, Aditya
(4) Afsana, Ansar, Anjan

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

Ashok, Amit, Ajay, Akansh and Abhishek are five friends who live in five different cities namely Kunnamangalam, Joka, Vastrapur, Banerghatta and Prabandhnagar, not necessarily in that order. Their annual salaries (in INR) are 7,00,000, 8,00,000, 9,00,000, 11,00,000 and 13,00,000, in no particular order. Further, the following information is given:

(i) Akansh, who does not live in Banerghatta, earns a salary that is a prime number multiple of 100000.

(ii) The person who lives in Prabandhnagar is not the one whose salary is the minimum amongst the five friends.

(iii) The absolute difference between the salaries of Akansh and Ajay is the same as the absolute difference between the salaries of Ashok and Abhishek.

(iv) The salary of the person who lives in Prabandhnagar is a perfect square multiple of 1,00,000.

(v) Ajay's salary (in INR) is 1,00,000 INR more than the average salary of Akansh and Ashok.

(vi) Amit lives in the city that has the shortest name amongst the given cities.

39. If Akansh lives in Vastrapur, then what is the average salary of the persons who live in Banerghatta and Kunnamangalam?

(1) Rs. 9 lakh (2) Rs. 10 lakh (3) Rs. 12 lakh (4) Data Insufficient

40. Who lives in Prabandhnagar?

(1) Ashok (2) Amit (3) Abhishek (4) Ajay

41. If Amit and Ajay live in cities with names starting with consecutive letters, who lives in Vastrapur?

(1) Akansh (2) Amit (3) Abhishek (4) Ajay

42. If the salary of the person who lives in Banerghatta is neither maximum nor minimum, then what is the average salary of the persons who live in Kunnamanglam and Vastrapur?

(1) Rs.10.5 lakhs (2) Rs. 10 lakhs (3) Rs. 12 lakh (4) Cannot be determined

Directions for questions 43 to 45: Answer the questions on the basis of the information given below.

There are four married couples. A, B, C and D are the male members, and E, F, G and H are female members making the four couples. Each couple celebrates its marriage anniversary on a different date from among 7th, 12th, 14th and 24th, falling in different months out of March, May, October and December. Further, the following information is given:

(i) E celebrates her marriage anniversary on a date the numerical value of which is twice the numerical value of the date on which H celebrates her marriage anniversary.

(ii) The sum of the numerical values of the date and the month number of the marriage anniversary of D, is equal to the numerical value of the date of the marriage anniversary of C.

(iii) A and E are maried to each other. Only for this couple, the sum of the numerical values of date and the month number of their marriage anniversary is a prime number.

(iv) A and D celebrate their marriage anniversaries in different months starting with the same letter.

43. If G's marriage anniversary falls on 24th December, which of the following combinations of a couple and the date on which they celebrate their marriage anniversary could be correct?

(1) D-F, 7th May

(2) C-F, 12th October

(3) C-G, 24th December

(4) D-H, 7th March

44. If the sum of the numerical values of the date and the month number of marriage anniversary of F is maximum but not a perfect square, who is the husband of F?

(1) B (2) C (3) D (4) Either B or C

45. If the sum of the numerical values of the date and the month number of marriage anniversary of F is maximum but not a perfect square, what is the date on which G celebrates her marriage anniversary?

(1) 7th May (2) 12th October (3) 12th December (4) Cannot be determined

Directions for questions 46 to 49: Answer the questions on the basis of the information given below:

A new program was introduced in Yum Bee Yay course of MII, where various CEOs and mentors from the Industry come as a visiting faculty in the 3rd trimester of the course. They are:

CEO Name	Companies
Narayan Murthy	Infosys
Andy Grove	Intel
Kiran Deshpande	MBT
S. G. Pitroda	WorldTel
Kishor Bayani	Pantaloons

These people have been invited to teach three batches: I, II and III.

- (Narayan Murthy and Andy Grove); (Andy Grove and Kiran Deshpande); (Kiran Deshpande and S. G. Pitroda); (S. G. Pitroda and Kishor Bayani); (Kishor Bayani and Narayan Murthy) are experts in five subjects: *Leading, Following and Team Dynamics (LFTD); Strategic Management (SM); Information Technology and Systems (ITS); Services Marketing (SMkt); and International Brand Marketing (IBM)* respectively.
- There are 5 sessions in a day where all the subjects are taught daily to each batch, one subject in each session.
- Each visiting faculty comes daily for one session of each batch. They necessarily teach only the subjects they are experts in.

The partial session plan is given below:

Timings	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
9:00 am - 11:00 am				ITS	Kishor Bayani	
11:00 am - 1:00 pm	Kiran Deshpande				Narayan Murthy	
2:00 pm - 4:00 pm			Andy Grove			ITS
4:00 pm - 6:00 pm	S.G.Pitroda			IBM		
6:30 pm - 8:30 pm		IBM				SM

46. In batch I, SM and ITS are taught respectively by
(1) Andy Grove and Kiran Deshpande
(2) Kiran Deshpande and S.G. Pitroda
(3) Andy Grove and S. G. Pitroda
(4) Cannot be determined

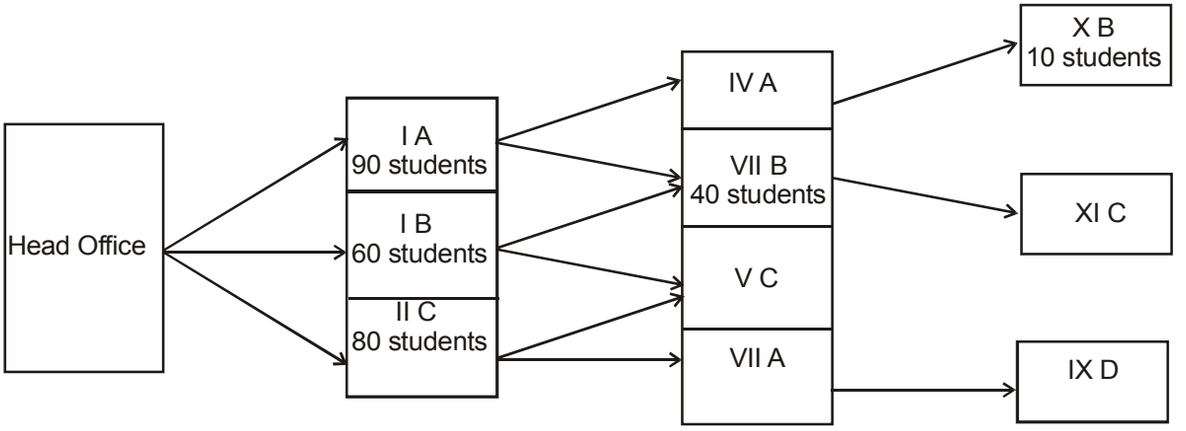
47. For batch III, IBM and SM are taught respectively by
(1) Narayan Murthy and Andy Grove
(2) Kishor Bayani and Andy Grove
(3) Narayan Murthy and Kiran Deshpande
(4) Kiran Deshpande and Kishor Bayani

48. Kishor Bayani and Narayan Murthy taught which subjects to batch I?
(1) SMkt and LFTD
(2) IBM and LFTD
(3) SMkt and IBM
(4) Cannot be determined

49. Who among the following takes the last two lectures of batch II?
(1) Narayan Murthy and Kishor Bayani
(2) Kishor Bayani and S. G. Pitroda
(3) Kiran Deshpande and Kishor Bayani
(4) Cannot be determined

Directions for questions 50 to 53 : Answer the questions on the basis of the information given below.

KAT examination was conducted in the Indus World School yesterday. The number of students who have appeared in the exam in each classroom is observed to be always a multiple of ten. Question papers are distributed from the Head-Office to all the classrooms. Number of students taking the exam in some classrooms is known. The following figure provides information about the route through which the question papers are distributed to each classroom.



Additional Information given:

(i) Question papers from one classroom to another classroom can be passed only when question paper is distributed to every student in the previous classroom.

(ii) There are 450 question papers in the Head-Office and 150 question papers are sent through each route originating from the Head-Office.

(iii) Each and every students gets exactly one question paper.

(iv) In the end all the question papers were distributed.

50. If the number of students in classroom XI C is not less than 50 then what could be the maximum number of question papers that can come to classroom V C?

(1) 80 (2) 90 (3) 100 (4) 110

51. If the number of students in classroom IX D is least possible, then a minimum of how many students are there in classroom IV A such that number of students in classrooms XI C and V C are equal and number of students in classroom VII A is 40?

(1) 10 (2) 20 (3) 30 (4) 40

52. If time taken (in seconds) to distribute the question papers in a classroom is equal to the number of students in the classroom, then find the maximum time in which the question papers will be distributed in V C? (Assume that the time taken to travel from one classroom to other or Head-office to a classroom is negligible)

(1) 110 sec (2) 140 sec (3) 120 sec (4) 130 sec

53. If number of students taking the exam in classroom VII A is 50 then find the maximum possible number of students in classroom IV A?

(1) 60 (2) 80 (3) 50 (4) 70

Directions for questions 54 to 56: Answer the questions on the basis of the information given below.

A psychiatrist analysed the results of a test conducted to assess three personality traits—Patience, Compassion and Honesty—on five of his patients—A, B, C, D, and E. He evaluated each of the personality traits on a scale of 1 to 5 (integers only). It is also known that:

(i) Scores of no two patients were same in any of the traits.

(ii) No patient was assigned the same score in all the three traits.

(iii) Only two patients were assigned the same score in two traits.

(iv) The score of A in Compassion was equal to that of C in Honesty which was 4.

(v) The score of E in Compassion was 1 more than his score in Patience, which, in turn, was 2 less than his score in Honesty.

(vi) Neither A's nor B's score in any of the traits was 5.

(vii) The score of D in Patience was equal to that of A in Compassion, and the score of C in Compassion was the same as that of A in Honesty.

54. The score assigned to A in Patience was

(1) 2 (2) 3 (3) 5 (4) Cannot be determined

55. For which of the following pairs of traits can we be sure that no patient had the same score?

(1) Patience and Compassion (2) Compassion and Honesty

(3) Patience and Honesty (4) None of these

56. How many patients scored less than or equal to A in each of the three traits?

(1) 0 (2) 2 (3) 1 (4) 3

Directions for questions 57 to 59: Answer the questions on the basis of the information given below.

Five movies – Oblivion, Magadheera, Pride and Prejudice, Bhaag Milkha Bhaag and Nkwocha – from five different film industries – Bollywood, Tollywood, Nollywood, Kollywood and Hollywood – were released on five different dates – 2nd, 9th, 16th, 23rd and 30th – in October, 2012, not necessarily in the same order. The Box Office Collections (BOC) of the five movies were 110 cr, 90 cr, 580 cr, 200 cr and 380 cr, not necessarily in the same order. It is also known that:

(i) Bhaag Milkha Bhaag, BOC of which was 110 cr, was released on 23rd October.

(ii) Pride and Prejudice, BOC of which was 200 cr, was not from Bollywood.

(iii) The movies that were released on 2nd and 30th October were from Hollywood and Nollywood respectively.

(iv) Nkwocha was not released on 2nd October. Its BOC was equal to the sum of BOCs of the two movies that were released on 9th and 16th October.

(v) Magadheera was neither from Bollywood nor was its BOC 90 cr.

57. For how many of the five movies can the film industry be definitely determined?

(1) 2 (2) 5 (3) 3 (4) 4

58. What was the sum of BOCs of the movies that were released on 2nd and 30th October?

(1) 780 cr (2) 670 cr (3) 835 cr (4) 690 cr

59. Which movie's BOC was 580 cr?

(1) Magadheera (2) Oblivion

(3) Bhaag Milkha Bhaag (4) Nkwocha

Directions for questions 60 to 63: Answer the questions on the basis of the information given below.

A psychiatrist analysed the results of a test conducted to assess three personality traits—Patience, Compassion and Honesty—on five of his patients—A, B, C, D, and E. He evaluated each of the personality traits on a scale of 1 to 5 (integers only). It is also known that:

(i) Scores of no two patients were same in any of the traits.

(ii) No patient was assigned the same score in all the three traits.

(iii) Only two patients were assigned the same score in two traits.

(iv) The score of A in Compassion was equal to that of C in Honesty which was 4.

(v) The score of E in Compassion was 1 more than his score in Patience, which, in turn, was 2 less than his score in Honesty.

(vi) Neither A's nor B's score in any of the traits was 5.

(vii) The score of D in Patience was equal to that of A in Compassion, and the score of C in Compassion was the same as that of A in Honesty.

60. The score assigned to A in Patience was

(1) 2 (2) 3 (3) 5 (4) Cannot be determined

61. For which of the following pairs of traits can we be sure that no patient had the same score?

(1) Patience and Compassion (2) Compassion and Honesty

(3) Patience and Honesty (4) None of these

62. How many patients scored less than or equal to A in each of the three traits?

(1) 0 (2) 2 (3) 1 (4) 3

63. Whose score was the maximum in honesty?

(1) A (2) B (3) C (4) D

Directions for questions 64 to 67: Answer the questions on the basis of the information given below.

Mr. Mathew teaches students of ten different classes – A through J. The number of students in the given classes is 1 through 10 respectively. No two classes have a common student. In a particular week, he did not teach the students of exactly two out of the ten classes. In the given week, he taught students of each of the remaining eight classes on exactly three different days. He did not teach the students of any class on Sunday, and on each of the remaining six days of the week, he taught the students of exactly four different classes. The number of students taught by him on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday was 18, 12, 23, 19, 32 and 25 respectively. It is also known that, in the given week, no student was absent in his/her respective class.

64. Students of which of the following classes were not taught by him in the given week?

(1) E and D (2) G and D (3) I and H (4) D and H

65. Students of which of the following classes were not taught by him on Friday of the week?

(1) F (2) I (3) G (4) None of these

66. On Saturday of the week, if Mr. Mathew did not teach students of class J but taught students of class C, then students of which of the following classes were not taught by him on two consecutive days of the week?

(1) C (2) E (3) A (4) G

67. On Saturday of the week, if Mr. Mathew did not teach students of class J but taught students of class C, then students of class F were taught on

(1) Tuesday, Friday and Saturday (2) Tuesday, Thursday and Friday

(3) Tuesday, Wednesday and Saturday (4) None of these

Directions for question 68 to 70: Answer the questions on the basis of the information given below.

Four students — Rahul, Rohit, Pooja and Neha – took an exam consisting of four questions, with four options each. In the exam, each of them attempted all the questions and answered at least one question correctly, and no two of them answered the same number of questions correctly. The table given below shows the responses of the four students for the questions in the exam.

Question / Name	1	2	3	4
Rahul	a	d	b	a
Rohit	b	c	b	b
Pooja	a	c	d	d
Neha	a	c	d	a

68. Who answered exactly two questions correctly?

(1) Rahul (2) Rohit (3) Pooja (4) Neha

69. What was the correct option for the 4th question?

(1) a (2) b (3) c (4) d

70. If the marks assigned to 1st, 2nd, 3rd and 4th questions were 1, 2, 3 and 4 respectively and there was no negative marking for a wrong answer, then who scored the second highest marks?

(1) Rahul (2) Rohit (3) Pooja (4) Neha

Directions for questions 71 to 74: Answer the questions on the basis of the information given below.

Six students – John, Steve, Hans, Brown, Peter and Eddy – took an exam, with the maximum marks as 100. Each student scored a different marks and none of them scored zero marks. It is also known that:

I. The marks scored by each student, except Brown, was the squares of a natural number.

II. The marks scored by John was equal to the sum of the marks scored by two other students in the group.

III. The marks scored by Brown, Peter and Eddy were the cubes of natural numbers.

IV. The product of the marks scored by John and Peter was an odd natural number.

V. The absolute difference between the marks scored by Eddy and Steve was equal to the marks scored by one of the students, except these two, in the group.

71. The marks scored by John was equal to the sum of the marks scored by

(1) Brown and Hans (2) Steve and Eddy (3) Brown and Peter (4) Eddy and Hans

72. The ratio of the marks scored by two students in the group was 1 : 4. Who out of the two scored the lesser marks?

(1) Peter (2) John (3) Hans (4) Eddy

73. Who scored the lowest marks?

(1) Steve (2) Brown (3) Hans (4) Peter

74. What was the sum of the marks scored by Hans and Brown?

(1) 37 (2) 72 (3) 65 (4) 44

Directions for questions 75 to 78: Answer the questions on the basis of the information given below.

Five boys — A, B, C, D and E — went on a shopping trip. Before shopping, three of the five boys had different amounts from among Rs. 100, Rs. 300 and Rs. 400, and the remaining two of them had the same amount which was Rs. 200. While shopping, they did not lend or borrow from each other. After the shopping, it was found that each of them was left with a different amount from among Rs. 165, Rs. 95, Rs. 70, Rs. 40 and Rs. 10, not necessarily in the same order. It is also known that:

I. A started with more money than what D started with.

II. B spent Rs. 15 more than what C spent.

III. E, who spent Rs. 35, started with more money than exactly one person in the group.

IV. C started with 66.67% of the money what B started with.

V. D was left with more money than what A was left with.

75. How much money did A spend?

(1) Rs. 205 (2) Rs. 190 (3) Rs. 35 (4) Rs. 360

76. What was the position of E in ascending order of spending?

(1) 1 (2) 2 (3) 4 (4) 5

77. Who was left with Rs. 40?

(1) A (2) B (3) C (4) D

78. What was the absolute difference between the amounts spent by B and D?

(1) Rs. 160 (2) Rs. 185 (3) Rs. 180 (4) None of these

PRACTICE EXERCISE – 2

Directions for questions 1 to 4: Answer the questions on the basis of the information given below.

In a query answering module called 'Help Me', students ask their queries, which are based on four subject areas namely DI, LR, QA and VA. The queries enter the module as soon as they are asked and remain there until they are answered. All queries that are received in the first half of the day are counted as a part of that day and the ones received in the second half are counted as a part of the next day. There are four persons – Dudi, Anu, Sam and Tiru – who are responsible for answering queries. Queries are answered only in the second half of the day.

The following table gives the number of unanswered queries of the previous week, 15th to 21th May, 2015, from the four subject areas by the end of the week.

Number of unanswered queries of previous week			
DI	LR	QA	VA
24	17	48	14

The information regarding the number of new queries received in the current week, 22nd to 28th May, 2015, is given in the table below.

	DI	**LR**	**QA**	**VA**
Monday	10	2	5	2
Tuesday	12	5	2	3
Wednesday	8	2	5	0
Thursday	4	2	8	5
Friday	2	4	3	6
Saturday	4	5	1	7

- Queries based on VA are answered only by Sam.
- Tiru answers queries based on QA only. Sam answers queries on VA only.
- In the current week, if the number of queries answered by Dudi, Anu, Sam and Tiru on any day (from Monday to Saturday) are denoted by d, a, s and t respectively, then it was observed that

  $6 \leq d \leq 12$

  $8 \leq a \leq 18$

  $5 \leq s \leq 10$

  $2 \leq t \leq 15$

  No query is admitted or answered on Sunday.

1. On which day of the current week could Sam answer the maximum possible number of queries?

(1) Wednesday (2) Friday (3) Saturday (4) Either Friday or Saturday

2. In the current week, if there were no pending queries of QA at the end of Saturday and only Tiru answered QA queries, the total number queries of QA that were answered on the same day when they were received could not be less than

(1) 4 (2) 3 (3) 2 (4) 1

3. Which of the following is not possible?

(1) All pending queries of the previous week could be answered by the end of Wednesday.

(2) All pending queries of the previous week could be answered by the end of Thursday.

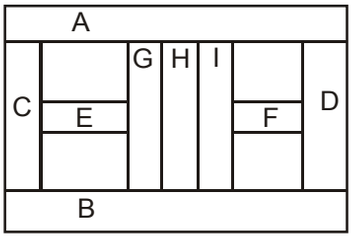
(3) All pending queries of the previous week could be answered by the end of Friday.

(4) All pending queries of the previous week could be answered by the end of Monday.

4. On Monday, of the current week, a total of 58 queries were answered. Atmost how many of them could be of QA?

(1) 45 (2) 31 (3) 21 (4) Data inconsistent

Directions for questions 5 to 8: Answer the questions on the basis of the information given below.



The given figure has 9 boxes labelled A, B, C, D, E, F, G, H and I respectively. Each box has a distinct single-digit natural number written on it. Two numbers, on any two adjacent boxes, are called as adjacent numbers.

Additional information :

1. The sum of the numbers on boxes G and I is less than 13.
2. The sum of the numbers on boxes adjacent to H is equal to the sum of the numbers on boxes adjacent to G.
3. The sum of the numbers on the boxes that are adjacent to the box containing 5 is 30.
4. The sum of the numbers on boxes C and D is less than 6.
5. Box E does not have the lowest number and box F does not have the highest number.
6. The sum of the numbers on boxes G and H is prime.
7. The sum of the numbers on the boxes adjacent to D exceeds the sum of the numbers on boxes adjacent to C by 6.

5. Which of the following statements is sufficient to find the number written on box C?
   (i) The sum of the numbers on boxes adjacent to F is more than the sum of the numbers on boxes adjacent to E.
   (ii) The sum of the numbers on boxes adjacent to F is less than the sum of the numbers on boxes adjacent to E.
   (1) The question can be answered by using statement (i) alone but not (ii) alone.
   (2) The question can be answered by using statement (ii) alone but not (i) alone.
   (3) The question can be answered by using either statement alone.
   (4) No more information is required.
6. For how many boxes the numbers written on them can be uniquely determined?
   (1) All of them (2) 7 (3) 3 (4) 5
7. For how many pairs of adjacent boxes, the sum of the numbers on them is 15?
   (1) 0 (2) 1 (3) 2 (4) 3
8. For how many boxes, the sum of the numbers on the boxes adjacent to them must be a prime number?
   (1) 2 (2) 3 (3) 4 (4) 5

Directions for questions 9 to 12: Answer the questions on the basis of the information given below.

Upon noticing the sudden increase in absenteeism in an office, the concerned HR manager hired a consultant to analyse the employees' attendance data. The data was regarding four employees of the company and the number of days on which they were physically present in the company in a month consisting of 30 days. The HR manager did not provide the consultant with direct information about the number of days on which these four employees were present. Instead, he chose two of the four employees at a time, added the number of days on which they had been present and collated the six numbers so obtained in a table in descending order from left to right on a sheet of paper. Just before going through the data, the consultant spilled his coffee on the sheet as a result of which the column figures numbered 3, 4 and 5 became illegible. The table, after the spilling of coffee, is shown below.

Column	**1**	**2**	**3**	**4**	**5**	**6**
Sum of the number of days on which employees were present, taken two at a time	51	49				40

For each of the employee the number of days on which he/she was absent in the given month was a distinct integer. There was no such day in the month on which all the four employees were absent.

9. Column figure numbered 5 should be:

(1) 41 (2) 42 (3) 44 (4) 45

10. If one of the illegible column figures reads 45, then which of the following is true?

(1) One of the other illegible column figures reads 46.

(2) One of the four employees was present on exactly 25 days in the month.

(3) One of the four employees was present on exactly 23 days in the month.

(4) One of the four employees was present on exactly 21 days in the month.

11. Eksa was the second employee, if the 4 employees are arranged in ascending order of the days on which they were present in the month. What could have been the maximum possible number of days on which Eksa was present?

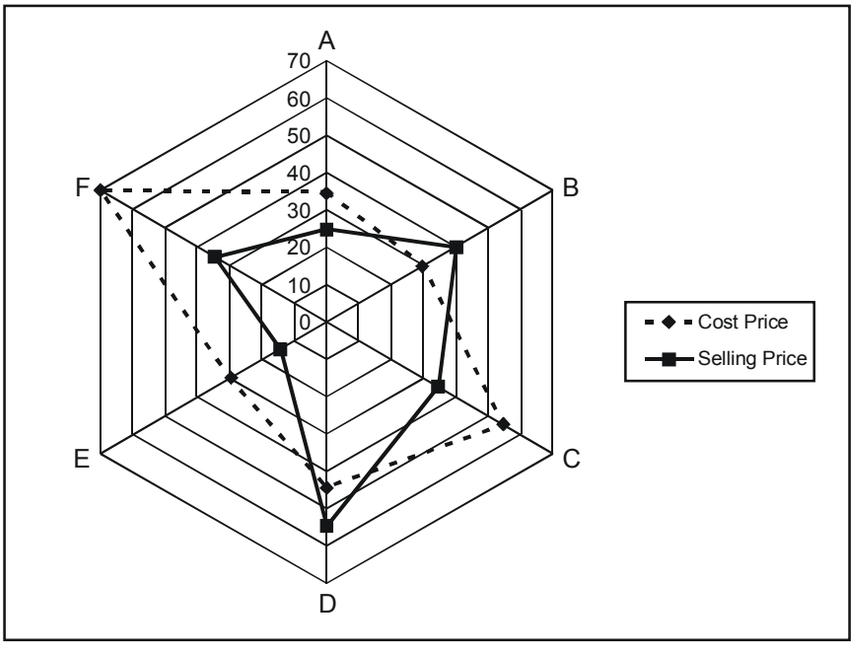
(1) 25 (2) 24 (3) 23 (4) 22

12. When the consultant called up the HR manager and told him about the missing numbers, all that the HR manager could remember was that the column figure numbered 3 was the addition of the number of days for the two employees who were present on the maximum and the minimum possible number of days. Which of the following is column figure numbered 3?

(1) 44 (2) 45 (3) 46 (4) 47

Directions for questions 13 to 15: Answer the questions on the basis of the information given below.

The diagram given below shows the per unit Cost Price and Selling Price (in Rs.) of six items – A, B, C, D, E and F– produced by a company named Prakash & Sons in the year 2012. It is also known that the company sold all the units of the six items that it produced in the given year.



13. If the company produced A, B, C, D, E and F in the ratio 7 : 31 : 6 : 23 : 4 : 3, then the percentage profit that the company made in the year 2012 was

(1) 6.35 (2) 6.63 (3) 6.45 (4) 8.21

14. 'X' was the overall profit percentage on the profit-making items and 'Y' was the overall loss percentage on the loss-making items for the company in the year 2012. If the company produced an equal number of units of all six items, then find the sum of the values of X and Y.

(1) 68.78 (2) 82.60 (3) 42.78 (4) 90.45

15. On which of the six items did the company register the maximum loss in the year 2012?

(1) E (2) F (3) C (4) Cannot be determined

Directions for questions 16 and 17: Answer the questions on the basis of the information given below.

Each of the five persons out of Rohan, Deepak, Tripti, Sonal and Tarun completed a different number of units of work from among 200, 180, 140, 150 and 240 over a period of certain number of days. The number of days taken by Rohan, Deepak, Tripti, Sonal and Tarun to complete the mentioned units of work is 12, 10, 8, 10 and 12 days respectively. The following table provides information about the total units of work completed by each of these mentioned persons by the end of each day.

	Number of Units				
After	**Rohan**	**Deepak**	**Tripti**	**Sonal**	**Tarun**
1 day	10	12	5	20	18
2 days	22	32	15	25	20
3 days	24	50	25	40	44
4 days	40	52	50	50	48
5 days	60	84	80	65	50
6 days	68	120	96	80	95
7 days	140	140	108	100	100
8 days	148	156	140	125	112
9 days	176	172	140	140	115
10 days	180	180	140	150	120
11 days	184	180	140	150	160
12 days	200	180	140	150	240

A person is said to be more efficient than the other person only if he/she has done more number of units of work than him/her on at least seven out of the mentioned days.

16. Out of the mentioned five persons, how many persons are more efficient than exactly two persons?

(1) 4 (2) 2 (3) 1 (4) 3

17. On how many days the number of units of work completed by Sonal is more than at least one and at most two out of the mentioned persons?

(1) 5 (2) 8 (3) 6 (4) 7

Directions for questions 18 to 21: Answer the questions on the basis of the information given below.

There are three textile mills – M_1, M_2 and M_3 – in Sariska, a laidback town situated on the scenic banks of river Skirasa. The number of workers in M_1 is 30 less than that in M_2, but 20 more than that in M_3. In M_2, the number of unskilled male workers is equal to the number of unskilled female workers. The number of male workers in M_1 is equal to the number of female workers in M_3 and the number of skilled male workers in M_2 is equal to the number of unskilled female workers in M_3. Also, thrice the number of skilled male workers in M_3 is equal to the total number of unskilled male workers in M_2, which, in turn, is equal to the number of skilled female workers in M_3. The number of unskilled male workers in M_3 is 80% of the number of skilled female workers in M_1. Twice the number of unskilled male workers in M_1 is equal to the number of unskilled male workers in M_3, which, in turn, is equal to two-fifths the number of skilled female workers in M_2. It is also known that, in M_1, the number of skilled female workers is equal to the number of unskilled female workers and the total number of workers in three mills taken together is 370.

18. Which mill has the highest number of skilled male workers?

(1) M_1 (2) M_2 (3) M_3 (4) Cannot be determined

19. The number of skilled female workers in M_3 is what percentage of that in M_2?

(1) 60% (2) 40% (3) 50% (4) 70%

20. What is the absolute difference between the total number of female workers and that of the male workers in the three mills taken together?

(a) 10 (2) 20 (3) 30 (4) 40

21. The number of unskilled female workers in all the three mills together is

(1) 90 (2) 95 (3) 105 (4) 100

Directions for questions 22 to 25: Answer the questions on the basis of the information given below.

There are four companies — CCA, T & T, Birla Tea and LLL – in Udyog Nager. The following information, recorded during the FY 2014-15, is known about these four companies:

I. The local sales of LLL were eleven times the profits of T & T.
II. The sum of exports of Birla Tea and LLL is equal to half the equity base of CCA.
III. The sum of equity base of Birla Tea and the local sales of T & T is equal to five times the exports of T & T.
IV. The profit of LLL = the local sales of CCA – the exports of Birla Tea.
V. The profit of CCA is equal to the average profits of T & T and LLL.
VI. The total profit of all the companies put together was Rs. 100 crore.
VII. The local sales of Biral Tea was 1.25 times the exports of CCA.
VIII. The equity base of T & T = Total exports of all four companies – Rs. 50 crore.
IX. The equity base of LLL = 7 × (Profit of LLL + Profit of Birla Tea – Profit of T & T).

The following are some additional information regarding the four aforementioned parameters for the given companies:

1. Local sales of LLL = Rs. 110 crore
2. Equity base of CCA = Rs. 500 crore
3. Local sales of Birla Tea = Rs. 100 crore
4. Equity base of Birla Tea = Rs. 450 crore
5. Exports of T & T = Rs. 120 crore
6. Profit of Birla Tea = Rs. 40 crore
7. Exports of Birla Tea = Rs. 100 crore

22. In FY 2014-15, the equity base of LLL was

(1) Rs. 500 crore (2) Rs. 400 crore (3) Rs. 450 crore (4) Rs. 420 crore

23. In FY 2014-15, the profit of LLL was

(1) Rs. 30 crore (2) Rs. 40 crore (3) Rs. 20 crore (4) Rs. 10 crore

24. In FY 2014-15, the equity base of CCA was greater than the equity base of T & T by

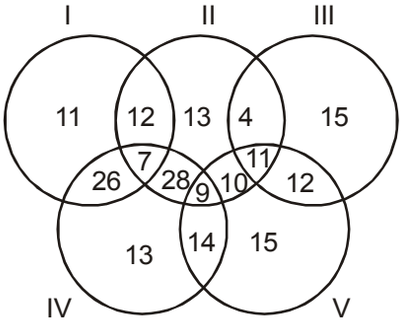
(1) 10% (2) 20% (3) 25% (4) 50%

25. In FY 2014-15, the total local sales of all the four companies put together as a percentage of total equity base of all four companies put together was

(1) 36% (2) 28% (3) 32% (4) 33%

Directions for questions 26 to 29: Answer the questions on the basis of the information given below.

The Venn diagram shown below represents the past-time habits of people of age 10 years and above in five different categories - smoking, drinking, playing golf, playing cards and chewing tobacco. The numbers given in each region represent the number of people in that category. For example, 28 represents the number of people whose past-time habits are drinking and playing cards only.



Note: All figures in 12,000s

Category I : People who smoke

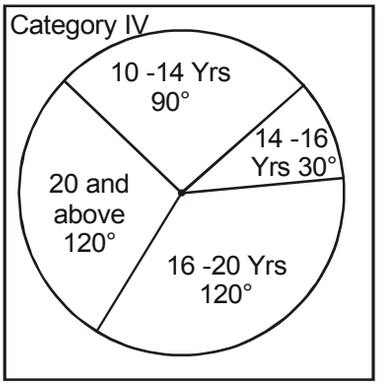
Category II : People who drink

Category III : People who play golf

Category IV : People who play cards

Category V : People who chew tobacco

The pie-chart below provides additional information on further age group distribution for category IV, which holds true for each of its regions.



26. How many people who play cards only or play golf only belong to the age group 16-20 years ?

(1) 280000 (2) 336000 (3) 240000 (4) Data Insufficient

27. How many people who smoke and play cards belong to the age group 14-16 years ?

(1) 33000 (2) 36000 (3) 30000 (4) None of these

28. How many people who play cards and chew tobacco belong to the age group 10-14 years ?

(1) 92000 (2) 69000 (3) 72000 (4) Data Insufficient

29. If the age distribution of Category IV applies to all the five categories, then the total number of people (having these five past-time habits), who belong to the age group 20 and above, is

(1) 80000 (2) 799920 (3) 800000 (4) 670000

Directions for questions 30 to 33: Answer the questions on the basis of the information given below.

In an MBA college having 480 students, each student had to choose 3 out of 5 subjects namely Brand Management (BM), Digital Marketing (DM), Retail Marketing (RM), Consumer Behaviour (CM) and Market Research (MR). The following information is about the selection of three subjects namely BM, DM and RM by the students.

(i) Three times the number of students who chose exactly 2 of the 3 subjects was equal to the sum of the number of students who chose exactly one subject and that of those who chose exactly three subjects.

(ii) The number of students who chose both DM and RM but not BM was 16 more than that of those who chose both BM and DM but not RM.

(iii) The number of students who chose all the three subjects was at least 15.

(iv) The number of students who chose only DM was more than that of those who chose only BM.

(v) The number of students who chose both BM and DM but not RM was at least one-fifth and at most one-third that of those who chose exactly two subjects.

(vi) The number of students who chose BM was 4 less than that of those who chose RM.

(vii) The number of students who chose only RM was 6 times that of those who chose all the three subjects.

30. Students who chose only DM exceded those who chose only BM by atleast

(1) 32 (2) 13 (3) 25 (4) None of these

31. What was the maximum number of students who chose BM ?

(1) 194 (2) 211 (3) 210 (4) None of these

32. What was the minimum number of students who chose RM and exactly one out of BM and DM?

(1) 64 (2) 78 (3) 72 (4) 80

33. How many students chose atleast one among BM, DM and RM, given they had to select 3 out of 5 subjects?

(1) 450 (2) 480 (3) 432 (4) Cannot be determined

Directions for questions 34 to 37: Answer the questions on the basis of the information given below.

Five national selectors – S_1, S_2, S_3, S_4 and S_5 – gave different grades out of I, II, III, IV and V to the cricketers on the basis of their performance in 2014.

According to the grading system, grades I, II, III, IV, and V fetch points 7,5,4,2 and 0 respectively. Grade-Average for a player is defined as the arithmetic mean of the points fetched by the grades that he was given by the selectors.

The following table gives the partial information regarding the grades, along with Grade-Average, received by a few Indian players. For example Pathan's Grade-Average is 2.8, which means the total points fetched by the grades that he was given by the selectors is 14.

Player	Selectors					Grade average
	S1	S2	S3	S4	S5	
Sehwag	I		IV	III		
Gambhir	II	IV	V			
Rahane						2.8
Uttappa	V			I		
Rohit	IV	II				3.4
Kohli			I			4
Raina	I		IV			
Dhoni	V	II				
Sachin		I				4.2
Pathan						2.8
Zaheer				II		
Harbhajan			II	II		
Ashwin		III				
Ojha						3
Umesh		II	I			

Additional Information:

(i) No selector gave grade V to Sachin and Rohit. Sachin's Grade-Average was the highest.

(ii) The Grade-Average of Sehwag was better than that of Rohit but worse than that of Kohli.

(iii) No selector gave grade I or grade V to Zaheer.

(iv) S_3 and S_5 gave the same grade to Dhoni and Ashwin. Dhoni got the same grade from S_3 and S_5.

(v) No player got grade V from more than one selector.

(vi) Three selectors gave the same grade to Uttappa.

(vii) No three selectors gave the same grade to Zaheer. The same was true for Ashwin.

34. If the Grade Average of Zaheer was better than that of Sehwag, and all the selectors, except one, gave higher grade to Zaheer than that to Sehwag, what was the grade given by S_1 to Zaheer?

(1) III (2) IV (3) II (4) Cannot be determined

35. If the Grade Average of Sehwag and Dhoni was the same, then how many different values of Grade Average were possible for Ashwin?

(1) 4 (2) 2 (3) 3 (4) 5

36. If S_3 gave higher grade than S_5 to both Sachin and Rohit, the sum of points given by S_3 to Uttappa, Sachin and Rohit can take how many different values:

(1) 5 (2) 6 (3) 4 (4) 9

37. How many different values of Grade Average are possible for Zaheer?

(1) 3 (2) 4 (3) 5 (4) 6

Directions for questions 38 to 41: Answer the questions on the basis of the information given below.

After a survey was conducted in a college to gauge how the students use their free time, the folowing observations were made:

120 students like to spend their time with girl-friends. 150 students like playing video games. 200 students like playing cricket and 170 students like watching television. 20 students like spending their time with girl-friends and playing cricket. 25 students like spending their time with girl-friends and playing video games. 25 students like watching television and playing cricket. 20 students like watching television and playing video games. 10 students like spending their time with girl-friends and watching television. 30 students like playing cricket and video games.

38. If no student has more than two interests, then how many students like playing video games or cricket but do not like watching television or spending time with their girl-friends?

(1) 230 (2) 245 (3) 225 (4) 270

39. If no student has more than two interests, then how many students like at least one out of playing video games, watching television and spending time with girl friends, but not playing cricket?

(1) 370 (2) 410 (3) 400 (4) 310

40. It is also known that the number of students who like exactly three activities is double the number of students who like all the four activities. The number of students who like any three activities, is the same for all possible combinations of three activities out of the four. Find the maximum number of students who can like all the four activities given that number of student(s) is/are an integer only.

(1) 5 (2) 4 (3) 2 (4) None of these

41. It is also known that the number of students who like exactly three activities is double the number of students who like all the four activities. The number of students who like any three activities, is the same for all possible combinations of three activities out of the four. If 79 students like to spend their time with their girl-friends only, then find the number of students who like playing cricket only.

(1) 129 (2) 139 (3) 166 (4) 183

Directions for questions 42 to 45: Answer the questions on the basis of the information given below.

Six friends decided to play a game of die, the numbers on six faces of which were from 1 to 6. They divided themselves in 3 teams – G1, G2 and G3 – with two friends in each. They played two rounds of the game. In each round, all the players threw the die once and the absolute difference (AD) between the face values obtained by the members of each team was calculated. The teams with the lowest, second highest and highest AD was declared the winner, runner up and loser respectively. The winner got 30 points, runner-up got 20 points and the loser got 10 points.

The table below shows points obtained by the teams in 2 rounds.

Teams	Points in Round 1	Points in Round 2
G1	30	30
G2	20	-
G3	10	-

Additional Data:

(i) The sum of ADs of the 3 teams in Round 1 was less than that in Round 2.

(ii) Out of 4 numbers obtained by the 2 players of G3 in two rounds, at least 2 were odd.

(iii) The sum of the four numbers obtained by the two players of G1 in the two rounds, is not a prime number.

(iv) No two friends got the same number on the die in any of the rounds. Also, no two teams had the same AD in any of the rounds.

42. If 3 players got the same value on the die, in both the rounds, what was the value on the die of the player in G2 who got the lowest value in Round1?

(1) 1 (2) 4 (3) 2 (4) Cannot be determined

43. If the same 3 players from the 3 teams got least values in their respective team in both the rounds, what is the minimum possible value of the sum of 2 values in 2 rounds for any of these 3 players?

(1) 5 (2) 4 (3) 3 (4) 2

44. For which team no player could get 4 on the die in any of the two rounds ?

(1) G3 (2) G2 (3) G1 (4) Not possible

45. Which team could definitely not get the same AD in both rounds?

(1) G1 (2) G2 (3) G3 (4) More than one of them

Directions for questions 46 to 49: Answer the questions on the basis of the information given below.

There are a total of 300 students in SRCC Hostel. Out of them 70 belong to tiger group, 85 belong to lion group and 90 belong to leopard group. Exactly 45 students belong to both tiger and lion groups, 40 students belong to both tiger and leopard groups, and 60 students belong to both lion and leopard groups.

46. If the number of students belonging to all the three groups is mean (average) of its maximum possible value and minimum possible value, how many students in the hostel do not belong to any of the three groups?

(1) 130 (2) 170 (3) 80 (4) Data insufficient

47. If the number of students belonging to all three groups is maximum possible value and tiger group starts collecting a 'Rangdari tax' from all those students who do not belong to this group at the rate of Rs. 10 per student, then what will be the amount collected by tiger group in the form of Rangdari tax?

(1) Rs. 700 (2) Rs. 2,300 (3) Rs. 1,600 (4) Rs. 900

48. If the number of students belonging to at least one of the three groups is its minimum possible value, what is the number of students who belong to only lion group?

(1) 65 (2) 20 (3) 0 (4) 55

49. If the number of students belonging to none of the three groups is maximum, how many students belong to exactly two of the three groups?

(1) 105 (2) 145 (3) 25 (4) 85

Directions for questions 50 to 53: Answer the questions on the basis of the information given below.

Seven batsmen – Ponting, Sachin, Sehwag, Gambhir, Warner, Smith and Yuvraj – played in a test match between India and Australia. The number of balls faced by them are 300, 240, 180, 160, 270, 120 and 150 not necessarily in the same order and their strike rates are 33.3%, 60%, 30%, 40%, 80%, 45% and 50% in any order.

Strike rate = (Number of runs scored/ Number of balls faced) × 100

Additional information is also given:

1. No batsman, out of the seven, scored 150 or more runs and the lowest runs scored by any of the seven batsmen was 60.
2. Ponting was the highest scorer, and either he faced the maximum number of balls or his strike rate was the highest among all.
3. The Strike rate of one of Ponting and Sachin, was twice of the other.
4. Runs scored by each of them was different, except Sehwag and Yuvraj. These two batsmen scored 60 runs each.
5. Smith scored 81 runs and Gambhir scored 108 runs.

50. What was the strike rate of Sachin?

(1) 30% (2) 40% (3) 35% (4) 45%

51. Who faced the least number of balls?

(1) Sehwag (2) Yuvraj (3) Warner (4) Either Sehwag or Yuvraj

52. Who was the second highest scorer?

(1) Gambhir (2) Warner (3) Sachin (4) Smith

53. How many runs did Warner score?

(1) 90 (2) 96 (3) 120 (4) None of these

Directions for questions 54 to 57: Answer the questions on the basis of the information given below.

A survey was conducted among 120 kids to gauge their preference for ice cream, chocolate and milkshake. It was found that the number of kids who liked at most two of these items was three times that of those who liked at least 2 of these items. The number of kids who like only chocolate was more than that of those who liked only ice cream, which, in turn, was more than that of those who liked only milkshake.

54. The number of kids who did not like either of the three items was one-fifth of those who liked exactly two items, then which of the following could be the number of kids who liked exactly one of the three items?
(1) 80 (2) 81 (3) 82 (4) 85

55. If the number of kids who did not like either of three items was less than that of those who liked only milkshake, then the number of kids who did not like any of the three items could not be more than
(1) 19 (2) 20 (3) 21 (4) 22

56. If each of the kids liked atleast one of the three items, the number of kids who liked only chocolate was 36 and the number of kids who liked ice cream was equal to that of those who liked chocolate, the number of kids who liked ice cream could not be more than
(1) 84 (2) 75 (3) 74 (4) 85

57. If each of the kids liked atleast one of the three items, the number of kids who liked only chocolate was 36 and the number of kids who liked ice cream was equal to that of those who liked chocolate, the number of kids who liked chocolate and ice cream but not milkshake could not be more than
(1) 40 (2) 39 (3) 37 (4) Cannot be determined

Directions for questions 58 to 61: Answer the questions on the basis of the information given below.

Seven candidates namely Ashok, Jitesh, Pravesh, Kalash, Ragini, Shiela and Hakim contested for the post of president of student union in Delhi University. In Round 1, if any candidate gets more than 50% of the total number of votes cast in that round, he/she is declared the winner, else top five candidates based on number of votes move to Round 2. In Round 2, if any candidate gets more than 50% of the total number of votes cast in that round, he/she is declared the winner, else top three candidates based on number of votes move to Round 3. In Round 3, the candidate who gets the maximum number of votes out of total number of votes cast in that round is declared the winner. In any round, no two candidates got the same number of votes. The table below shows the number of votes received by the candidates in Round 1 of the election.

Name of candidate	Number of votes received in Round 1
Ashok	3047
Jitesh	3112
Pravesh	3084
Kalash	3140
Hakim	3008
Ragini	3149
Shiela	3160

58. If 15000 votes were cast in Round 2, then the value of the sum of the number of votes received by the candidate who got the maximum votes and the number of votes received by the candidate who got minimum votes in that round could not be less than
(1) 3455 (2) 3752 (3) 3680 (4) 3684

59. If the winner was decided after the Round 3 and 10,000 votes were cast in each of Round 2 and Round 3, then total number of votes received, in the three rounds put together, by a candidate who was not the winner could not be more than
(1) 13158 (2) 13083 (3) 13082 (4) 13159

60. If 8000 votes were cast in Round 2 and 12000 votes were cast in Round 3, then the total number of votes received, in the three rounds put together, by the candidate who won the election could not be less than
(1) 7087 (2) 7009 (3) 7011 (4) 7085

61. The number of votes received, in the first two round put together, by a candidate who Reached Round 3 could not be less than
(1) 3010 (2) 3086 (3) 3087 (4) Data insufficient

Directions for questions 62 to 65: Answer the questions on the basis of the information given below.

Six friends – Hasan, Ram, Sanjay, Sunil, Alam and Govind – went to a shopping mall and each of them purchased some items. There were nine different types of items in the mall. The per unit price (in Rs.) of each of the nine items was a different integer out of 100, 200, 400, 600, 700, 900, 1100, 1200 and 1400. A total of 25 items were purchased by the six friends, and the number of items purchased by Hasan was the minimum. Alam and Govind purchased the same number of items and the number of items purchsed by Alam was more than that by Sanjay, who did not purchase 3 items. No two friends purchased the same combinations of items. It is also known that:

(i) Each friend bought at least 3 items but not more than 5 items. Also, no friend bought more than one unit of any of the nine items.
(ii) The amount spent by Hasan was Rs. 2000, which was not less than the amount spent by Govind.
(iii) Hasan did not purchase the costliest item. Alam purchased both the cheapest and the costliest items.
(iv) The amount spent by Alam was twice the amount spent by Govind. The amount spent by Sunil was average of the amount spent by Alam and Govind.
(v) An item purchased by Sunil was priced Rs. 1100. The amount spent by each of Ram and Sanjay was not more than the amount spent by Sunil.
(vi) Two units were purchased of each type of the items that were priced Rs. 100, Rs. 400 and Rs. 600.
(vii) Not more than two friends purchased 5 items each.

62. The price (in Rs.) of the item that was purchased by the maximum number of friends was
(1) 200 (2) 700 (3) 900 (4) 1100

63. The amount spent (in Rs.) by Sanjay was
(1) 2900 (2) 3000
(3) Either 2900 or 3000 (4) None of these

64. Which of the following statements is/are definitely true?
(i) The amount spent by Ram was more than that by Sanjay.
(ii) The item priced Rs. 1100 was purchased by four friends.
(1) Only (i) (2) Both (i) and (ii) (3) Only (ii) (4) Neither (i) nor (ii)

65. How many types of items were purchased by Hasan and Ram but not by Govind?
(1) 1 (2) 2 (3) 3 (4) Cannot be determined

Direction for questions 66 to 69: Answer the questions on the basis of the information given below.

Six gentlemen viz. Mr. Gupta, Mr. Pandey, Mr. Sharma, Mr. Chowbey, Mr. Haathi and Mr. Handa went to Megacity Shopping Mall for shopping. Each one of them bought exactly one item. The items bought (not necessarily in that order) were – Dress, Sweater, Camera, Telephone, Tires, Bicycle. The list price of these items (not necessarily in that order) was – Rs. 200, Rs. 1500, Rs. 300, Rs. 2000, Rs. 900 and Rs. 1200 and the price paid (after various discounts) was – Rs. 800, Rs. 600, Rs. 1200, Rs. 1000, Rs. 75 and Rs. 50. The following information is also available:

1. Mr. Gupta bought a clothing item.
2. The bicycle was bought at 50% off and its buyer's name starts with H.
3. Mr. Chowbey bought the item priced at Rs. 1500 for 4/5th of the list price.
4. The tires set was sold for Rs. 100 less than the list price.
5. The item that was sold for Rs. 50 was an article of clothing.
6. Mr. Pandey spent Rs. 400 less than that by Mr. Chowbey.
7. Mr. Haathi paid for the dress with a Rs. 100 note (value equal to 50% of the list price) and received Rs. 25 in change.
8. Mr. Gupta spent less than Mr. Sharma, who spent less than Mr. Pandey.
9. The item originally priced the highest was not sold for the highest price and the lowest priced item was not sold for the lowest amount.
10. The price paid for telephone was more than that for the Camera.

66. Who bought the Camera?
(1) Mr. Gupta (2) Mr. Pandey (3) Mr. Sharma (4) Mr. Handa

67. Who paid the highest price?
(1) Mr. Sharma (2) Mr. Handa (3) Mr. Haathi (4) Mr. Chowbey

68. What did Mr. Handa buy?
(1) The camera (2) The sweater (3) The tires (4) The bicycle

69. What was the percentage discount on the highest original price item?
(1) 70% (2) 50% (3) 25% (4) 75%

ANSWER KEYS

PRACTICE EXERCISE – 1

1. (3)	**2.** (3)	**3.** (3)	**4.** (1)	**5.** (4)	**6.** (1)	**7.** (2)	**8.** (4)	**9.** (1)	**10.** (4)
11. (1)	**12.** (2)	**13.** (1)	**14.** (1)	**15.** (2)	**16.** (4)	**17.** (3)	**18.** (3)	**19.** (4)	**20.** (2)
21. (4)	**22.** (1)	**23.** (1)	**24.** (4)	**25.** (2)	**26.** (4)	**27.** (3)	**28.** (1)	**29.** (2)	**30.** (2)
31. (2)	**32.** (4)	**33.** (2)	**34.** (2)	**35.** (1)	**36.** (1)	**37.** (3)	**38.** (4)	**39.** (4)	**40.** (3)
41. (1)	**42.** (2)	**43.** (2)	**44.** (1)	**45.** (3)	**46.** (1)	**47.** (3)	**48.** (2)	**49.** (1)	**50.** (2)
51. (2)	**52.** (4)	**53.** (3)	**54.** (4)	**55.** (4)	**56.** (1)	**57.** (3)	**58.** (2)	**59.** (4)	**60.** (4)
61. (4)	**62.** (1)	**63.** (4)	**64.** (4)	**65.** (4)	**66.** (1)	**67.** (1)	**68.** (1)	**69.** (1)	**70.** (3)
71. (3)	**72.** (2)	**73.** (4)	**74.** (4)	**75.** (4)	**76.** (2)	**77.** (1)	**78.** (4)		

PRACTICE EXERCISE – 2

1. (4)	**2.** (4)	**3.** (4)	**4.** (4)	**5.** (3)	**6.** (4)	**7.** (1)	**8.** (2)	**9.** (2)	**10.** (1)
11. (3)	**12.** (4)	**13.** (3)	**14.** (1)	**15.** (4)	**16.** (4)	**17.** (4)	**18.** (1)	**19.** (1)	**20.** (3)
21. (2)	**22.** (4)	**23.** (1)	**24.** (3)	**25.** (2)	**26.** (4)	**27.** (1)	**28.** (2)	**29.** (3)	**30.** (2)
31. (2)	**32.** (4)	**33.** (2)	**34.** (2)	**35.** (3)	**36.** (3)	**37.** (1)	**38.** (1)	**39.** (4)	**40.** (2)
41. (2)	**42.** (2)	**43.** (4)	**44.** (1)	**45.** (2)	**46.** (2)	**47.** (2)	**48.** (3)	**49.** (4)	**50.** (2)
51. (4)	**52.** (3)	**53.** (1)	**54.** (2)	**55.** (3)	**56.** (2)	**57.** (2)	**58.** (2)	**59.** (4)	**60.** (1)
61. (2)	**62.** (1)	**63.** (3)	**64.** (3)	**65.** (4)	**66.** (3)	**67.** (4)	**68.** (4)	**69.** (2)	

EXPLANATIONS

PRACTICE EXERCISE – 1

For questions 1 to 4:

From statement 1 Shane received 0 cookies. From statement 3, Shane and Chris, and Matthew and Graham can have [(0,1)(2,3)] or [(0,2)(1,3)] or [(0,3)(1,4)] cookies respectively.

Using statements 2 and 4 we can conclude that only possible case is [(0,3)(1,4)]. So Greame must have got 2 cookies.

Using statement 1 and statement 7 we can say that Graham and Greame like wrestling shows, as Shane likes a sports show and there are only two sports shows. From statement 5, Matthew likes Smackdown and Shane likes Sports Center. So Chris likes Hitz.

From statement 6 Graham likes Krackjack.

From statement 8 Greame likes Hide n Seek or Good Day. Shane likes Good Day or Bon-Bon. Matthew likes Hide n Seek or Bon-Bon or Good Day.

Name	No. of cookies	TV show	Type of Biscuit
Shane	0	Sports Center	Good Day/Bon-Bon
Matthew	1	Smackdown	Hide n Seek/Bon-Bon/Good Day
Greame	2	Raw/Wrestlemania	Hide n Seek/Good Day
Chris	3	Hitz	Maska Chaska
Graham	4	Wrestlemania/Raw	Krackjack

1. Raw – Bon Bon cannot be a matching pair, which is liked by the same person.

5. As given in the question, we can frame some relation i.e. A > B > C and P > S.

Now look at each option, (1), (2) and (3), we find that all these options are possible, now check option (4).

Option (4), when Alex is not the stoutest, Paul is the stoutest. That is, Paul is No. 1 (in stoutness) Cedric cannot then be No. 3, as both Alex and Ben are above him, and hence Cedric can at best be No. 4 in the descending order (i.e. Cedric can only be No. 1 or No. 2 in the ascending order of stoutness. He cannot be No. 3 in the ascending order). Hence, which is given under this choice is not possible.

6. Similarly, check out the options as we did for previous question. Only option (1) is possible.

For questions 8 to 11:

From statement (vii), its clear that four jungles had 3 animals each and three jungles had 2 animals each.

So, the total number of animals in the five jungles put together = (4 × 3) + (3 × 2) = 18

Let the number of jungles in which Zathura, Zakura and Fatura were present be x and the number of jungles in which Tandura was present be y.

From statement (ii),

$3x + y = 18 \Rightarrow y = 3(6 - x)$

It can be noted that x = 6 is not possible; that means y = 0, which is not possible as Tandura was present in E, from statement (v). Similarly, x = 4 is also not possible, as from statements (v) and (vi), Tandura was not present in F and G.

Hence, x = 5 and y = 3.

We can also deduce from statement (ii) that Tandura was dominant in only one jungle, and from statement (v), it was E. Zakura and Fatura were the dominant animals of G and F respectively as per statements (iv) and (vi). From statements (iii) and (viii), A, B, C and D must have had Zathura, Zakura and Fatura as the dominant animal, not necessarily in that order. Also, Zathura must have been the dominant animal of jungle C.

The jungle G did not have Zathura and Fatura as the other two animals along with the dominant animal Zakura, as a combination, were present in jungle F. Hence, G had Zakura and Fatura only.

Now, its clear that Zathura was not present in jungles E and G, so it must have been present in all the other jungles and was dominant animal of jungle B. As Fatura was not present in A and Zakura was not present in D, Zakura and Fatura must have been the dominant animals of A and D respectively.

Further analysis leads to the following tables:

Jungle	Dominant animal	Other animals
A	Zakura	Zathura, Tandura
B	Zathura	Zakura/ Fatura
C	Zathura	Fatura/Zakura
D	Fatura	Zathura, Tandura
E	Tandura	Zakura, Fatura
F	Fatura	Zakura, Zathura
G	Zakura	Fatura

8. Both (1) and (2) are true.

9. The animals present cannot be determined uniquely for B and C.

For questions 12 to 14:

Let the number of notes that Galu had be x.

The number of notes with each of the remaining six persons = x + 5

$\therefore 6(x + 5) + x = 100 \Rightarrow x = 10$

So, initially Galu had 10 notes and the rest had 15 each.

The five transactions T1, T2, T3, T4, T5 are:

T1 : Kalu gave 5 notes to Lalu

T2 : Malu gave 3 notes to Dalu

T3 : Malu received 1 note from Galu

T4 : Falu received 2 notes

T5 : Dalu received some notes

By using statements (i) and (iii), it can be concluded that the number of notes after the first three transactions with Lalu, Malu, Dalu, Kalu and Galu were 20, 13, 18, 10 and 9 notes respectively.

By using statement (iv), it is apparent that Salu, Kalu and Galu did not receive any note. Now as the number of people who did not give any note was 2. It means the giver in each transaction was different.

By using statements (v) and (vi), Falu and Dalu had 17 notes in the end. Hence, Dalu must be the one who gave the two notes to Falu.

Dalu must have received one note from someone else. We know that the giver could not be Falu. It could not be Lalu either, as Lalu had to have 20 notes in the end. As we know that the givers in all the five transactions are different, Kalu, Malu and Galu are also ruled out. Hence, Salu must have given the note to Dalu.

Further analysis leads to the following table:

Persons	Initial number of notes	Notes received	Notes given	Final number of notes
Lalu	15	5	0	20
Malu	15	1	3	13
Salu	15	0	1	14
Dalu	15	3+1	2	17
Kalu	15	0	5	10
Falu	15	2	0	17
Galu	10	0	1	9

For questions 15 to 18:

From statement IV and V, it can be deduced that V stayed in room no. 30, which has the maximum number of factors out of the given room numbers, and T stayed in room no. 35. Now, from statements I and III, it can be concluded that P and Q stayed in room numbers 32 and 33 respectively, and S stayed in room no. 16. Now, it can be concluded that R stayed in room no. 20 as no two directors, except P and Q, stayed in the two adjacent rooms. From statement VI, it can be asserted that W stayed in room no. 18. From statement II, it can be concluded that U stayed in either room no. 17, 19 or 31.

The above derived conclusions can be tabulated as follows:

R		W		S		
20	19	18	17	16	15	Riverside
30	31	32	33	34	35	Jungleview
V		P	Q		T	

15. As Y stayed in Riverside, U must have also stayed in Riverside. The third person in Riverside was X. U could occupy a room in Riverside in 2 ways (room number 17 or 19). The remaining 2 people could occupy the other 2 rooms in 2 different ways. Similarly, Z and F could occupy the remaining 2 rooms in Jungleview in 2 different ways.

Therefore, the required number of ways

= 2 × 2 × 2 = 8.

16. Since R and T did not stay in the same resort, R could not be a part of the team that has T in it.

17. W's room was not opposite to T's room.

18. 8 professionals were not eligible for the lucky draw. The 4 eligible participants were P, Q, occupant of room number 19 and occupant of room number 17.

For questions: 19 to 21:

As per the given information,

$2A + 2C + 4D = 80 \Rightarrow A + C + 2D = 40$

Since, A is the largest of all the mentioned letters, A cannot be equal to 5, 10, 30 or 35.

The possible values of A are 15, 20 and 25.

19. There are three possibilities.

Case I: When A = 15.

$C + 2D = 25 \Rightarrow C = 5$ and D = 10.

Therefore, A + C + D = 15 + 5 + 10 = 30

Case II: When A = 20.

$C + 2D = 20 \Rightarrow C = 10$ and D = 5.

Therefore, A + C + D = 20 + 10 + 5 = 35

Case III: When A = 25.

$C + 2D = 15, \Rightarrow C = 5$ and D = 5.

Therefore, A + C + D = 25 + 5 + 5 = 35

Therefore, (A + C + D) can have two values and these are 30 and 35. Hence, option (d) is a correct answer.

20. 20 is a possible value of A.

21. In order to minimize the value of B, we have to minimize the value of (A + B + C + D). Since A + C + D = 30 or 35, therefore the minimum possible value of (A + B + C + D) which is a multiple of 4 is 40. Hence, the minimum possible value of B is 5.

For questions 22 to 25:

Since 15 and 30 are the two numbers that are already filled in the boxes of the matrix, therefore the 16 consecutive natural numbers are from 15 to 30.

$$\text{Sum of these 16 numbers} = \frac{16\,(15+30)}{2} = 8 \times 45$$

Sum of the numbers in the cells of any row or any column or any diagonal of the square matrix is $\frac{8 \times 45}{4} = 90$

Hence, A + B = 57; C + G = 48; F + J = 42; E + H = 45; D + I = 45 and K + L = 33.

Therefore, $(K, L) \rightarrow (17, 16)$ or (16, 17).

Similarly, $(A, B) \rightarrow (28, 29)$ or (29, 28).

Also, $E = 66 - 45 = 21 \Rightarrow H = 24$

$(C, G) \rightarrow (22, 26), (26, 22), (23, 25), (25, 23)$

$(F, J) \rightarrow (19, 23), (23, 19), (20, 22), (22, 20)$

$(D, I) \rightarrow (19, 26), (26, 19), (20, 25), (25, 20), (22, 23), (23, 22)$

In the third column, E = 21. So, B + I + L = 69

The only combination of (B, L) that satisfies without violating any condition is (28, 16).

Hence, I = 25, D = 20, K = 17, A = 29, B = 28, L = 16, H = 24 and E = 21

Now, $(C, G) \rightarrow (22, 26), (26, 22)$ and $(C, F) \rightarrow (23, 26), (26, 23)$

Hence, C = 26, G = 22, F = 23 and J = 19.

Finally the given matrix will look like as follows:

15	29	28	18
26	20	21	23
22	24	25	19
27	17	16	30

22. Since C = 26, 4 numbers are numerically greater then C.

23. (A + I) – (B + H) = 54 – 52 = 2.

24. The 16 consecutive natural numbers could be from 'n' to 'n + 15', where 'n' is a natural number.

Sum of these numbers

$$= \frac{16(n+n+15)}{2} = 16n + 120.$$

Sum of the numbers in the boxes of any row

$$= \frac{16n+120}{4} = 4n + 30.$$

Only option (4), i.e. 170 gives a integer value of n.

25. The value of C is 26.

For questions 26 to 29:

On the besis of the given information, preliminary table can be drawn as shown below:

	Radha	Pamela	Jaspinder	Ameena
Boxer				×
Zorro				×
Tommy	×	×	×	√
Jacky				×

Pamela's pet dog is neither Boxer nor Jacky. Hence, amela's dog is Zorro.

Ameena's husband is either Peter or Ramanpreet. Peter's pet dog is Boxer. Hence Ameena, owner of Tommy, cannot be the wife of Peter. Therefore, Ameena is the wife of Ramanpreet.

Pet dog of Qureshi is not Jacky. Shyam's wife is not Jaspinder.

Further analysis leads to the final table.

	Radha	Pamela	Jaspinder	Ameena	
Boxer	×	×	√	×	Peter
Zorro	×	√	×	×	Qureshi
Tommy	×	×	×	√	Ramanpreet
Jacky	√	×	×	×	Shyam

26. Husband of Radha is Shyam.

27. Boxer is the pet dog of Jaspinder.

28. Zorro is the pet dog of Qureshi.

29. Only (iii) is correct.

For questions 30 to 32:

A total of 5 different arrangements are possible

$X_1 - X_3 \quad X_2 - X_5 \quad X_4 - X_6$

$X_1 - X_4 \quad X_2 - X_5 \quad X_3 - X_6$

$X_1 - X_4 \quad X_2 - X_6 \quad X_3 - X_5$

$X_1 - X_5 \quad X_2 - X_4 \quad X_3 - X_6$

$X_1 - X_6 \quad X_2 - X_4 \quad X_3 - X_5$

30. Among the various possible arrangement shown above, there are two possible arrangements for (X_1, X_4).

31. If the pairs $(X_1, X_3), (X_1, X_5), (X_1, X_6), (X_2, X_6)$ or (X_4, X_6) are given, then all other pairs can be determined, while if the pairs $(X_1, X_4), (X_2, X_4), (X_2, X_5), (X_3, X_5)$ or (X_3, X_6) are given, then all other pairs can't be determined.

Therefore required probability

$$= \frac{\text{Total number of favourable cases}}{\text{Total number of possible cases}} = \frac{5}{10}$$

32. If X_2 and X_4 are kept in one cage then X_1 and X_3 cannot be kept together as in that case X_5 and X_6 will have to be paired, which violates the given condition.

For questions 33 to 35:

Only those cities that have three roads emanating from them can be start/end city.

33. All the routes which start from city 2, ends at city 4 and all the routes which start from city 4, ends at city 2.

34. Three routes starts from city 2 and city 4 each.

35. There is no such route which starts and ends at the same city.

For questions 36 to 38:

36. All of the given children can possibly be from Dahiya family.

Case I:

Afsana and Siddharth are from Dahiya family.

Age of Afsana in Jan 2001 = 9 years and 11 months.

Age of Siddharth in Jan 2001 = 2 years and 3 months.

Average age = 6 years and 1 month.

Case II:

Anjan and Samaksh are from Dahiya family.

Age of Anjan in Jan 2001 = 5 years and 8 months.

Age of Samaksh in Jan 2001 = 6 years and 6 months.

Average age = 6 years and 1 month.

Case III:

Afsana, Anjan and Ansar are from Dahiya family.

Age of Afsana in Jan 2001 = 9 years and 11 months.

Age of Anjan in Jan 2001 = 5 years and 8 months.

Age of Ansar in Jan 2001 = 2 years and 8 months.

Average age = 6 years and 1 month.

37. Case I: One case is possible when 1st child of Khanna family is Samaksh and second child is Sami, born in January 2000. Children of Ahuja family can be Ansar and Aditya.

Age of Aditya in January 2000 = 46 months.

Age of Ansar in January 2000 = 20 months.

Age of Samaksh in January 2000 = 66 months.

Age of Sami in January 2000 = 0 month.

$$\therefore \text{Average age} = \frac{46+20}{2} = \frac{66+0}{2}$$

Case II: Another case is possible when 1st child of Khanna family is Salim and second child is Sami, born in January 2000. Children of Ahuja family can be Akash and Sandy.

Age of Akash in January 2000 = 81 months.

Age of Sandy in January 2000 = 7 months.

Age of Salim in January 2000 = 88 months.

Age of Sami in January 2000 = 0 month.

$$\therefore \text{Average age} = \frac{81+7}{2} = \frac{88+0}{2}$$

38. Age of children as on January 2000 (in months) is given below.

Name	Age
Akash	81
Anjan	56
Ansar	20
Afsana	107
Aditya	46
Anirudh	63
Sandy	7
Siddharth	15
Salim	88
Sukrit	97
Sami	0
Samaksh	66

Now, average age of children will be integer number of years only if their age adds up to 36 months, 72 months, 108 months ..... and so on.

For that to happen sum of age of children (in months) should be a multiple of 3 at any point of time.

Among the given options, only the sum of ages (in months) of Afsana, Ansar and Anjan is a multiple of 3.

For questions 39 to 42:

From statement (ii) the possibilities are

Akansh	7/9	11/13	7/11	9/13
Ajay	9/7	13/11	11/7	13/9
Ashok	11/13	7/9	9/13	7/11
Abhishek	13/11	9/7	13/9	11/7

From statement (v), Ajay's salary = 11,00,000.

$\Rightarrow$ Ashok's salary = 7,00,000 or 13,00,000.

$\Rightarrow$ Akansh's salary = 13,00,000 or 7,00,000.

Thus, the final scenario is as follows:

	Akansh	**Ajay**	**Ashok**	**Abhishek**	**Amit**
Salaries (In Rs. Lakh)	7 or 13	11	13 or 7	9	8
Cities:	K/V	B/K/V	B/K/V	Prabandhnagar	Joka

39. If Akansh, lives in Vastrapur, then Ajay and Ashok must be staying at Kunnamangalam and Banerghatta, not necessarily in that order. Their average salary in any case will be Rs. 12 lakhs or 9 lakhs. So the data is insufficient.

40. Abhishek lives in Prabandhnagar.

41. Amit lives in Joka, so Ajay must be living at Kunnamangalam. Since Akansh is not staying at Banerghatta, he must be staying at Vastrapur.

42. As person from Banerghatta did not earn maximum or minimum salary so he earns Rs.11 lakhs (from table). So average salary of persons living in Kunnamanglam and Vastrapur is $\left(\frac{13+7}{2}\right)$

= Rs.10 lakhs.

For questions 43 to 45:

From statement (i), E's anniversary date can be 14th or 24th and that of H can be 7th or 12th in that order.

From statement (ii), the anniversary date of D can be 7th May or 12th December and correspondingly C's anniversary date can be 12th or 24th.

From statement (iii), the anniversary date of A-E can be 24th May or 14th May or 14th March.

From above conclusions and statement (iv), we can conclude that A's marriage anniversary is on 14th March and D's marriage anniversary is on 7th May.

Thus, C's anniversary date comes out to be 12th. For both D and H, the marriage anniversary date comes out to be 7th May. So, they must form a couple.

Husband	A	B	C	D
Wife	E	F/G	G/F	H
Anniversary date	14	24	12	7
Month	March	Oct/Dec	Dec/Oct	May

43. Only option (2) is a possible combination.

For questions 44 and 45:

The possible anniversary dates of F can be 24th October or 24th December or 12th October or 12th December.

Among these only 24th October and 24th December gives the maximum value, in other cases sum is not maximum.

But 24th December = 24 + 12 = 36 is a perfect square.

So F's anniversary is on 24th October.

As B has his anniversary date on 24th so F is the wife of B.

44. B is the husband of F.

45. G's marriage anniversary is on 12th December.

For questions 46 to 49:

For batch I,

Andy Grove cannot take session 3 as he is busy with batch II at same time. He cannot take session 5 also, as he is not an expert in IBM. So, he will take session 1 of batch I.

For batch III,

S.G. Pitroda cannot take session 4 as he is already occupied with batch I and he cannot take session 5 as he is not an expert in SM. So, he will take session 3 of batch III.

Now, session 5 can be taken by either Kiran Deshpande or Andy Grove. If Andy Grove takes session 5 of SM, then Kiran Deshpande will have to take ITS, which is not possible as S.G. Pitroda is already scheduled for session 3 of ITS. Therefore, Kiran Deshpande will take session 5 and Andy Grove will take session 4.

Andy Grove is an expert in LFTD and SM but SM is already scheduled with Kiran Deshpande, so Andy Grove will take LFTD. Similarly, Narayan Murthy will take IBM and Kishor Bayani will take SMkt.

So the table will look like:

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove			ITS	Kishor Bayani	SMkt
2	Kiran Deshpande				Narayan Murthy	IBM
3			Andy Grove		S.G. Pitroda	ITS
4	S.G. Pitroda			IBM	Andy Grove	LFTD
5		IBM			Kiran Deshpande	SM

Case I: Andy Grove teaching LFTD to batch II in session 3.

If Andy Grove teaches LFTD to batch II in session 3, SM will be taken by Kiran Deshpande. But Kiran Deshpande is not available for batch II in session 2 or session 5. Thus, this case is not possible.

Case II: Andy Grove teaching SM to batch II in session 3.

Batch II:

Thus, LFTD can be taught by Narayan Murthy only. But he is with batch III in session 2. Hence, he can be with batch II in session 5 only.

$\Rightarrow$ IBM in session 4 will be taught by Bayani.

$\Rightarrow$ Pitroda teaches SMkt in session 2.

$\Rightarrow$ Kiran Deshpande teaches ITS in session 1.

Batch I:

IBM in session 5 can be taught by Kishor Bayani only, because Narayan Murthy is busy with batch II.

$\Rightarrow$ Narayan Murthy teaches LFTD in session 3.

$\Rightarrow$ Andy Grove teaches SM in session 1.

$\Rightarrow$ Kiran Deshpande teaches ITS in session 2.

$\Rightarrow$ S.G. Pitroda teaches SMkt in session 4.

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove	SM	Kiran Deshpande	ITS	Kishor Bayani	SMkt
2	Kiran Deshpande	ITS	S.G. Pitroda	SMkt	Narayan Murthy	IBM
3	Narayan Murthy	LFTD	Andy Grove	SM	S.G. Pitroda	ITS
4	S.G. Pitroda	SMkt	Kishor Bayani	IBM	Andy Grove	LFTD
5	Kishor Bayani	IBM	Narayan Murthy	LFTD	Kiran Deshpande	SM

46. In batch I, SM and ITS are taught by Andy Grove and Kiran Deshpande respectively.

47. In batch III, IBM and SM are taught by Narayan Murthy and Kiran Deshpande respectively.

48. In batch I, Kishor Bayani taught IBM and Narayan Murthy taught LFTD.

49. The last two lectures of batch II were taken by Narayan Murthy and Kishor Bayani.

50. For finding the maximum number of question papers coming to V C let us assume that number of students in XI C and IV A is minimum possible i.e. 50 and 10 respectively.

Sum of minimum number of question papers required in I A, IV A, X B and VII B = 90 + 10 + 10 + 40 = 150

Let us assume that requirement of classes I A, IV A, X B and VII B is fulfilled by 150 questions papers coming to class I A.

Hence, requirements of classes XI C and V C are to be fulfilled by question papers coming from I B.

Since class XI C can receive question papers only from class VII B, therefore 50 question papers from class I B should come to class VII B.

Maximum number of question papers that can come to V C from II C = (150 – (80 + 10 + 10)) = 50

Maximum number of question papers that can come to class V C from class I B = 150 – (60 + 50) = 40.

$\therefore$ Maximum number of question papers that can come to class V C = 50 + 40 = 90.

51. Let the number of students in each of the classes V C and XI C be 'x'.

Least possible number of students in IX D = 10

Hence total number of students in classes IV A, V C and XI C = (3 ×150) – (90 + 60 + 80 + 40 + 40 + 10 + 10) = 450 – 330 = 120

As number of students in each class is a multiple of 10

∴ x is a multiple of 10 and 2x is a multiple of 20

Hence, minimum number of students in class IV A will be when x = 50,

∴ Minimum number of students in IV A = 120 – 100 = 20.

52. Let the number of question papers going from classroom I A to classroom IV A be x.

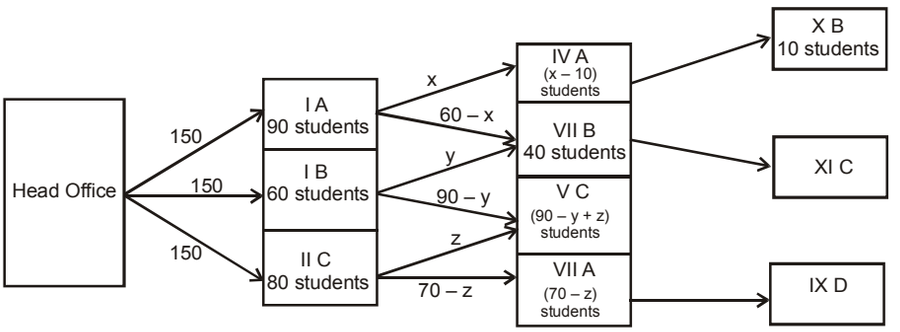
Therefore, the number of question papers going from classroom I A to classroom VII B will be 60 – x.

Let the number of question papers going from classroom I B to classroom VII B be y and

let the number of question papers going from classroom II C to classroom V C be z.

∴ The number of question papers going from classroom I B to classroom V C will be 90 – y and the number of question papers going from classroom II C to classroom VII A will be 70 – z.

Thus, the figure would be as follows:



The question can be interpreted as, find the maximum number of student in classroom V C,

i.e. maximize (90 – y + z).

In order to do so, y should be minimum possible and z should be maximum possible.

Minimum number of students in classrooms VII A and IX D are 10 each.

∴ Maximum value of z = 50.

Also, minimum number of students in classrooms IV A and XI C = 10 each.

∴ Total number of students in classrooms IV A, X B, XI C and VII B combined = 70.

∴ Minimum value of y = 70 – 60 = 10.

∴ Maximum value of (90 – y + z) = 90 – 10 + 50 = 130.

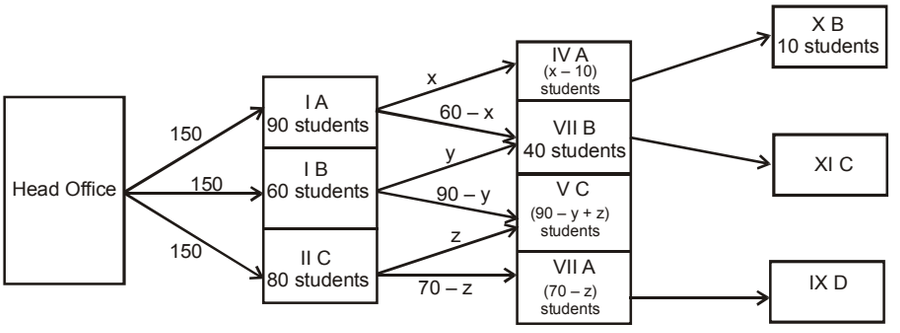
53. Let the number of question papers going from classroom I A to classroom IV A be x.

Therefore, the number of question papers going from classroom I A to classroom VII B will be 60 – x.

Let the number of question papers going from classroom I B to classroom VII B be y and let the number of question papers going from classroom II C to classroom V C be z.

∴ The number of question papers going from classroom I B to classroom V C will be 90 – y and the number of question papers going from classroom II C to classroom VII A will be 70 – z.

Thus, the figure would be as follows:



The question asks us to maximize the value of (x – 10).

By the problem, 70 – z = 50

$\Rightarrow z = 20$.

In order to maximize the value of $(x - 10)$ we must maximize the value of x.

The number of students in classroom V C = $90 - y + z = 110 - y$.

The number of question papers going from classroom I B to classroom V C = $90 - y$.

$\therefore 90 - y \geq 0$.

$\Rightarrow y \leq 90$.

$\therefore$ Maximum value of y = 90.

Thus, question papers coming from classroom I B can be distributed to all students of classrooms VII B and XI C.

Hence, no paper needs to go from classroom I A to classroom VII B.

$\therefore$ Number of papers going from classroom I A to classroom IV A is maximum.

Thus, number of students in classroom IV A = (150 – 90) – 10 = 50.

For questions 54 to 56:

Let the score of E in patience and that of A in honesty be x and y respectively. Now, preliminary table on the basis of the given information can be drawn as shown below.

Patients	Patience	Compassion	Honesty
A		4	y
B			
C		y	4
D	4		
E	x	x + 1	x + 2

Since scores of no two patients were same in any of the traits, the value x of must have been 1. From statements (vi) and (vii), it is obvious that the scores of B and C in Compassion could not be 5. So the score of D in Compassion as well as in Honesty was 5. From statements (iii) and (vi), it can be deduced that the score C in Patience was 5.

Further analysis leads to the following table.

Patients	Patience	Compassion	Honesty
A	3/2	4	1
B	2/3	3	**2**
C	5	1	4
D	4	5	5
E	1	2	3

54. The score of A in patience cannot be determined.

55. The pairs of traits given in the options could have the same score.

56. No patient scored less than or equal to A in each of the three traits.

For questions 57 to 59:

From statements (ii) and (iv), the BOC of Nkwocha was 580 cr. From statement (v), the BOC of Magadheera was not 90 cr, so it must have been 380 cr. Consequently the BOC of Oblivion was 90 cr.

From statement (i), Bhaag Milkha Bhaag was released on 23rd October. From statement (iv), the release dates of Magadheera and Pride and Prejudice must have been 9th and 16th October, not necessarily in that order, and those of Nkwocha and Oblivion must have been 30th and 2nd October respectively.

Using statement (iii) and previously drawn conclusions, Oblivion and Nkwocha were from Hollywood and Nollywood respectively. From statements (ii) and (v), Pride and Prejudice and Magadheera were not from Bollywood. So Bhaag Milkha Bhaag must have been from Bollywood.

From these conclusions, the following table can be drawn.

Name of movie	Date of release (in October)	BOC (in cr.)	Film Industry
Oblivion	2nd	90	Hollywood
Magadheera	9th/16th	380	Tollywood/Kollywood
Pride and Prejudice	16th/9th	200	Kollywood/Tollywood
Bhaag Milkha Bhaag	23rd	110	Bollywood
Nkwocha	30th	580	Nollywood

57. We can determine the respective film industries for exactly 3 movies.

58. The sum of the BOCs of movies released on 2nd and 30th October = (90 + 580) = 670 cr.

59. Nkwocha had BOC of 580 cr.

For questions 60 to 63:

Let the score of E in patience and that of A in honesty be x and y respectively. Now, preliminary table on the basis of the given information can be drawn as shown below.

Patients	Patience	Compassion	Honesty
A		4	y
B			
C		y	4
D	4		
E	x	x + 1	x + 2

Since scores of no two patients were same in any of the traits, the value x of must have been 1. From statements (vi) and (vii), it is obvious that the scores of B and C in Compassion could not be 5. So the score of D in Compassion as well as in Honesty was 5. From statements (iii) and (vi), it can be deduced that the score C in Patience was 5.

Further analysis leads to the following table.

Patients	Patience	Compassion	Honesty
A	3/2	4	1
B	2/3	3	**2**
C	5	1	4
D	4	5	5
E	1	2	3

60. The score of A in patience cannot be determined.

61. The pairs of traits given in the options could have the same score.

62. No patient scored less than or equal to A in each of the three traits.

63. D's score was maximum in honesty.

For questions 64 to 67:

Had Mr. Mathew taught each of the given ten classes on exactly three different days of the week, he would have taught a total of (1 + 2 + 3 + … + 9 + 10) × 3 = 165 students.

Total number of students taught by Mr. Mathew on the six days of the week = 18 + 12 + 23 + 19 + 32 + 25 = 129

Therefore, the total number of students in the two classes that were not taught by him = $\left(\frac{165-129}{3}\right) = 12$

So, the possible pairs of the two classes that were not taught by him could be (B and J), (C and I), (D and H) or (E and G).

On Tuesday the total number of students taught by him was 12.

This is possible in two cases:

Case I: He taught the classes A, B, C and F

Case II: He taught the classes A, B, D and E

From the two cases stated above, we can definitely conclude that he taught the classes A and B.

On Friday, the total number of students taught by him was 32.

This is possible in two cases:

Case III: He taught the classes E, H, I and J.

Case IV: He taught the classes F, G, I and J.

From the two cases stated above, we can definitely conclude that he taught the classes I and J and also, he taught either class E or G.

Therefore, the two classes that Mr. Mathew did not teach were D and H.

65. The classes taught by him on Friday were F, G, I and J.

Hence, option (d) is the correct choice.

66. It is given that on Saturday of the week Mr. Mathew did not teach class J but taught class C.

Since he did not teach class J on Saturday, he definitely taught class I on Saturday as on Saturday Mr. Mathew taught 25 students and only possible combination was (C, F, G, I).

Hence, he definitely taught class E on each of the three days namely Monday, Wednesday and Thursday as he did not teach class E on Friday, Saturday and Tuesday.

The possible combinations of the classes taught by him on Thursday is (E, I, C and B) or (E, A, C and J).

Therefore, he definitely taught the class C on Thursday.

The only possible combination of the classes taught by him on Monday was (A, B, E and J)

The final table is given below:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
A, B, E and J	A, B, C and F	(E, G, J and A) or (E, G, I and B)	(E, C, A and J) or (E, C, I and B)	F, G, I and J	C, I, F and G

Class C is not taught by him on two consecutive days of the week 'W'.

67. By referring to the table given in the pervious question, it can be calculated that the required days were Tuesday, Friday and Saturday.

For questions 68 to 70:

Assume Rahul attempted all the questions correctly. No two students answer the same number of questions correctly. On checking, we find that the condition given in the previous statement does not hold. Hence, Rahul did not answer all the question correctly.

On proceeding in the similar manner, we find that Neha answered all the questions correctly.

The number of questions answered correctly by:

Rahul = 2

Pooja = 3

Rohit = 1

The correct option for the 1st, 2nd, 3rd and 4th questions were 'a', 'c', 'd' and 'a' respectively.

68. Rahul answered two questions correctly.

69. The correct option for the 4th question was 'a'.

70. According to the given marking scheme, the marks scored by:

Rahul = 5

Rohit = 2

Pooja = 6

Neha = 10

For questions 71 to 74:

Let the respective initial letters namely J, S, H, B, P and E of the boys denote the marks scored by them.

From III, B, P and E are cubes of integers. From III and I, P and E are the squares of integers as well as cubes of integers.

Now none of the scores is zero and the cubes of integers in the range 1 to 100 are 1, 8, 27, 64. Out of these, 1 and 64 are squares of integers too. So P and E are 1 and 64, not necessarily in the same order.

From IV, J × P is an odd number. Hence, both J and P have to be odd natural numbers. This implies that P cannot be 64. So P is 1 and E is 64. Therefore, B = 8 or 27.

Now, from V, 64 – S or S – 64 is equal to either J, H, B or P. From I, the possible values of S are 4, 9, 16, 25, 36, 49, 81 and 100. The respective differences between these numbers and 64 are 60, 55, 48, 39, 28, 15, 17 and 36; out of these, except 36, none is either the cube or the square of an integer. This difference has to be 36 and hence S = 100. Since P cannot be 36 as it is 1, B cannot be 36 as it is either 8 or 27 and J cannot be 36 as it is an odd natural number, H is 36.

From II, J is either 9, 25, 49, 81. Out of these only 9 (i.e., 8 + 1) is possible sum of the marks obtain by the two other boys. Hence, J = 9 and B = 8.

So, P = 1, E = 64, S = 100, B = 8, H = 36, J = 9

For questions 75 to 78:

Since C started with 66.67% of the money that B started with, the ratio of amounts of C and B must have been in the ratio 2 : 3 and thus C started with Rs. 200 and B with Rs. 300. Since E started with money more than just one person, E must have started with Rs. 200. Since A has more money than D, A must have started with Rs. 400 and D with Rs. 100.

B and C started with Rs. 300 and Rs. 200 respectively, and B spent Rs. 15 more than C. Hence, the difference between the amounts left with B and C should have been Rs. 85. Out of the remaining amounts, only Rs. 95 and Rs. 10 satisfy this condition. Hence, B ended with Rs. 95 and C with Rs. 10. Since E spent Rs. 35, he ended with Rs. 165. Between A and D, D ended with more than A, and hence, D ended with Rs. 70 and A with Rs. 40.

The final table is given below:

Name	Started with	Ended with	Spent
A	400	40	360
B	300	95	205
C	200	10	190
D	100	70	30
E	200	165	35

PRACTICE EXERCISE – 2

1. The maximum possible value of 's' is 10. The minimum number of queries that he can answer on any day is 5. From Monday to Thursday there are 14 queries from the previous week and 10 from that week. Hence in all there are 24 queries. So there is no way he could have answered 10 queries on any day from Monday to Thursday. So he could have answered the maximum number of queries that is 10 either on Friday or on Saturday.

2. Tiru can answer in the following way:

Days	Pending	Queries asked on the day	Queries answered during the day	Remaining queries at the end of the day
Mon	48	5	15	(48 – 15) + 5 = 38
Tue	38	2	15	(38 – 15) + 2 = 25
Wed	25	5	15	(25 – 15) + 5 = 15
Thu	15	8	15	(15 – 15) + 8 = 8
Fri	8	3	8	(8 – 8) + 3 = 3
Sat	3	1	4	3 + 1 – 4 = 0

So, the required answer is 1.

3. At least two days were required to answer all the pending queries of the previous week. Hence, all the statements could be true except given in option (4).

Since, queries asked on Thursday, Friday and Saturday are less than 21 so there must be some pending queries that would be answered on Thursday, Friday and Saturday.

Hence, all pending queries cannot be answered at the end of Wednesday, Thursday and Friday.

4. Maximum number of queries that can be solved on any day = 12 + 18 + 10 + 15 = 55.

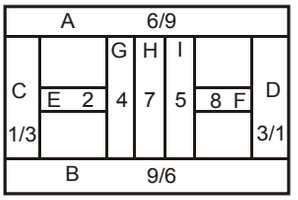
$\therefore$ The data is inconsistent.

For questions 5 to 8:

Statement (3) will be possible for the boxes which have atleast 4 adjacent boxes, i.e. for A and B or G/H/I. But since sum of numbers in C and D is less than 6, and maximum sum for G,H&I can be 7 + 8 + 9 = 24, it cannot be A or B. Because of point(1), sum of the numbers of the Boxes adjacent to H cannot be 30, as maximum sum for A and B can be 8 + 9 = 17.

From (7), number on box F exceed that by number in E by 6, since other boxes A and B are adjacent to both C and D. So sum of the numbers on boxes adjacent to I is more than that of G, and I has 5 and sum of numbers adjacent to it is 30. So A,B,H & F will have 6, 7, 8 and 9 in any order. From (1), G will be less than 8. Also from (7), E will be either 1/2/3.

From (2), sum of numbers written on the boxes I and G = sum of numbers written on the boxes H and E. The only combination possible is as follows:



5. Sum of numbers on boxes adjacent to F = (6 or 9) + (5) + (9 or 6) + (3 or 1) = 15 + 5 + (3 or 1) … (where 3 or 1 is the value for box D)

Sum of numbers on boxes adjacent to E = (6 or 9) + (4) + (9 or 6) + (1 or 3) = 15 + 4 + (1 or 3) … (where 1 or 3 is the value for box C)

By statement (1),

15 + 5 + (3 or 1) > 15 + 4 + (1 or 3)

$\Rightarrow$ 1 + (3 or 1) > (1 or 3)

This is only possible for,

1 + 3 > 1

$\Rightarrow$ D = 3 and C = 1

Hence, it can be solved using only statement (1)

By statement (2)

15 + 5 + (3 or 1) < 15 + 4 + (1 or 3)

$\Rightarrow$ 1 + (3 or 1) < (1 or 3)

This is only possible for,

1 + 1 < 3

$\Rightarrow$ D = 1 and C = 3

Hence, it can be solved using only statement (2) as well.

6. The numbers written can be determined for boxes E, F, G, H and I only

7. It is not possible for any pairs of two boxes.

8. For box C – 6 + 9 + 2 = 17, for box D – 6 + 9 + 8 = 23. For box E – 4 + 1/3 = 5/7, both are prime numbers.

For questions 9 to 12:

Let a, b, c, d be the number of days on which those four employees were present.

(a > b > c > d)

$\Rightarrow$ a + b = 51, c + d = 40 and a + c = 49

a + b = 51 $\Rightarrow$ a $\geq$ 26 and b $\leq$ 25

c + d = 40 $\Rightarrow$ c $\geq$ 21 and d $\leq$ 19

a + c = 49 $\Rightarrow$ a $\geq$ 25 and c $\leq$ 24

Thus, 'c' could be 21, 22, 23 or 24. Corresponding values of a, b, d would be

Cases	I	II	III	IV
a	28	27	26	25
b	23	24	25	26
c	21	22	23	24
d	19	18	17	16

But in the rightmost case IV, a < b. Thus, it may be ignored.

Cases	I	II	III
a	28	27	26
b	23	24	25
c	21	22	23
d	19	18	17

9. Column figure numbered 5 = b + d = (a + b) + (c + d) – (a + c) = 51 + 40 – 49 = 42

10. The 3rd column must be either (a + d) or (b + c). From the table above, the only way two figures can sum up to 45 is (a + d) in case II. Hence, b + c = 46. Thus, the column 3 should read 46.

11. Eksa was present on 'c' days. Maximum value of c = 23.

12. Column figure numbered 3 is (a + d). Thus, the 4th column must be (b + c). Also, since (a + d) is column figure numbered 3, a + d > b + c

Its true only for case I.

$\Rightarrow$ (a + d) = 47.

13. Let the number of units produced of A, B, C, D, E and F be 7x, 31x, 6x, 23x, 4x, and 3x respectively.

$\therefore$ Required profit percentage

$$= \left(\frac{\begin{array}{l} 7x \times (-10) + 31x \times 10 + 6x \times (-20) \\ + 23x \times 10 + 4x \times (-15) + 3x \times (-35) \end{array}}{\begin{array}{l} 7x \times 35 + 31x \times 30 + 6x \times 55 + 23x \times 45 \\ + 4x \times 30 + 3x \times 70 \end{array}} \right) \times 100$$

= 6.45.

14. Let the number of units produced of each of the six items be x.

The profit-making items for the company were B and D.

$\therefore$ Overall profit percentage on the profit-making items

$$(X) = \left(\frac{10 \times x + 10 \times x}{30 \times x + 45 \times x} \right) \times 100 = 26.67$$

The loss-making items for the company were A, C, E and F.

$\therefore$ Overall loss percentage on the loss-making items

$$(Y) = \left(\frac{10 \times x + 20 \times x + 15 \times x + 35 \times x}{35 \times x + 55 \times x + 30 \times x + 70 \times x} \right) \times 100$$

= 42.105

$\therefore$ X + Y = 26.67 + 42.105 = 68.78.

15. As the number of units produced of the six items is not known, we cannot determine the item on which the company registered the maximum loss in 2012.

For questions 16 and 17:

The following table provides information about the number of units of work completed on each of the twelve given days.

On the	Rohan	Deepak	Tripti	Sonal	Tarun	Total
First day	10	12	5	20	18	65
Second day	12	20	10	5	2	49
Third day	2	18	10	15	24	69
Fourth day	16	2	25	10	4	57
Fifth day	20	32	30	15	2	99
Sixth day	8	36	16	15	45	120
Seventh day	72	20	12	20	5	129
Eighth day	8	16	32	25	12	93
Ninth day	28	16	0	15	3	62
Tenth day	4	8	0	10	5	27
Eleventh day	4	0	0	0	40	44
Twelfth day	16	0	0	0	80	96

By comparing the number of units completed by each of the five persons on each of the twelve days we get the following conclusion.

Rohan is more efficient than both Tripti and Sonal.

Deepak is more efficient than both Rohan and Tripti

Tripti is more efficient than none of the mentioned persons

Sonal is more efficient than Tarun

Tarun is more efficient than both Tripti and Rohan.

16. There are three persons namely Rohan, Deepak and Tarun who are more efficient than exactly two persons.

17. On seven days namely the second, third, fourth, fifth, sixth, seventh and ninth days the number of units of work completed by Sonal is more than at least one and at most two out of the mentioned persons.

For questions 18 and 21: Let the number of workers in M1 be x.

$\therefore$ x + x + 30 + x – 20 = 370 or x = 120.

Let the number of skilled male and female workers in M1 be 'a' and 'b' respectively, and the number of skilled and that of unskilled male workers in M2 be 'c' and 'd' respectively.

Now, the given data can be tabulated as shown below.

Number of workers	Male		Female		Total
	Skilled	Unskilled	Skilled	Unskilled	
M1	a	0.4b	b	b	120
M2	c	d	2b	d	150
M3	d/3	0.8b	d	c	100

Given that,

a + 0.4b = d + c

$\therefore$ 2b = d/3 + 0.8b + 20 and 2b + d = d/3 + 0.8b + 50

Solving above euations, we get,

d = 30, b = 25, c = 40, a = 60

18. M1 has the highest number of skilled male workers.

19. The percentage = $\frac{30}{50} \times 100 = 60\%$.

20. The difference

= (a + c + d/3 + 0.4b + d + 0.8b) – (b + 2b + d + b + d + c) = (a + 1.2b + c + 4d/3) – (4d + c + 2d)

= 60 + 1.2 × 25 + 40 + 4 × 30/3) – (4 × 30 + 40 + 2 × 30) = 30.

21. Required number = b + c + d = 25 + 40 + 30 = 95.

For questions 22 to 25:

From the additional data, we can draw the following table:

Terms (Rs. in crore)	Companies			
	CCA	T & T	Birla Tea	LLL
Equity base	500	D	450	G
Local sales	A	E	100	110
Export	B	120	100	H
Profit	C	F	40	I

Using the mother data,

(I) $F = \frac{110}{11} =$ Rs. 10 crore

(II) $100 + H = \frac{500}{2} \Rightarrow H =$ Rs. 150 crore

(III) 450 + E = 5 × 120 $\Rightarrow$ E = Rs. 150 crore

(IV) I = A – 100 ... (i)

(V) $C = \frac{F + I}{2}$

$\Rightarrow$ 2C = F + I

$\Rightarrow$ 2C = 10 + I ... (ii)

(VI) C + F + I + 40 = 100

From equation (ii), we get

C + 10 + (2C – 10) + 40 = 100

$\Rightarrow$ 3C – 10 = 50

$\Rightarrow$ C = Rs. 20 crore

$\therefore$ I = Rs. 30 crore and A = Rs. 130 crore

(VII) 100 = 1.25 × B

$\Rightarrow$ B = $\frac{100}{1.25}$ = Rs. 80 crore

(VIII) D = 80 + 120 + 100 + 150 – 50 = Rs. 400

(IX) G = 7 × (I + 40 – F)

= 7 × (30 + 40 – 10)

= 7 × 60 = Rs. 420 crore

22. Rs. 420 crore.

23. Rs. 30 crore.

24. Required percentage = $\left(\frac{500}{400}-1\right)\times 100 = 25.$

25. Total local sales of all companies
= 130 + 150 + 100 + 110 = Rs. 490 crore
Total equity base of all companies
= 500 + 400 + 450 + 420
= Rs. 1,770 crore

$\therefore$ Required percentage $= \frac{490}{1770}\times 100 \approx 28.$

26. Data insufficient as age group distribution of the people who play golf is not given.

27. People who smoke and play cards
= (26 + 7) × 12000 = 33 × 12000
Out of these, people who belong to group

14 – 16 years = $\frac{30}{360}\times 33\times 12000 = 33000.$

28. No. of people (in 12000) who play cards and chew tobacco = 14 + 9 = 23
For the age group 10 – 14 years we have

$\frac{90}{360}\times 23\times 12000 = 69000.$

29. Total no. of people = 200 × 12000
Number of people in age group 20 and above

= $\frac{120}{360}\times 200\times 12{,}000 = 800000.$

For questions 30 to 33:

Since every student has to select 3 subjects out of five, he will select at least one out of any 3 subjects. That means all 480 students selected atleast one of these 3 subjects.

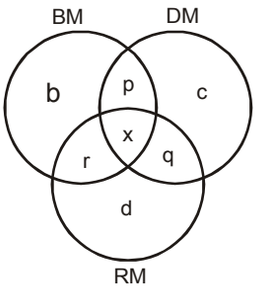
Let the number of students who selected exactly one subject be S

Let the number of students who selected exactly two subject be D

Let the number of students who selected exactly three subject be T

So, S + D + T = 480

From (I), 3D = S + T; on adding D on both sides we get 4D = S + T + D = 480 and hence D = 120.



From (V) , $24 \le p \le 40$ and using (II) $40 \le q \le 56$

So, p = 24 + y & q = 40 + y, where $0 \le y \le 16$

And r = 120 – (p + q) = 56 – 2y

From (VII), d = 6x

Using (VI), b + (24 + y) + (56 – 2y) + x = 6x + (56 – 2y) + (40 + y) + x – 4 $\Rightarrow$ = 6x + 12

Since x is at least 15, possible values of b are 102,108,114,120...

Also, c + b + d + x = 480 – 120 = 360,

$\Rightarrow$ so c = 348 – 13x

As c is greater than b, possible values of c are 153, 140, 127.

Therefore, x can take only three values.

Hence, the possible values are d are 90, 96 and 102.

Final table is as follows:

x	b	c	d
15	102	153	90
16	108	140	96
17	114	127	102

30. Minimum difference is 13.

31. Number of students who chose BM = b + p + r + x = 92 – y + 7x
The above quantity will be minimum when y is maximum.
Which will be maximum when y is minimum i.e zero and x is maximum i.e 17.
So the maximum students who could select BM was 211.

32. We have to minimize (q + r) = (56 – 2y) + (40 + y) = 96 – y
When y is maximum i.e 16, we will get the minimum value = 80.

33. Since each student chose 3 out of the 5 subjects, each student must have selected at least one subjects out of BM, DM and RM. Hence, required answer is 480.

For questions 34 to 37:

(A better way to approach this set will be to use points rather than gradings while solving)

Based on the given information, the possible points for a few cricketers can be obtained through the grades given by the selectors whose grades are not shown in the table, and the same, in any order, are as follows:

Sachin- (2,4,4,4) or (5,5,2,2)

Sehwag- (5,0) or (4,2)

Uttappa- (2,2,2) or (4,4,4)

Rohit- (4,4,2)

Zaheer- (5,4,4,2) or (5,4,2,2) or (4,4,2,2)

34. The points obtained by two are tabulated below:

Name	S1	S2	S3	S4	S5	Total
Sehwag	7	2/4	2	4	4/2	19
Zaheer	2	4/5	4	5	5/4	20

35. The only possible way in which Sehwag and Dhoni can get same average is as follows-

Name	S1	S2	S3	S4	S5	Total
Sehwag	7	4/2	2	4	2/4	19
Dhoni	0	5	5	4	5	19
Ashwin		4	5		5	

Different possible ranking other two selectors can give to Ashwin (in any order) are-

(2,0), (2,2), (4,0) or (4,2).

And hence three different totals- 16,18 and 20.

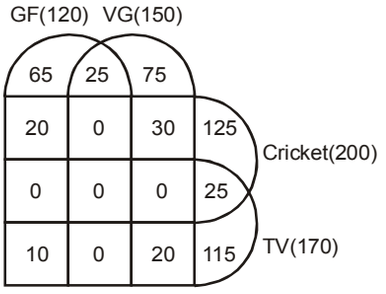
36. Points which S3 can give to these players can take following values

Sachin - 4/5, Rohit- 4, Uttappa- 2/4.

37. Zaheer- (5,4,4,2,5) or (5,4,2,2,5) or (4,4,2,2,5)

Hence, three values of Grade Average are possible for Zaheer.

For questions 38 and 39:



38. Number of students who like playing video games or cricket but do not like watching television or spending time with their girlfriends

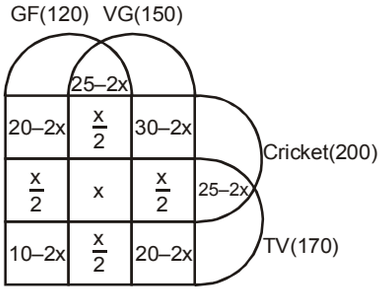
= 150 + 200 – 20 – 25 – 25 – 20 – 30 = 230.

39. Number of students who like at least one out of playing video games, watching television and spending time with their girlfriends, but not playing cricket

= 65 + 25 + 75 + 10 + 20 + 115 = 310.

For questions 40 and 41:

Let the number of students who like all the four part time activities be x



40. For x to be maximum, $10 - 2x \geq 0$

When $10 - 2x = 0$

$\Rightarrow x = 5$

When x = 5, $\frac{x}{2}$ is not an integer.

So, x should be equal to 4.

41. Total number of students who like spending time with their girlfriend = $79 + 25 - 2x + 20 - 2x + \frac{x}{2} + \frac{x}{2} + \frac{x}{2} +$

$x + 10 - 2x = 120$

$\Rightarrow 55 - \frac{7x}{2} = 41$

$\Rightarrow \frac{7x}{2} = 14 \quad \therefore x = 4.$

Number of students who like to play cricket only

$= 200 - \left(25 - 2x + x + \frac{x}{2} + \frac{x}{2} + \frac{x}{2} + 20 - 2x + 30 - 2x\right)$

= 139.

For questions 42 to 46:

Under the given conditions the possible values of Absolute Difference (AD) of 3 teams (in any order) can have 3 possibilities:

(a) 1, 2 and 4- total 7

(b) 2, 3 and 4- total 9

(c) 1, 3 and 5- total 9

As per statement (i), the AD of 3 teams is 1, 2 and 4 in round 1 and AD of G_1, G_2 and G_3 is 1, 2 and 4 respectively.

Combination (a) can be obtained in 2 ways:

(2 – 3), (4 – 6) and (1 – 5)

(4 – 5), (1 – 3) and (2 – 6)

Combination (b) can be obtained again in 2 ways:

(2 – 4), (3 – 6) and (1 – 5)

(3 – 5), (1 – 4) and (2 – 6)

Combination (c) can be obtained in only 1 way:

(3 – 4), (2 – 5) and (1 – 6)

Using the statements (ii) & (iii), we have the following possibilities:

Teams	Throws in Round 1	Throws in Round 2
G_1	(4 – 5)	(2 – 4)
G_2	(1 – 3)	(3 – 6)
G_3	(2 – 6)	(1 – 5)

Teams	Throws in Round 1	Throws in Round 2
G_1	(2 – 3)	(3 – 4)
G_2	(4 – 6)	(2 – 5) or (1 – 6)
G_3	(1 – 5)	(1 – 6) or (2 – 5)

42. The given situation realises in the following case:

Teams	Throws in Round 1	Throws in Round 2
G_1	(2 – 3)	(3 – 4)
G_2	(4 – 6)	(1 – 6)
G_3	(1 – 5)	(2 – 5)

From the table, the required value comes out to be 4.

43. For the required answer, consider the following case:

Teams	Throws in Round 1	Throws in Round 2
G_1	(2 – 3)	(3 – 4)
G_2	(4 – 6)	(2 – 5)
G_3	(1 – 5)	(1 – 6)

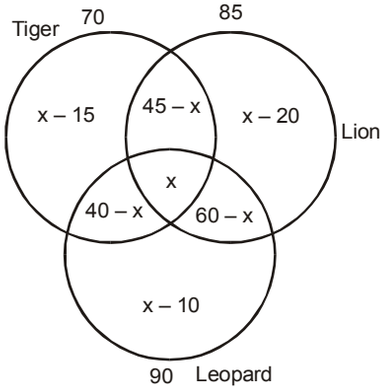
Lowest sum in 2 Rounds is possible for G_3, and which is 2.

44. For G_3, no player got 4 in any of 2 rounds in any of the cases.

45. In one case, G_1 got AD of 1 in both rounds. In other case, G_3 got AD of 4 in both rounds. But G_2 did not get the same AD in both the round in any case.

For questions 47 to 50:

From the given data we can draw the following Venn diagram.



46. $x_{Max} = 40$

$x_{min} = 20$

$$\text{Mean (average)} = \frac{40 + 20}{2} = 30$$

$\therefore$ When x = 30, the number of students not belonging to any group = 300 – (90 + x + 10) = 300 – (100 + 30) = 170.

47. Rangdari tax = (300 – 70) × 10 = Rs. 2300.

48. Number of students belonging to atleast one group = 100 + x

The above quantity will be minimum when x is minimum i.e. 20.

Number of students belonging to only Lion group = 20 – 20 = 0

49. Number of students belonging to no group = 300 – (100 + x) = 200 – x

The above quantity will be maximum when x is minimum i.e. 20.

Number of students belonging to exactly two groups = 45 – x + 40 – x + 60 – x = 25 + 20 + 40 = 85.

For questions 50 to 53:

The given scores can be made by different combinations of balls faced and strike rate. The possible combinations for the scores given are as follows (number of balls faced, strike rate) –

Yuvraj and Sehwag - 60 runs – (120, 50%), (180, 33.3%), (150, 40%)

Smith - 81 runs – (270, 30%) , (180, 45%)

Gambhir - 108 runs – (180, 60%), (270, 40%), (240, 45%)

Strike rate of Sachin and Ponting $\rightarrow$ (30% and 60%) or (40% and 80%) in any order.

Let us suppose either Yuvraj or Sehwag had strike rate of 40% then Ponting's strike rate would have been either 30% or 60% and he must have faced 300 balls.

Hence, he can score 90 runs or 180 runs which is not possible. Hence, for Yuvraj and Sehwag the possible combinations of ball faced and strick rate are (120, 50%), (180, 33.3%) in any order.

So Smith faced 270 balls and his strike rate is 30% and Gambhir faced 240 balls with strike rate of 45%. Ponting's strike is either 40% or 80%. If Ponting's strike rate of 40%, then strike rate of Sachin would be 80% and the score made by Sachin would be more than that of Ponting, which is not possible.

Hence, strike rate of Ponting will be 80%.

Now, the following table can be made.

Player	Balls Faced	Strike rate in %	Runs
Ponting	160	80	128
Sachin	300	40	120
Gambhir	240	45	108
Warner	150	60	90
Smith	270	30	81
Yuvraj / Sehwag	180	33.3	60
Sehwag / Yuvraj	120	50	60

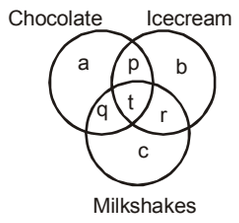
50. Strike rate of Sachin is 40%.

51. It can be either Sehwag or Yuvraj.

52. Sachin is the second highest scorer.

53. Warner scored 90 runs.

For questions 54 to 57:



Let, the number of kids who do not like either of three = n

The number of kids who like exactly one = s

The number of kids who like exactly two = d

The number of kids who like all three= t

So, n + s + d + t = 120 – (1)

n + s + d = 3(d + t); n + s = 2d + 3t

Substituting this in (1), we get 3d + 4t = 120

40 0

36 3

32 6

. .

0 30

So, n + s = (3d + 4t)3/4 – d/4 = 90 – d/4

Range of (n + s) is 80 to 90 as 'd' decreases from 40 to 0.

54. As 'n' is one-fifth of 'd', so 'd' has to be a multiple of 5 as well, so possible values of 'd' will be 40/20/0. Possible values of (n + s) will be 80/85/90 and of 'n' will be 8/4/0 respectively. 's' can take three possible values- 72/81/90.

55. 'n' will be maximum when (n + s) will be maximum, i.e 90. And s = a + b + c, where a > b > c > n. Maximum value which 'n can take is 21.

For questions 56 and 57:

n = 0 & a = 36.

56. Kids who like ice cream is b + p + t + r, which is equal to 120 – (a + q + c) . To maximize this number minimize q & c, as "a" is given 36. maximum value that 'b' can take is 35. To minimize 'c', we should minimize 's', i.e 80. "c" will be 9.

Also kids who like ice cream is equal to kids who like chocolate, so

36 + p + t + q = b + p + t + r

36 + q = b + r, since b < a. 'q' will be zero and r = 1.

Ans is 120 – (36 + 0 + 9) = 75

57. from previous question, s = 80 so d = 40 & t = 0

b + p + t + r = 75; 35 + p + 0 + 1 = 75, so p = 39.

58. The sum of required number of votes will be minimum when the number of votes for top four candidates will be as close as possible and the fifth candidate gets no vote. In that case the number of votes by top four candidates, in decreasing order will be 3752, 3751, 3749 and 3748.

Hence, the sum = 3752 + 0 = 3752.

59. This sum will be maximum for the person who got maximum number of votes in Round 2, i.e. 50% and just one less than 50% of votes cast in Round 3 (assuming winner got exactly 50% votes in Round 3)

This person is Shiela, and her total votes

= 3160 + 5000 + 4999 = 13159.

60. If he/she gets the least number of votes among the people who moved to Round 2, also he/she gets the least number of votes among the people who moved to Round3, and he wins the Round3 with minimum number of votes. This person can be Pravesh and his total votes will be 3084 + 2 + 4001 = 7087.

61. The total number can be minimum for Parvesh who qualified the Round 1 with minimum votes, and if he gets 2 votes, minimum votes needed to reach Round 3 and zero votes in Round 3. Hence total votes

= 3084 + 2 + 0 = 3086.

For questions 62 to 65:

By the information given in the question, we can determine that the number of items purchased by Hasan, Ram, Sanjay, Sunil, Alam and Govind were 3, 4, 4, 4, 5 and 5 respectively.

From statement (ii), the amount spent by Govind was equal to or less than that by Hasan. Since Govind purchase 5 items and the minimum cost of 5 items was Rs. 2000, the amount spent by Govind was also Rs. 2000.

From statement (iv), the amount spent by Sunil

$= \frac{4000+2000}{2} = 3000$

Now, using statements (iii), (v) and (vi), the final table can be drawn as follows:

Person	No. of items	Total amount spent	Price of items purchased
Govind	5	2000	100, 200, 400, 600, 700
Sunil	4	3000	1100, 900, 600, 400
Alam	5	4000	100, 200, 1100, 1200, 1400
Hassan	3	2000	200, 700, 1100
Ram	4	2900/3000	200, 700, 900, 1100/1200
Sanjay	4	3000/2900	200, 700, 900, 1200/1100

62. Item priced Rs. 200 was purchased by maximum number of friends i.e. 5.

63. Sanjay spent either Rs. 2900 or Rs. 3000.

64. Statement (i) is wrong.

Statement (ii) is correct.

65. If Ram purchased the item priced Rs. 1100, the answer is 1.

If Ram did not purchase the item of Rs. 1100, then the answer is 0.

Hence, option (d) is the correct answer.

For questions 66 to 69:

From (1), Mr. Gupta bought either a dress or a Sweater.

From (2), either Mr. Haathi or Mr. Handa would have bought the bicycle.

From (3), Mr. Chowbey spent Rs. 1200 for the item priced at Rs. 1500.

From (6), Mr. Pandey spent Rs. 800 for the item which he purchased.

From (8), Mr. Sharma spent less than Rs. 800 (Rs. 600 or Rs. 75) and Mr. Gupta spent less than Mr. Sharma (Rs. 75 or Rs. 50)

From (7), Mr. Haathi, bought a dress for Rs. 75. Hence Mr. Gupta must have spent Rs. 50 for sweater. Also Mr. Sharma must have spent Rs. 600.

Now since, every one's paid price is known, Mr. Handa must have bought the bicycle for Rs. 1000 and from (2), the original price must have been Rs. 2000. From (4), the only original price and paid price pair which is different by Rs. 100, in Rs. 900 and Rs. 800 respectively. Hence, Mr. Pandey bought tires for Rs. 800.

From (10), since the paid price of telephone was more than the camera, therefore, the paid price of telephone was Rs. 1200 and that of the camera was Rs. 600.

From (9) now, the original price of the lowest paid price item, sweater, would not be the lowest. Hence its original price must be Rs. 300.

Also from (7), the original price of the dress was Rs. 200 (twice the value of Rs. 100 note).

The summary of all the above is captured in the table below:

		Items						Price Paid					
	Persons	Dress	Sweater	Camera	Telephone	Tires	Bicycle	Rs. 800	Rs. 600	Rs. 1200	Rs. 1000	Rs. 75	Rs. 50
	Mr. Gupta		✓										✓
	Mr. Pandey					✓		✓					
	Mr. Sharma			✓					✓				
	Mr. Chowbey				✓					✓			
	Mr. Haathi	✓										✓	
	Mr. Handa						✓				✓		
Original price	Rs. 200	✓											
	Rs. 1500				✓								
	Rs. 300		✓										
	Rs. 2000						✓						
	Rs. 900					✓							
	Rs. 1200			✓									

66. Mr. Sharma bought the camera.

67. Mr. Chowbey paid the highest amount.

68. Mr. Handa bought the bicycle.

69. Since, Rs. 1000 is paid for the item of Rs. 2000 so

$$\text{percentage discount} = \frac{2000-1000}{2000} \times 100 = 50\%.$$