CAT 2019 Question Paper Slot 2

DILR

Instructions [35 - 38]

Ten players, as listed in the table below, participated in a rifle shooting competition comprising of 10 rounds. Each round had 6 participants. Players numbered 1 through 6 participated in Round 1, players 2 through 7 in Round 2,..., players 5 through 10 in Round 5, players 6 through 10 and 1 in Round 6, players 7 through 10, 1 and

2 in Round 7 and so on. The top three performances in each round were awarded 7, 3 and 1 points respectively. There were no ties in any of the 10 rounds. The table below gives the total number of points obtained by the 10 players after Round 6 and Round 10.

Player No.	Player Name	Points after Round 6	Points after Round 10
1	Amita	8	18
2	Bala	2	5
3	Chen	3	6
4	David	6	6
5	Eric	3	10
6	Fatima	10	10
7	Gordon	17	17
8	Hansa	1	4
9	Ikea	2	17
10	Joshin	14	17

The following information is known about Rounds 1 through 6:
1. Gordon did not score consecutively in any two rounds.
2. Eric and Fatima both scored in a round.
The following information is known about Rounds 7 through 10:
1. Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds.
2. Joshin scored in Round 7, while Amita scored in Round 10.
3. No player scored in all the four rounds.

35. What were the scores of Chen, David, and Eric respectively after Round 3?

A 3, 6, 3

B 3, 3, 3

C 3, 3, 0

D 3, 0, 3

36. Which three players were in the last three positions after Round 4?

A Bala, Ikea, Joshin

B Bala, Hansa, Ikea

C Bala, Chen, Gordon

D Hansa, Ikea, Joshin

37. Which player scored points in maximum number of rounds?

A Joshin

B Chen

C Amita

D Ikea

38. Which players scored points in the last round?

A Amita, Eric, Joshin

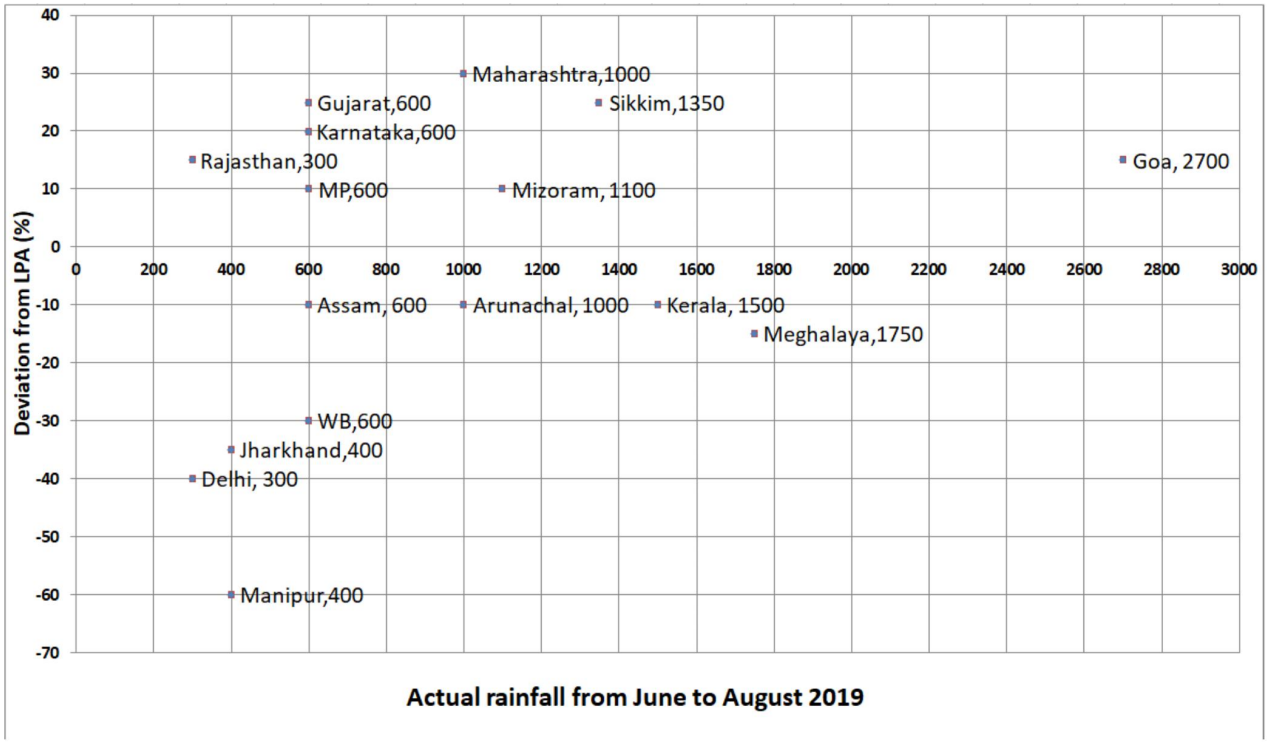
B Amita, Chen, David

C Amita, Bala, Chen

D Amita, Chen, Eric

Instructions [39 - 42]

To compare the rainfall data, India Meteorological Department (IMD) calculated the Long Period Average (LPA) of rainfall during period June-August for each of the 16 states. The figure given below shows the actual rainfall (measured in mm) during June-August, 2019 and the percentage deviations from LPA of respective states in 2018. Each state along with its actual rainfall is presented in the figure.



39. If a 'Heavy Monsoon State' is defined as a state with actual rainfall from June-August, 2019 of 900 mm or more, then approximately what percentage of 'Heavy Monsoon States' have a negative deviation from respective LPAs in 2019?

A 42.86

B 75.00

C 57.14

D 14.29

40. If a 'Low Monsoon State' is defined as a state with actual rainfall from June-August, 2019 of 750 mm or less, then what is the median 'deviation from LPA' (as defined in the Y-axis of the figure) of 'Low Monsoon States'?

A -10%

B 10%

C -20%

D -30%

41. What is the average rainfall of all states that have actual rainfall of 600 mm or less in 2019 and have a negative deviation from LPA?

A 367 mm

B 500 mm

C 450 mm

D 460 mm

42. The LPA of a state for a year is defined as the average rainfall in the preceding 10 years considering the period of June-August. For example, LPA in 2018 is the average rainfall during 2009-2018 and LPA in 2019 is the average rainfall during 2010-2019. It is also observed that the actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009. The LPA of Gujarat in 2019 is closest to

A 475 mm

B 505 mm

C 490 mm

D 525 mm

Instructions [43 - 46]

The first year students in a business school are split into six sections. In 2019 the Business Statistics course was taught in these six sections by Annie, Beti, Chetan, Dave, Esha, and Fakir. All six sections had a common midterm (MT) and a common endterm (ET) worth 100 marks each. ET contained more questions than MT. Questions for MT and ET were prepared collectively by the six faculty members. Considering MT and ET together, each faculty member prepared the same number of questions.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks. In both MT and ET, all the 5-mark questions preceded the 10-mark questions, and all the 15- mark questions followed the 10-mark questions.

The following additional facts are known.
i. Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks.
ii. Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT.
iii. All questions prepared by a faculty member appeared consecutively in MT as well as ET.
iv. Chetan prepared the third question in both MT and ET; and Esha prepared the eighth question in both.
v. Fakir prepared the first question of MT and the last one in ET. Dave prepared the last question of MT and the first one in ET.

43. The second question in ET was prepared by:

A Chetan

B Beti

C Esha

D Dave

44. How many 5-mark questions were there in MT and ET combined?

A 13

B 12

C 10

D Cannot be determined

45. Who prepared 15-mark questions for MT and ET?

A Only Beti, Dave, Esha and Fakir

B Only Dave and Fakir

C Only Esha and Fakir

D Only Dave, Esha and Fakir

46. Which of the following questions did Beti prepare in ET?

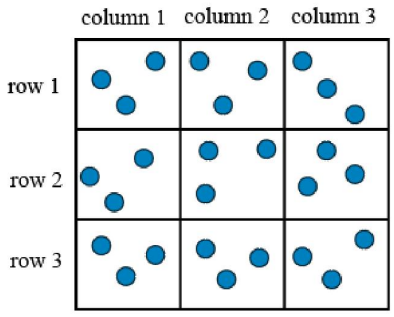
A Seventh question

B Fourth question

C Ninth question

D Tenth question

Instructions [47 - 50]



	Column 1	Column 2	Column 3
Row 1	(2, 4)	(6, 8)	(1, 3)
Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

Three pouches (each represented by a filled circle) are kept in each of the nine slots in a 3 × 3 grid, as shown in the figure. Every pouch has a certain number of one-rupee coins. The minimum and maximum amounts of money (in rupees) among the three pouches in each of the nine slots are given in the table. For example, we know that among the three pouches kept in the second column of the first row, the minimum amount in a pouch is Rs. 6 and the maximum amount is Rs. 8.

There are nine pouches in any of the three columns, as well as in any of the three rows. It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4.

47. What is the total amount of money (in rupees) in the three pouches kept in the first column of the second row?

48. How many pouches contain exactly one coin?

49. What is the number of slots for which the average amount (in rupees) of its three pouches is an integer?

50. The number of slots for which the total amount in its three pouches strictly exceeds Rs. 10 is

Instructions [51 - 54]

Three doctors, Dr. Ben, Dr. Kane and Dr. Wayne visit a particular clinic Monday to Saturday to see patients. Dr. Ben sees each patient for 10 minutes and charges Rs. 100/-. Dr. Kane sees each patient for 15 minutes and charges Rs. 200/-, while Dr. Wayne sees each patient for 25 minutes and charges Rs. 300/-. The clinic has three rooms numbered 1, 2 and 3 which are assigned to the three doctors as per the following table.

Room No.	Monday & Tuesday	Wednesday & Thursday	Friday & Saturday
1	Ben	Wayne	Kane
2	Kane	Ben	Wayne
3	Wayne	Kane	Ben

The clinic is open from 9 a.m. to 11.30 a.m. every Monday to Saturday.
On arrival each patient is handed a numbered token indicating their position in the queue, starting with token number 1 every day. As soon as any doctor becomes free, the next patient in the queue enters that emptied room for consultation. If at any time, more than one room is free then the waiting patient enters the room with the smallest number. For example, if the next two patients in the queue have token numbers 7 and 8 and if rooms numbered 1 and 3 are free, then patient with token number 7 enters room number 1 and patient with token number 8 enters room number 3.

51. What is the maximum number of patients that the clinic can cater to on any single day?

A 12

B 30

C 31

D 15

52. The queue is never empty on one particular Saturday. Which of the three doctors would earn the maximum amount in consultation charges on that day?

A Dr. Wayne

B Dr. Kane

C Dr. Ben

D Both Dr. Wayne and Dr. Kane

53. Mr. Singh visited the clinic on Monday, Wednesday, and Friday of a particular week, arriving at 8:50 a.m. on each of the three days. His token number was 13 on all three days. On which day was he at the clinic for the maximum duration?

A Same duration on all three days

B Friday

C Monday

D Wednesday

54. On a slow Thursday, only two patients are waiting at 9 a.m. After that two patients keep arriving at exact 15-minute intervals starting at 9:15 a.m. -- i.e. at 9:15 a.m., 9:30 a.m., 9:45 a.m. etc. Then the total duration in minutes when all three doctors are simultaneously free is

A 30

B 10

C 15

D 0

Instructions [55 - 58]

In the table below the check marks indicate all languages spoken by five people: Paula, Quentin, Robert, Sally and Terence. For example, Paula speaks only Chinese and English.

	Arabic	Basque	Chinese	Dutch	English	French
Paula			✓		✓	
Quentin				✓	✓	
Robert	✓					✓
Sally		✓			✓	
Terence			✓			✓

These five people form three teams, Team 1, Team 2 and Team 3. Each team has either 2 or 3 members. A team is said to speak a particular language if at least one of its members speak that language.
The following facts are known.
(1) Each team speaks exactly four languages and has the same number of members.
(2) English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team.
(3) None of the teams include both Quentin and Robert.
(4) Paula and Sally are together in exactly two teams.
(5) Robert is in Team 1 and Quentin is in Team 3.

55. Who among the following four is not a member of Team 2?

A Paula

B Terence

C Quentin

D Sally

56. Who among the following four people is a part of exactly two teams?

A Paula

B Quentin

C Sally

D Robert

57. Who among the five people is a member of all teams?

A Terence

B Sally

C Paula

D No one

58. Apart from Chinese and English, which languages are spoken by Team 1?

A Arabic and French

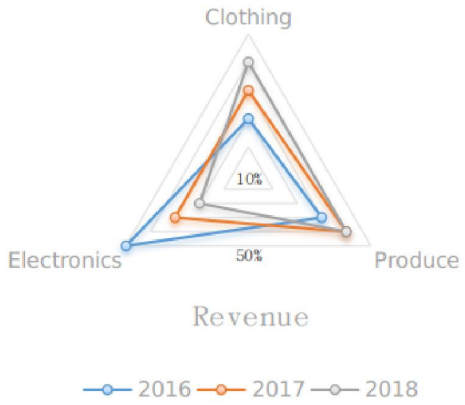
B Basque and French

C Arabic and Basque

D Basque and Dutch

Instructions [59 - 62]

A large store has only three departments, Clothing, Produce, and Electronics. The following figure shows the percentages of revenue and cost from the three departments for the years 2016, 2017 and 2018. The dotted lines depict percentage levels. So for example, in 2016, 50% of store's revenue came from its Electronics department while 40% of its costs were incurred in the Produce department.



In this setup, Profit is computed as (Revenue - Cost) and Percentage Profit as Profit/Cost × 100%.
It is known that
1. The percentage profit for the store in 2016 was 100%.
2. The store's revenue doubled from 2016 to 2017, and its cost doubled from 2016 to 2018.
3. There was no profit from the Electronics department in 2017.
4. In 2018, the revenue from the Clothing department was the same as the cost incurred in the Produce department.

59. What was the percentage profit of the store in 2018?

60. What was the ratio of revenue generated from the Produce department in 2017 to that in 2018?

A 16 : 9

B 4 : 3

C 9 : 16

D 8 : 5

61. What percentage of the total profits for the store in 2016 was from the Electronics department?

62. What was the approximate difference in profit percentages of the store in 2017 and 2018?

A 15.5

B 25.0

C 8.3

D 33.3

Instructions [63 - 66]

Students in a college are discussing two proposals --
A: a proposal by the authorities to introduce dress code on campus, and
B: a proposal by the students to allow multinational food franchises to set up outlets on college campus.

A student does not necessarily support either of the two proposals.

In an upcoming election for student union president, there are two candidates in fray:
Sunita and Ragini. Every student prefers one of the two candidates.

A survey was conducted among the students by picking a sample of 500 students. The following information was noted from this survey.

1. 250 students supported proposal A and 250 students supported proposal B.
2. Among the 200 students who preferred Sunita as student union president, 80% supported proposal A.
3. Among those who preferred Ragini, 30% supported proposal A.
4. 20% of those who supported proposal B preferred Sunita.
5. 40% of those who did not support proposal B preferred Ragini.
6. Every student who preferred Sunita and supported proposal B also supported proposal A.
7. Among those who preferred Ragini, 20% did not support any of the proposals.

63. Among the students surveyed who supported proposal A, what percentage preferred Sunita for student union president?

64. What percentage of the students surveyed who did not support proposal A preferred Ragini as student union president?

65. What percentage of the students surveyed who supported both proposals A and B preferred Sunita as student union president?

A 40

B 25

C 20

D 50

66. How many of the students surveyed supported proposal B, did not support proposal A and preferred Ragini as student union president?

A 150

B 210

C 200

D 40

Answers

DILR

35.**B**	36.**D**	37.**D**	38.**D**	39.**A**	40.**A**	41.**D**	42.**C**
43.**D**	44.**A**	45.**D**	46.**D**	47.**13**	48.**8**	49.**2**	50.**3**
51.**C**	52.**B**	53.**C**	54.**D**	55.**C**	56.**C**	57.**C**	58.**A**
59.**25**	60.**D**	61.**70**	62.**C**	63.**64**	64.**84**	65.**D**	66.**A**

Explanations

DILR

Explanation [35 - 38]:
From the condition given in the premise, we can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A		X	X	X	X		8					18
B			X	X	X	X	2					5
C				X	X	X	3	X				6
D					X	X	6	X	X			6
E						X	3	X	X	X		10
F							10	X	X	X	X	10
G	X						17		X	X	X	17
H	X	X					1			X	X	4
I	X	X	X				2				X	17
J	X	X	X	X			14					17

The information known about Rounds 1 through 6:
1. Gordon(G) did not score consecutively in any two rounds.
2. Eric(E) and Fatima(F) both scored in a round.

By observing the table:

1. Jordan(J) scored 7 points in both the rounds 5th & 6th.

2. Amita (A) scored 1,7 points then she scored 7 in the first round.

3. Bala (B) scored 1 point in both the rounds 1st and 2nd.

4. Ikea (I) scored 1 point in the round 4th and 5th.

5. Gordon(G- 7,7,3) did not score consecutively in any two rounds so it scored in $2^{nd,}$ 4^{th} and 6^{th} rounds respectively.

We can make the following table from the details given in the question.

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

1. Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.

2. Ikea scored 15 points (1,7,7) in three rounds respectively.

3. Eric scored 7 in round 10.

4. Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8	7	0	0	3	18
B	1	1	X	X	X	X	2	0	0	3	0	5
C	3	0	0	X	X	X	3	X	1	1	1	6
D	0	3	0	3	X	X	6	X	X	0	0	6
E	0	0	3	0	0	X	3	X	X	X	7	10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17	0	X	X	X	17
H	X	X	1	0	0	0	1	0	3	X	X	4
I	X	X	X	1	1	0	2	1	7	7	X	17
J	X	X	X	X	7	7	14	3	0	0	0	17

35. **B**

Hence option B is correct.

36. **D**

Hence option D is correct.

37. **D**

Hence option D is correct.

38. **D**

3. Bala (B) scored 1 point in both the rounds 1st and 2nd.

4. Ikea (I) scored 1 point in the round 4th and 5th.

5. Gordon(G- 7,7,3) did not score consecutively in any two rounds so it scored in $2^{nd,}$ 4^{th} and 6^{th} rounds respectively.

We can make the following table from the details given in the question.

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

1. Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.

2. Ikea scored 15 points (1,7,7) in three rounds respectively.

3. Eric scored 7 in round 10.

4. Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

Hence option D is correct.

39. **A**

The states which satisfy the condition given in the question:

Maharashtra, Mizoram, Sikkim, Goa, Arunachal, Kerla, Meghalaya.....7 states

The 'Heavy Monsoon States' have a negative deviation: Arunachal, Kerla, Meghalaya

= 3/7x100=42.86%

Option A

40. **A**

All the states which satisfy the condition for ' Low monsoon state' are Gujrat (+25%), Karnataka (+20%), Rajasthan (+15), MP (+10%), Assam (-10%), WB (-30%), Jharkhand (-35%), Delhi (-40%) and Manipur (-60%).

The median of all the deviation is -10% Assam.

41. **D**

The states Assam, WB, Jharkhand, Delhi and Manipur satisfy the conditions given in the question.

The actual rainfall of all these states in 2019 are 600,600,400,300,400

Average of these states= 2300/5=460mm

42. **C**

The actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009.

So If the actual rainfall in 2009 = x mm

Then the actual rainfall in 2019= 1.2x mm

Actual rainfall in 2019= 600mm
Then, actual rainfall in 2009 = 500mm
As deviation is +25% so average 2009 - 2018 is 600/1.25 = 480
LPA 2019 = (480×10 - 500 + 600)/10 = 490mm

Answer C

Explanation [43 - 46]:

All six sections had a common midterm (MT) and a common end term (ET) worth 100 marks each.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks.

5x4=20, 10x3=30, 15x2=30

The total possible with considering the minimum number of questions of each type = 20+30+30=80 marks.

Rest 20 marks are possible by the following cases: {5,5,5,5} {5,5,10} {10,10} {5,15}

ET contained more questions than MT.

Thus MT cannot consider the case {5,5,5,5}

The number of questions in each case:

1) {5,5,5,5} = 9+4 =13 questions

2) {5,5,10} = 9+3 =12 questions

3) {10,10} = 9+2 =11 questions

4) {5,15} = 9+2 =11 questions

Considering MT and ET together, each faculty member prepared the same number of questions. The total

number of questions should be multiple of 6, thus the total number of questions will be 24.

For ET and MT, there are 2 cases :

{5,5,5,5}{5,15}

{5,5,5,5}{10,10}

According to the statement (i), Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks. Thus {10,10} case is not possible.

MT {5,5,5,5,5,10,10,10,15,15,15}

ET {5,5,5,5,5,5,5,5,10,10,10,15,15}

From statement (i),(ii),(iv),(v), every other faculty member prepared two questions for MT.
we can create the following table:

	1	2	3	4	5	6	7	8	9	10	11
MT	5	5	5	5	5	10	10	10	15	15	15
	F	F	C	C	A	B	B	E	E	D	D

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D		C		A			E					F

{ Annie(A), Beti(B), Chetan(C), Dave (D), Fakir(F) }

There are 24 questions in total so each faculty will make 4 questions.

We can create the following table for ET.

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D	D	C	C	A	A	A	E	E	B	B	F	F

43. **D**
Hence the correct option is D

44. **A**
Hence the correct option is A

45. **D**
Hence the correct option is D

46. **D**
Hence the correct option is D

47. **13**
We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {cloumn 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

The total amount of money (in rupees) in the three pouches kept in the first column of the second row=13

Correct answer 13

48. **8**

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {cloumn 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

Answer 8

49. **2**

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {cloumn 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

Answer 2

50. **3**

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {cloumn 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

Answer 3

51. **C**

If all the doctors served the patients one after the other, then in 2.5 hrs, Ben will serve 15 patients, Kane will serve 10 patients and Wayne will serve 6 patients.

A total of 31 patients can be served on a particular day.

52. **B**

If all the doctors served the patients one after the other, then in 2.5 hrs, Ben will serve 15 patients, Kane will serve 10 patients and Wayne will serve 6 patients.

Ben will earn = 15*100=Rs 1500

Kane will earn = 10*200=Rs 2000

Wayne will earn = 6*300=Rs 1800

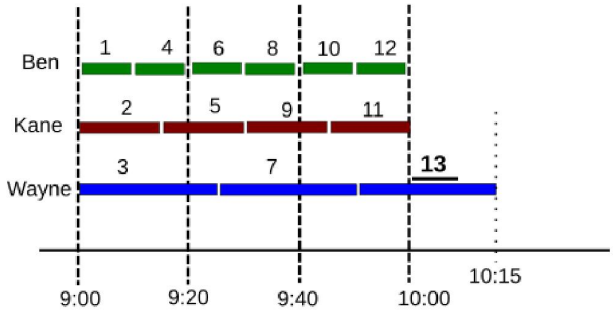
So Kane will earn the maximum amount in consultation charges on that day.

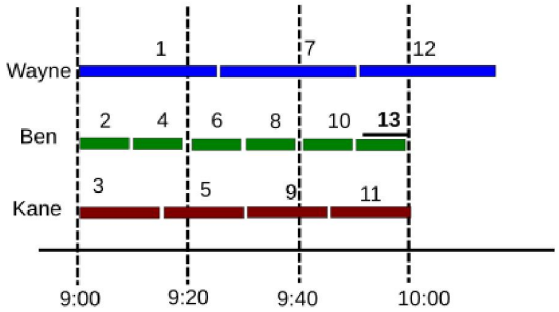
Option B

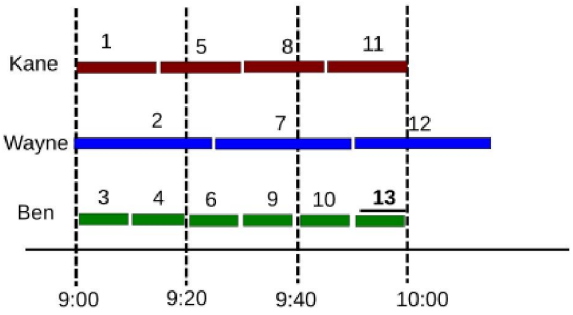
53. **C**

Mr Singh is 13th in the sequence on all the three days.

The following table will show the sequence for Monday, Wednesday and Friday.







He will stay the longest when the 13th guy is served by Doctor Wayne.

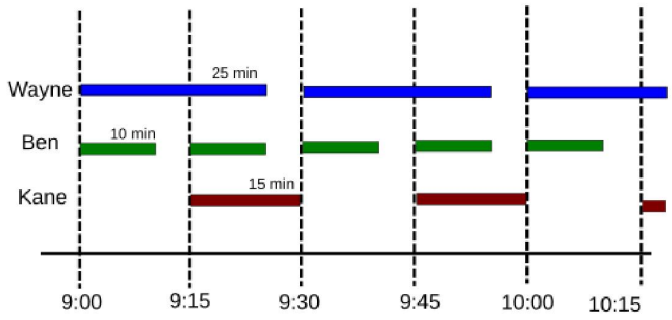
From the table, on Monday he had to wait at the clinic for the maximum duration: till 10:15.

Option C

54. **D**

On Thursday, the preference order for the patients is Wayne, Ben and Kane.

The first two customers will be served by Wayne and Ben. While Kane will be empty for the first 15 mins. Then he and Ben will serve the next two customers and Wayne will be empty for 5 minutes as shown in the figure below.



As we can see that the cycle will repeat after every 30 mins.

So all three doctors are never simultaneously free.

Option D

55. **C**

From statement 1 and 2,Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1,Team 2,Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is C.

56. **C**

From statement 1 and 2,Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1,Team 2,Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is C.

57. **C**

From statement 1 and 2,Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1,Team 2,Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is C.

58. **A**

From statement 1 and 2,Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1,Team 2,Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is A.

Explanation [59 - 62]:
We can make the following table from the web chart given in the question:

	Revenue				Cost			
	Clothing	Produce	Electronics		Clothing	Produce	Electronics	
2016	20	30	50		30	40	30	
2017	30	40	30		30	30	40	
2018	40	40	20		20	50	30	

If we consider the total cost in the year

2016 as 100, then according to Statement 1, the total revenue in 2016 must be 200.

The store's revenue doubled from 2016 to 2017, thus the total revenue in the year 2017 = 400.

We can find the revenue for the individual department in the year 2017, from the table.

There was no profit from the Electronics department in 2017, thus, we can find the total cost in 2017= 300

Considering the statement 4, we can find the total revenue in 2018 and tabulate the following table.

Cost							
	Clothing		Produce		Electronics		Total
2016	30%	30	40%	40	30%	30	100
2017	30%	90	30%	90	40%	120	300
2018	20%	40	50%	100	30%	60	200

Revenue							
	Clothing		Produce		Electronics		
2016	20%	40	30%	60	50%	100	200
2017	30%	120	40%	160	30%	120	400
2018	40%	100	40%	100	20%	50	250

59. **25**

The percentage profit of the store in 2018= (250-200)/200= 25%

60. **D**

The ratio of revenue generated from the Produce department in 2017 to that in 2018 = 160:100= 8:5

61. **70**

Profit in 2016 = 200-100= 100

Profit in the electronic department in 2016= 100-30=70

The total profits= for the store in 2016 were from the Electronics department 70%

62. **C**

Profit percentage in 2017= (400-300)/300 %= 33.33%

Profit percentage in 2018= (250-200)/200 %= 25%

The approximate difference in profit percentages of the store in 2017 and 2018= (33.33-25)%= 8.33%

Option C.

Explanation [63 - 66]:

Total number of students surveyed= 500

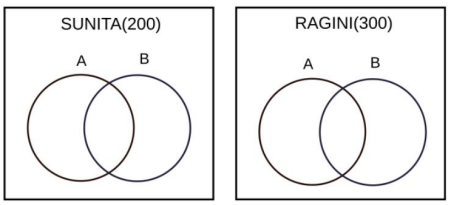
Every student prefers one of the two candidates. Ragini(R) and Sunita(S).

Thus, R+S=500.

According to statement 2, "Among the 200 students who preferred Sunita as student union president, 80% supported proposal A."

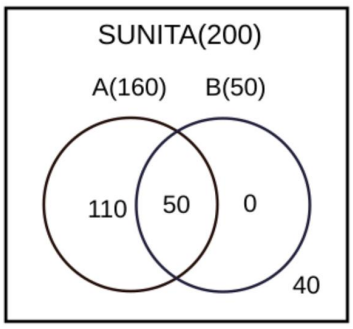
The number of students who support Sunita(S)=200

The number of students who supported Ragini(R)=300

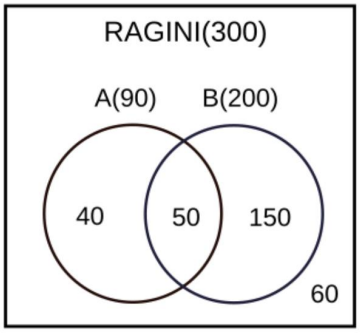


According to statements 2 and 3, 160 students who supported Sunita also supported the proposal A & 90 students who supported Ragini also supported proposal A.

According to statements 4 and 6, we can make the following Venn diagram for Sunita.



According to statement 5 and 7, we can make the following Venn diagram.



63. **64**
The number of students who preferred Sunita and the proposal A=160

=160/250= 64%

64. **84**
The percentage of the students surveyed who did not support proposal A preferred Ragini as student union president = 210/250=84%

Answer 84

65. **D**
According to the Venn diagram, the students surveyed who supported both proposals A and B preferred Sunita as student union president $\frac{50}{50+50}$ % =50%

66. **A**
From the diagram, we can understand that option A is correct.