CAT 2019 Question Paper with Solution
Slot 2 DILR

1.

|||Common|||

Direction: 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 Number	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.

|||End|||

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

A. 3, 3, 3
B. 3, 3, 0
C. 3, 6, 3
D. 3, 0, 3

Answer ||| A

Solution |||

The total of Joshin after six rounds is 14. Hence, Joshin scored 7 each in round 5 and 6.
Total of Amita after six rounds is 8 and she cannot score 7 in round six as it is already scored by Joshin in that round. Hence, the only possibility is that she scored 7 in round one and 1 in round six.
Total of Bala after six rounds is 8. Hence, he should have scored 1 in both rounds one and two. Similarly, Ikea's total after six rounds is 2 and she cannot score 1 in round six as it is already scored by Amita. Hence, she must have scored 1 in both rounds four and five.
The total of Hansa is 1 after six rounds. She must have scored that in round three as she cannot score 1 in other rounds.
Gordon did not score in any consecutive rounds and his total after six rounds is 17. Hence, he must have scored in rounds 2, 4, and 6.
As he cannot score 7 in round six, he must have scored 3 in that round and 7 in rounds two and four.
Eric must have scored 3 in only one round as he cannot score 1 in three rounds because from rounds one to four score 1 has already been taken.
Similarly, Fatima also must have scored 7 and 3 taking her score to 10 after six rounds.

We are given that Eric and Fatima both scored in a round and that is only possible when both have scored in round three. In round five someone must have scored 3. It cannot be Eric, hence, Fatima must have scored 3 in round five.

David must have scored 3 in round four. Scores of Chen and David for rounds one and two cannot be determined.

The following table can be derived

	1	2	3	4	5	6	Total	7	8	9	10	Total
Amita	7	-	-	-	-	1	8					18
Bala	1	1	-	-	-	-	2					5
Chen			0	-	-	-	3	-				6
David			0	3	-	-	6	-	-			6
Eric	0	0	3	0	0	-	3	-	-	-		10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
Gordon	-	7	0	7	0	3	17		-	-	-	17
Hansa	-	-	1	0	0	0	1			-	-	4
Ikea	-	-	-	1	1	0	2				-	17
Joshin	-	-	-	-	7	7	14					17

Chen must have scored 1 in each round 7, 8, and 9 so that the total can reach up to 6.
Ikea must have scored 15 in rounds seven to nine to reach the score of 17.

He can score 15 in three rounds only by scoring 7 in two rounds and 1 in one round. Since he cannot score 1 in rounds eight and nine, he must have scored that in round seven.
He must have scored 7 each in round eight and nine to take up the total to 17.
Amita should score a total of 10 in rounds seven to ten. Since she cannot score 1 in any of those rounds and she has scored in round 10, she must have scored 7 in round seven and 3 in round ten.
Joshin scored in round seven and we know that she needs 3 total to take her total to 17.
Since she cannot score 1 in any of the rounds, we can say that she must have scored 3 in round seven.
Hansa must have scored 3 in round eight as she cannot score that in round seven which was already scored by Joshin and Bala must have scored 3 in round nine as he cannot score that in any other round.

The following table can be derived:

	1	2	3	4	5	6	Total	7	8	9	10	Total
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Chen			0	-	-	-	3	-	1	1	1	6
David			0	3	-	-	6	-	-	0	0	6
Eric	0	0	3	0	0	-	3	-	-	-	7	10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
Gordon	-	7	0	7	0	3	17	0	-	-	-	17
Hansa	-	-	1	0	0	0	1	0	3	-	-	4
Ikea	-	-	-	1	1	0	2	1	7	7	-	17
Joshin	-	-	-	-	7	7	14	3	0	0	0	17

Chen and David scored 3 in either round one or two.
The scores of Chen, David, and Eric were 3, 3, and 3 respectively in round 3.

The correct option is A.

2.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

Answer ||| D

Solution |||

The total of Joshin after six rounds is 14. Hence, Joshin scored 7 each in round 5 and 6.
Total of Amita after six rounds is 8 and she cannot score 7 in round six it is already scored by Joshin in that round. Hence, the only possibility is that she scored 7 in round one and 1 in round six.
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As he cannot score 7 in round six, he must have scored 3 in that round and 7 in rounds two and four.
Eric must have scored 3 in only one round as he cannot score 1 in three rounds because from rounds one to four score 1 has already been taken.
Similarly, Fatima also must have scored 7 and 3 for taking his score to 10 after six rounds.

We are given that Eric and Fatima both scored in a round and that is only possible when both have scored in round three. In round five someone must have scored 3. It cannot be Eric, hence, Fatima must have scored 3 in round five.

David must have scored 3 in round four. Scores of Chen and David for rounds one and two cannot be determined.

The following table can be derived

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Chen			0	-	-	-	3	-				6
David			0	3	-	-	6	-	-			6
Eric	0	0	3	0	0	-	3	-	-	-		10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
Gordon	-	7	0	7	0	3	17		-	-	-	17
Hansa	-	-	1	0	0	0	1			-	-	4
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David			0	3	-	-	6	-	-	0	0	6
Eric	0	0	3	0	0	-	3	-	-	-	7	10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
Gordon	-	7	0	7	0	3	17	0	-	-	-	17
Hansa	-	-	1	0	0	0	1	0	3	-	-	4
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Joshin	-	-	-	-	7	7	14	3	0	0	0	17

Chen and David scored 3 in either round one or two.
The scores of Chen, David and Eric were 3, 3, 3 respectively in round 3.

From the table, we can say that Hansa, Ikea, and Joshin were in the last three positions after round 4.

The correct option is D.

3.Which player scored points in the maximum number of rounds?

A. Ikea
B. Chen
C. Amita
D. Joshin

Answer ||| A

Solution |||

The total of Joshin after six rounds is 14. Hence, Joshin scored 7 each in round 5 and 6.
Total of Amita after six rounds is 8 and she cannot score 7 in round six it is already scored by Joshin in that round. Hence, the only possibility is that she scored 7 in round one and 1 in round six.
Total of Bala after six rounds is 8. Hence, he should have scored 1 in both rounds one and two. Similarly, total of Ikea after six rounds is 2 and she cannot score 1 in round six as it is already scored by Amita. Hence, she must have scored 1 in both rounds four and five.
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Similarly, Fatima also must have scored 7 and 3 for taking his score to 10 after six rounds.

We are given that Eric and Fatima both scored in a round and that is only possible when both have scored in round three. In round five someone must have scored 3. It cannot be Eric, hence, Fatima must have scored 3 in round five.

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David			0	3	-	-	6	-	-			6
Eric	0	0	3	0	0	-	3	-	-	-		10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
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Ikea	-	-	-	1	1	0	2	1	7	7	-	17
Joshin	-	-	-	-	7	7	14	3	0	0	0	17

Chen and David scored 3 in either round one or two.
The scores of Chen, David and Eric were 3, 3, 3 respectively in round 3.

Ikea scored in six rounds which was the maximum.

The correct option is A.

4.Which players scored points in the last round?

A. Amita, Chen, David
B. Amita, Chen, Eric
C. Amita, Eric, Joshin
D. Amita, Bala, Chen

Answer ||| B

Solution |||

Amita, Chen, and Eric scored points in the last round.

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David			0	3	-	-	6	-	-			6
Eric	0	0	3	0	0	-	3	-	-	-		10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
Gordon	-	7	0	7	0	3	17		-	-	-	17
Hansa	-	-	1	0	0	0	1			-	-	4
Ikea	-	-	-	1	1	0	2				-	17
Joshin	-	-	-	-	7	7	14					17

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David			0	3	-	-	6	-	-	0	0	6
Eric	0	0	3	0	0	-	3	-	-	-	7	10
Fatima	0	0	7	0	3	0	10	-	-	-	-	10
Gordon	-	7	0	7	0	3	17	0	-	-	-	17
Hansa	-	-	1	0	0	0	1	0	3	-	-	4
Ikea	-	-	-	1	1	0	2	1	7	7	-	17
Joshin	-	-	-	-	7	7	14	3	0	0	0	17

Chen and David scored 3 in either round one or two.
The scores of Chen, David and Eric were 3, 3, 3 respectively in round 3.

The correct option is B

###TOPIC###Logical Reasoning||Tournaments||Tournaments###

5.

|||Common|||

Direction: 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 number	Monday and Tuesday	Wednesday and Thursday	Friday and 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.

|||End|||
What is the maximum number of patients that the clinic can cater to on any single day?
A. 15
B. 12
C. 31
D. 30

Answer ||| C

Solution |||

The total duration is 2.5 hrs, i.e.,150 mins.

The following table can be derived from the given information:

Doctor	Time taken for one patient	Maximum patients per day
Ben	10	15 (150/10)
Kane	15	10 (150/15)
Wayne	25	6 (150/25)
	Total	31

Therefore, the clinic can cater a maximum of 31 patients on any single day.

The correct option is C.

6. 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. Both Dr. Wayne and Dr. Kane
B. Dr. Ben
C. Dr. Wayne

D. Dr. Kane

Answer ||| D

Solution |||

Since the queue is never empty, we can say that the doctors are handling maximum patients.

Doctor	Time taken for one patient	Maximum patients per day	Charge per patient	Maximum earnings
Ben	10	15 (150/10)	100	1500
Kane	15	10 (150/15)	200	2000
Wayne	25	6 (150/25)	300	1800
	Total	31		

Doctor Kane would earn the maximum amount in consultation charges on that Saturday.

The correct option is D

7.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. Wednesday
C. Friday
D. Monday

Answer ||| D

Solution |||

Patient Number	Entry time
1	9:00 am
2	9:00 am
3	9:00 am
4	9:10 am
5	9:15 am
6	9:20 am
7	9:25 am
8	9:30 am
9	9:30 am
10	9:40 am
11	9:45 am
12	9:50 am
13	9:50 am

50 is a multiple of both 10 and 25. Hence, two patients simultaneously entered the rooms and Mr. Singh visited either Ben or Wayne.

Mr. Singh's token was 13. He visited Doctor Wayne on Monday.
On Wednesday and Friday, he visited Doctor Ben.

Doctor Wayne takes more time than Doctor Ben. Therefore, on Monday he was in the clinic for maximum duration.

The correct option is D.

8.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

Answer ||| D

Solution |||

From the following table we get the order of patients with different token numbers entering the doctor's room.

	Time taken for one patient	9:10	9:15	9:20	9:25	9:30	9:45	10:00
Wayne	25				4			9
Ben	10	1		3		5	7	10
Kane	15		2			6	8	

For further clearance we can understand from the timeline:

At 9:00 am – 2 patients were waiting

At 9:10 am – waiting number 1 - Doctor Ben

At 9:15 am – waiting number 2 - Doctor Kane and 2 new patients came to the clinic.

At 9:20 am - waiting number 3 - Doctor Ben

At 9:25 am - waiting number 4 - Doctor Wayne

At 9:30 am – two new patients came to clinic - Doctor Ben and Kane

9:40 – 9:45 – Only Doctor Ben is free.

At 9:45 am - two new patients came to clinic - Doctor Ben and Kane

9:50 – 9:55 – Only Wayne is free

9:55 – 10:00 – Only Wayne and Ben are free

At 10:00 - two new patients came to clinic - Doctor Wayne and Ben

And the cycle continues like this.

Hence, the duration where all the doctors are free together is 0.

The correct option is D.

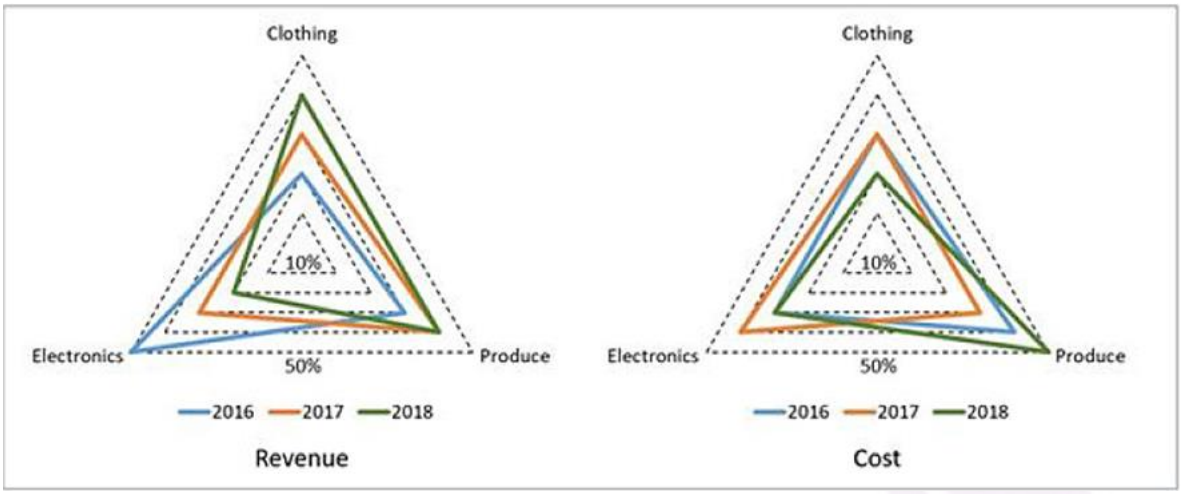
###TOPIC###Logical Reasoning||Logical Sequence||Logical Sequence###

9.

|||Common|||

Direction: 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.

|||End|||
What was the percentage profit of the store in 2018?

Answer |||

Solution |||

From the given information we can derive the following tables:

Revenue table (in Percentage)

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

Cost table (in percentage)

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

Let's assume the cost as Rs.100 for 2016. Hence, the revenue would be 200.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40

Since the store's revenue doubled from 2016 to 2017, the total revenue for 2017 was 400.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2017	160	120	120

From 2, the store's cost doubled from 100 to 200 from 2016 to 2018.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2018	100	60	40

From 3, the cost of the electronics department in 2017 was the same as revenue, i.e., 120.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2017	90	120	90

From 4, the revenue of the clothing department and the revenue of the other two departments can be determined.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2018	100	50	100

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40
2017	160	120	120
2018	100	50	100

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30
2017	90	120	90
2018	100	60	40

From the above derived final table we can get the percentage profit of the store in 2018 = $\frac{250-200}{200}$ (100%) = 25%.

The correct answer is 25%.

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

A. 8 : 5
B. 16 : 9
C. 4 : 3
D. 9 : 16

Answer ||| A

Solution |||

From the given information we can derive the following tables:

Revenue table (in Percentage)

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

Cost table (in percentage)

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

Let’s assume the cost as Rs.100 for 2016. Hence, the revenue would be 200

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40

Since the store’s revenue doubled from 2016 to 2017, the total revenue for 2017 as 400.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2017	160	120	120

From 2, the store’s cost doubled from 100 to 200 from 2016 to 2018.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2018	100	60	40

From 3, the cost of the electronics department in 2017 was the same as revenue i.e., 120.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2017	90	120	90

From 4, the revenue of the clothing department and the revenue of other two departments can be determined.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2018	100	50	100

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40
2017	160	120	120
2018	100	50	100

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30
2017	90	120	90
2018	100	60	40

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

The correct option is A.

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

Answer ||| 70

Solution |||

From the given information we can derive the following tables:

Revenue table (in Percentage)

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

Cost table (in percentage)

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

Let’s assume the cost as Rs.100 for 2016. Hence, the revenue would be 200

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40

Since the store's revenue doubled from 2016 to 2017, the total revenue for 2017 as 400.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2017	160	120	120

From 2, the store's cost doubled from 100 to 200 from 2016 to 2018.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2018	100	60	40

From 3, the cost of electronics department in 2017 was same as revenue i.e., 120.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2017	90	120	90

From 4, the revenue of clothing department and the revenue of other two departments can be determined.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2018	100	50	100

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40
2017	160	120	120
2018	100	50	100

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30
2017	90	120	90
2018	100	60	40

Profit of store from Electronics department in 2016 = 100 – 30 = 70
Total profit for the store = 100.
Required percentage = 70%

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

A. 33.3
B. 15.5
C. 8.3
D. 25.0

Answer ||| C

Solution |||

From the given information we can derive the following tables:

Revenue table (in Percentage)

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

Cost table (in percentage)

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

Let’s assume the cost as Rs.100 for 2016. Hence, the revenue would be 200

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40

Since the store's revenue doubled from 2016 to 2017, the total revenue for 2017 as 400.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2017	160	120	120

From 2, the store's cost doubled from 100 to 200 from 2016 to 2018.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2018	100	60	40

From 3, the cost of electronics department in 2017 was same as revenue i.e., 120.

Cost table (in Rs.)

	Produce	Electronics	Clothing
2017	90	120	90

From 4, the revenue of clothing department and the revenue of other two departments can be determined.

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2018	100	50	100

Revenue table (in Rs.)

	Produce	Electronics	Clothing
2016	60	100	40
2017	160	120	120
2018	100	50	100

Cost table (in Rs.)

	Produce	Electronics	Clothing
2016	40	30	30
2017	90	120	90
2018	100	60	40

In 2017, the profit percentage was $\frac{100}{300}(100\%)$ = 33.33% and in 2018 it was 25%.

Difference = 33.33 - 25 = 8.33%.

The correct option is C.

###TOPIC###Data Interpretation||Mixed Charts and Graphs||Mixed Charts and Graphs###

13.

|||Common|||

Direction: 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.

|||End|||
Who among the following four is not a member of Team 2?
A. Terence
B. Sally

C. Paula
D. Quentin

Answer ||| D

Solution |||

From the data given, we get the languages of Paula and Sally and combining that to points 4 and 2 we get the following table.

Team Members	Languages
Paula, Sally	English, Chinese, Basque
Paula, Sally	English, Chinese, Basque
	English, Chinese

Robert cannot be in the teams of Paula and Sally as he can speak 2 different languages that would violate the condition that each team can speak 4 languages.

Robert is in team 1 and Quentin is in team 3.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally	English, Chinese, Basque
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Form 2, Basque and French are spoken by two teams. Hence, team 2 should consist of a person who could speak French. Since only Robert and Terrance speak French but team 2 does not contain Arabic language so Terrance would be in team 2.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Only Paula and Terrance team 1, who could speak only English, Chinese, Arabic, or French.

The following final table is derived

Team Number	Team Members	Languages
1	Robert, Paula, Terrance	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Hence, Quentin is not a member of Team 2.

The correct option is D

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

A. Robert
B. Quentin
C. Sally
D. Paula

Answer ||| C

Solution |||

From the data given we get the languages of Paula and Sally and combining that to points 4 and 2 we get the following table.

Team Members	Languages
Paula, Sally	English, Chinese, Basque
Paula, Sally	English, Chinese, Basque
	English, Chinese

Robert cannot be in the teams of Paula and Sally as he can speak 2 different languages that would violate the condition that each team can speak 4 languages.

Robert is in team 1 and Quentin is in team 3.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally	English, Chinese, Basque
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Form 2, Basque and French are spoken by two teams. Hence, team 2 should consist of a person who could speak French. Since only Robert and Terrance speak French but team 2 does not contain Arabic language so Terrance would be in team 2.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Only Paula and Terrance team 1, who could speak only English, Chinese, Arabic or French.

The following final table is derived

Team Number	Team Members	Languages
1	Robert, Paula, Terrance	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Sally is part of exactly two teams.

The correct option is C.

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

A. No one
B. Terence
C. Paula
D. Sally

Answer ||| C

Solution |||

From the data given we get the languages of Paula and Sally and combining that to points 4 and 2 we get the following table.

Team Members	Languages
Paula, Sally	English, Chinese, Basque
Paula, Sally	English, Chinese, Basque
	English, Chinese

Robert cannot be in the teams of Paula and Sally as he can speak 2 different languages that would violate the condition that each team can speak 4 languages.

Robert is in team 1 and Quentin is in team 3.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally	English, Chinese, Basque
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Form 2, Basque and French are spoken by two teams. Hence, team 2 should consist of a person who could speak French. Since only Robert and Terrance speak French but team 2 does not contain Arabic language so Terrance would be in team 2.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Only Paula and Terrance team 1, who could speak only English, Chinese, Arabic or French.

The following final table is derived

Team Number	Team Members	Languages
1	Robert, Paula, Terrance	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Paula is a member of all teams.

The correct option is C.

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

A. Basque and Dutch
B. Arabic and French
C. Arabic and Basque
D. Basque and French

Answer ||| B

Solution |||

From the data given we get the languages of Paula and Sally and combining that to points 4 and 2 we get the following table.

Team Members	Languages
Paula, Sally	English, Chinese, Basque
Paula, Sally	English, Chinese, Basque
	English, Chinese

Robert cannot be in the teams of Paula and Sally as he can speak 2 different languages that would violate the condition that each team can speak 4 languages.

Robert is in team 1 and Quentin is in team 3.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally	English, Chinese, Basque
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Form 2, Basque and French are spoken by two teams. Hence, team 2 should consist of a person who could speak French. Since only Robert and Terrance speak French but team 2 does not contain Arabic language so Terrance would be in team 2.

Team Number	Team Members	Languages
1	Robert	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Only Paula and Terrance team 1, who could speak only English, Chinese, Arabic or French.

The following final table is derived

Team Number	Team Members	Languages
1	Robert, Paula, Terrance	English, Chinese, Arabic and French
2	Paula, Sally, Terrance	English, Chinese, Basque, French
3	Paula, Sally, Quentin	English, Chinese, Basque, Dutch

Apart from Chinese and English Team 1 speaks Arabic and French.

The correct option is B.

###TOPIC###Logical Reasoning||Logical Matching||Logical Matching###

17.

|||Common|||

Direction: 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.

|||End|||
The second question in ET was prepared by:
A. Esha
B. Beti
C. Dave
D. Chetan

Answer ||| C

Solution |||

Marks	Least number of Questions	Total Marks
5	4	20
10	3	30
15	2	30
	Grand total	80

The total marks should be 100. The different number of ways in which both ET and MT questions can be asked are:

Marks	Case 1	Case 2	Case 3	Case 4
5	8	6	5	4
10	3	4	3	5
15	2	2	3	2
Total	13	12	11	11

Each faculty member should prepare the same number of questions. Hence, the total number of questions after adding ET and MT should be a multiple of 6 as there are 6 faculty members.
We can eliminate case 2 because adding 12 to any of the remaining totals, i.e., 13 or 11 would not give us a multiple of 6.

It is given that ET contained more questions than MT therefore Case 1 is of ET. Further, from the given point (i) there are at least 5 questions of 5 marks in MT. Hence, case 4 also gets eliminated and we get the following table:

Marks	ET	MT
5	8	5
10	3	3
15	2	3
Total	13	11

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2		5		5
3	Chetan	5	Chetan	5
4		5		5
5	Annie	5	Annie	5
6		10		5
7		10		5
8	Esha	10	Esha	5
9		15		10
10		15		10
11	Dave	15		10
12		-		15
13		-	Fakir	15

Annie prepared one question for MT.

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2	Fakir	5	Dave	5
3	Chetan	5	Chetan	5
4	Chetan	5	Chetan	5
5	Annie	5	Annie	5
6	Beti	10	Annie	5
7	Beti	10	Annie	5
8	Esha	10	Esha	5
9	Esha	15	Esha	10
10	Dave	15	Beti	10
11	Dave	15	Beti	10
12	-	-	Fakir	15
13	-	-	Fakir	15

The second question in ET was prepared by Dave.

The correct option is C.

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

A. 10
B. 12
C. Cannot be determined
D. 13

Answer ||| D

Solution |||

Marks	Least number of Questions	Total Marks
5	4	20
10	3	30
15	2	30
	Grand total	80

The total marks should be 100. The different number of ways in which both ET and MT questions can be asked are:

Marks	Case 1	Case 2	Case 3	Case 4
5	8	6	5	4
10	3	4	3	5
15	2	2	3	2
Total	13	12	11	11

Each faculty member should prepare the same number of questions. Hence, the total number of questions after adding ET and MT should be a multiple of 6 as there are 6 faculty members.
We can eliminate case 2 because adding 12 to any of the remaining totals i.e, 13 or 11 would not give us the multiple of 6.

It is given that ET contained more questions than MT therefore Case 1 is of ET. Further, from the given point (i) there are at least 5 questions of 5 marks in MT. Hence, case 4 also gets eliminated and we get the following table:

Marks	ET	MT
5	8	5
10	3	3
15	2	3
Total	13	11

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2		5		5
3	Chetan	5	Chetan	5
4		5		5
5	Annie	5	Annie	5
6		10		5
7		10		5
8	Esha	10	Esha	5
9		15		10
10		15		10
11	Dave	15		10
12		-		15
13		-	Fakir	15

Annie prepared one question for MT.

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2	Fakir	5	Dave	5
3	Chetan	5	Chetan	5
4	Chetan	5	Chetan	5
5	Annie	5	Annie	5
6	Beti	10	Annie	5
7	Beti	10	Annie	5
8	Esha	10	Esha	5
9	Esha	15	Esha	10
10	Dave	15	Beti	10
11	Dave	15	Beti	10
12	-	-	Fakir	15
13	-	-	Fakir	15

There were (8 + 5), i.e., 13 questions in MT and ET combined for 5-marks.

The correct option is D.

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

A. Only Dave, Esha and Fakir
B. Only Esha and Fakir
C. Only Beti, Dave, Esha and Fakir
D. Only Dave and Fakir

Answer ||| A

Solution |||

Marks	Least number of Questions	Total Marks
5	4	20
10	3	30
15	2	30
	Grand total	80

The total marks should be 100. The different number of ways in which both ET and MT questions can be asked are:

Marks	Case 1	Case 2	Case 3	Case 4
5	8	6	5	4
10	3	4	3	5
15	2	2	3	2
Total	13	12	11	11

Each faculty member should prepare the same number of questions. Hence, the total number of questions after adding ET and MT should be a multiple of 6 as there are 6 faculty members.
We can eliminate case 2 because adding 12 to any of the remaining totals i.e, 13 or 11 would not give us the multiple of 6.

It is given that ET contained more questions than MT therefore Case 1 is of ET. Further, from the given point (i) there are at least 5 questions of 5 marks in MT. Hence, case 4 also gets eliminated and we get the following table:

Marks	ET	MT
5	8	5
10	3	3
15	2	3
Total	13	11

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2		5		5
3	Chetan	5	Chetan	5
4		5		5
5	Annie	5	Annie	5
6		10		5
7		10		5
8	Esha	10	Esha	5
9		15		10
10		15		10
11	Dave	15		10
12		-		15
13		-	Fakir	15

Annie prepared one question for MT.

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2	Fakir	5	Dave	5
3	Chetan	5	Chetan	5
4	Chetan	5	Chetan	5
5	Annie	5	Annie	5
6	Beti	10	Annie	5
7	Beti	10	Annie	5
8	Esha	10	Esha	5
9	Esha	15	Esha	10
10	Dave	15	Beti	10
11	Dave	15	Beti	10
12	-	-	Fakir	15
13	-	-	Fakir	15

Only Dave, Esha, and Fakir prepared 15-mark questions.

The correct option is A.

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

A. Tenth question
B. Fourth question
C. Ninth question
D. Seventh question

Answer ||| A

Solution |||

Marks	Least number of Questions	Total Marks
5	4	20
10	3	30
15	2	30
	Grand total	80

The total marks should be 100. The different number of ways in which both ET and MT questions can be asked are:

Marks	Case 1	Case 2	Case 3	Case 4
5	8	6	5	4
10	3	4	3	5
15	2	2	3	2
Total	13	12	11	11

Each faculty member should prepare the same number of questions. Hence, the total number of questions after adding ET and MT should be a multiple of 6 as there are 6 faculty members.
We can eliminate case 2 because adding 12 to any of the remaining totals i.e, 13 or 11 would not give us the multiple of 6.

It is given that ET contained more questions than MT therefore Case 1 is of ET.
Further, from the given point (i) there are at least 5 questions of 5 marks in MT.
Hence, case 4 also gets eliminated and we get the following table:

Marks	ET	MT
5	8	5
10	3	3
15	2	3
Total	13	11

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2		5		5
3	Chetan	5	Chetan	5
4		5		5
5	Annie	5	Annie	5
6		10		5
7		10		5
8	Esha	10	Esha	5
9		15		10
10		15		10
11	Dave	15		10
12		-		15
13		-	Fakir	15

Annie prepared one question for MT.

Question number	MT		ET	
	Faculty Name	Marks	Faculty Name	Marks
1	Fakir	5	Dave	5
2	Fakir	5	Dave	5
3	Chetan	5	Chetan	5
4	Chetan	5	Chetan	5
5	Annie	5	Annie	5
6	Beti	10	Annie	5
7	Beti	10	Annie	5
8	Esha	10	Esha	5
9	Esha	15	Esha	10
10	Dave	15	Beti	10
11	Dave	15	Beti	10
12	-	-	Fakir	15
13	-	-	Fakir	15

Beti prepared the tenth question in ET.

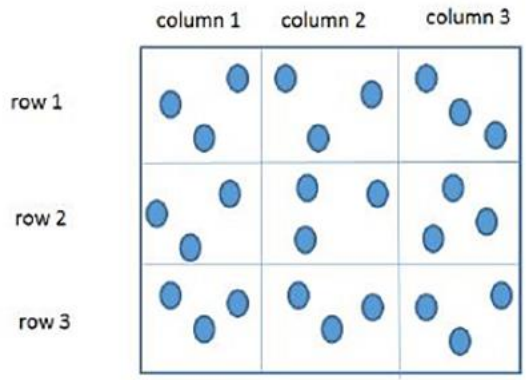
The correct option is A.

###TOPIC###Data Interpretation||Caselets||Caselets###

21.

|||Common|||

Direction:



	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.

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

Answer ||| 13

Solution |||

Since the minimum and maximum value is the same in row 2 of column 2, the number of coins were 1,1,1.
The total amount of money kept in the three pouches in the first column of the third row is Rs. 4. Hence, the number of coins in these pouches is in the order 1,1,2.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8)	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	
Total				

The average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer which means the total of every row or column is a multiple of 9.

We can see the least and maximum sum possible in Row 3 is from 17 to 21.

Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	Total
Least	1,1,2	1,1,2	2,2,5	17
Maximum	1,1,2	1,2,2	2,5,5	21

The only multiple of 9 in this range is 18. Hence, the sum of row three would be 18.

Similarly looking at Column 2, we get that the minimum and maximum sum which can be obtained is 27 and 30.
The only multiple of 9 in that range is 27. Hence, the sum of column 2 is 27.

In order to make the sum of column 2 as 27, the only possible way is by arranging the pouches in the following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5)	18
Total		27		

From 3, the sum of Row 3 is 18. Hence, when we deduct 8 from 18 we get 10.
The only possible way to arrange the cell of Column 3 in Row 3 is 2,3,5.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total		27		

For Column 1, we get the minimum and maximum sum as 23 and 27. The only multiple of 9 in that range is 27, therefore, the sum of column 1 is 27.
To make the sum of column 1 as 27 the only possible way is by arranging the pouches in the following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 1, the minimum and maximum sum is 35 and 37.
The only multiple of 9 in that range is 36.
To make the sum of Row 1 as 36 the only possible way is by arranging the pouches in the following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) -	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 2, the minimum and maximum sum which can be obtained is 48 and 62.
The only multiple of 9 in that range is 54. Hence, the sum of Row 2 is 54.
To make the sum of Row 2 as 54 the only possible way is by arranging the pouches in the following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) – 6,12,20	54
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27	54	

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

The correct answer is 13.

22.How many pouches contain exactly one coin?

Answer ||| 8

Solution |||

Since the minimum and maximum value is same in row 2 of column 2, the number of coins were 1,1,1.
The total amount of money kept in the three pouches in the first column of the third row is Rs. 4. Hence, the number of coins in these pouches is in the order 1,1,2.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8)	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	
Total				

The average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer which means the total of every row or column is a multiple of 9.

We can see the least and maximum sum possible in Row 3 is from 17 to 21.

Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	Total
Least	1,1,2	1,1,2	2,2,5	17
Maximum	1,1,2	1,2,2	2,5,5	21

The only multiple of 9 in this range is 18. Hence, the sum of row three would be 18.

Similarly looking at Column 2, we get that the minimum and maximum sum which can be obtained is 27 and 30.
The only multiple of 9 in that range is 27. Hence, the sum of column 2 is 27.

In order to make the sum of column 2 as 27 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5)	18
Total		27		

From 3, the sum of Row 3 is 18. Hence, when we deduct 8 from 18 we get 10.
The only possible way to arrange the cell of Column 3 in Row 3 is 2,3,5.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total		27		

For Column 1 we get that the minimum and maximum sum as 23 and 27. The only multiple of 9 in that range is 27 therefore the sum of column 1 is 27.
To make the sum of column 1 as 27 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 1, the minimum and maximum sum is 35 and 37.
The only multiple of 9 in that range is 36.
To make the sum of Row 1 as 36 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) -	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 2, the minimum and maximum sum which can be obtained is 48 and 62.
The only multiple of 9 in that range is 54. hence, the sum of Row 2 is 54.
To make the sum of Row 2 as 54 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) – 6,12,20	54
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27	54	

8 pouches contain exactly one coin.

The correct answer is 8.

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

Answer ||| 2

Solution |||

Since the minimum and maximum value is the same in row 2 of column 2, the number of coins were 1,1,1.
The total amount of money kept in the three pouches in the first column of the third row is Rs. 4. Hence, the number of coins in these pouches is in the order 1,1,2.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8)	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	
Total				

The average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer which means the total of every row or column is a multiple of 9.

We can see the least and maximum sum possible in Row 3 is from 17 to 21.

Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	Total
Least	1,1,2	1,1,2	2,2,5	17
Maximum	1,1,2	1,2,2	2,5,5	21

The only multiple of 9 in this range is 18. Hence, the sum of row three would be 18.

Similarly looking at Column 2, we get that the minimum and maximum sum which can be obtained is 27 and 30.
The only multiple of 9 in that range is 27. Hence, the sum of column 2 is 27.

In order to make the sum of column 2 as 27 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5)	18
Total		27		

From 3, the sum of Row 3 is 18. Hence, when we deduct 8 from 18 we get 10.
The only possible way to arrange the cell of Column 3 in Row 3 is 2,3,5.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total		27		

For Column 1 we get that the minimum and maximum sum as 23 and 27. The only multiple of 9 in that range is 27 therefore the sum of column 1 is 27.
To make the sum of column 1 as 27 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 1, the minimum and maximum sum is 35 and 37.
The only multiple of 9 in that range is 36.
To make the sum of Row 1 as 36 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) -	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 2, the minimum and maximum sum which can be obtained is 48 and 62.
The only multiple of 9 in that range is 54. hence, the sum of Row 2 is 54.
To make the sum of Row 2 as 54 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) – 6,12,20	54
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27	54	

There are 2 slots (Row 2 - column 2 and Row 1 - Column 3) for which the average amount (in rupees) of its three pouches is an integer.

The correct answer is 2.

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

Answer ||| 3

Solution |||

Since the minimum and maximum value is same in row 2 of column 2, the number of coins were 1,1,1.
The total amount of money kept in the three pouches in the first column of the third row is Rs. 4. Hence, the number of coins in these pouches is in the order 1,1,2.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8)	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	
Total				

The average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer which means the total of every row or column is a multiple of 9.

We can see the least and maximum sum possible in Row 3 is from 17 to 21.

Row 3	(1,2) – 1,1,2	(1,2)	(2,5)	Total
Least	1,1,2	1,1,2	2,2,5	17
Maximum	1,1,2	1,2,2	2,5,5	21

The only multiple of 9 in this range is 18. Hence, the sum of row three would be 18.

Similarly looking at Column 2, we get that the minimum and maximum sum which can be obtained is 27 and 30.
The only multiple of 9 in that range is 27. Hence, the sum of column 2 is 27.

To make the sum of column 2 as 27 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5)	18
Total		27		

From 3, the sum of Row 3 is 18. Hence, when we deduct 8 from 18 we get 10.
The only possible way to arrange the cell of Column 3 in Row 3 is 2,3,5.

	Column 1	Column 2	Column 3	Total
Row1	(2,4)	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5)	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total		27		

For Column 1 we get that the minimum and maximum sum as 23 and 27. The only multiple of 9 in that range is 27 therefore the sum of column 1 is 27.

To make the sum of column 1 as 27 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3)	
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20)	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 1, the minimum and maximum sum is 35 and 37.
The only multiple of 9 in that range is 36.
To make the sum of Row 1 as 36 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) -	
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27		

In Row 2, the minimum and maximum sum which can be obtained is 48 and 62.
The only multiple of 9 in that range is 54. hence, the sum of Row 2 is 54.
To make the sum of Row 2 as 54 the only possible way is by arranging the pouches in a following way:

	Column 1	Column 2	Column 3	Total
Row1	(2,4) – 2,4,4	(6,8) – 6,6,8	(1,3) – 1,2,3	36
Row 2	(3,5) – 3,5,5	(1,1) – 1,1,1	(6,20) – 6,12,20	54
Row 3	(1,2) – 1,1,2	(1,2) – 1,1,2	(2,5) – 2,3,5	18
Total	27	27	54	

There are 3 slots for which the total amount in its three pouches strictly exceeds Rs. 10.

The correct answer is 3.

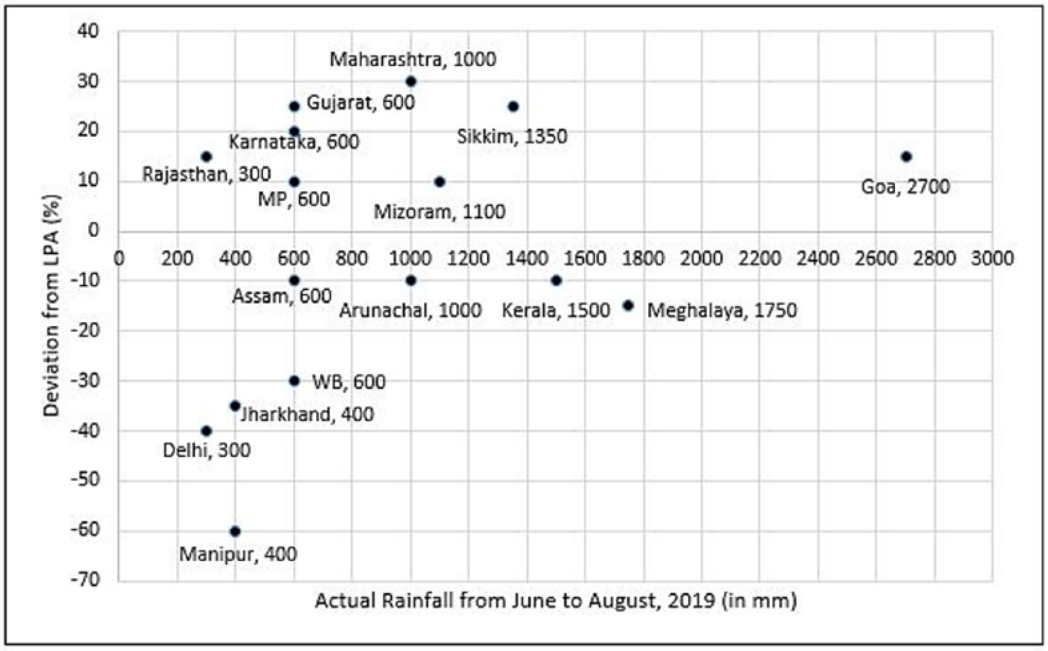
###TOPIC###Data Interpretation||Mixed Charts and Graphs||Mixed Charts and Graphs###

25.

|||Common|||

Direction: 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.



|||End|||
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. 57.14
C. 75.00
D. 14.29

Answer ||| A

Solution |||

There are 7 states according to the given definition of the 'Heavy Monsoon State' and out of them 3 have negative deviations from the respective LPAs in 2019.
Required percentage = $\frac{3}{7}(100\%) = 42.86\%$

The correct option is A.

26.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. -20%
B. 10%
C. -10%
D. -30%

Answer ||| C

Solution |||

There are 9 states categorised as 'Low Monsoon State' and the median value (fifth value) out of these 9 states is of Assam with a value of -10%.
The median 'deviation from LPA' (as defined in the Y-axis of the figure) of 'Low Monsoon States' is -10%.

The correct option is C.

27.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. 450 mm
B. 500 mm
C. 460 mm
D. 367 mm

Answer ||| C

Solution |||

There are 5 states (Assam, WB, Jharkhand, Delhi, Manipur) that have actual rainfall of 600 mm or less in 2019 and have a negative deviation from LPA. The total rainfall of these states is 2300 mm (600+600+400+300+400) and the average = 2300/5 = 460 mm.

The correct option is C

.

28.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. 490 mm
B. 525 mm
C. 505 mm
D. 475 mm

Answer ||| A

Solution |||

In 2019 the rainfall in Gujarat is 600mm with a positive deviation of 25%. Hence, in 2018 the LPA of Gujarat must be 480 and the total rain from 2009-18 is 4800 mm.

The actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009.
Hence, the actual rainfall in 2009 was 500 mm.

To calculate the LPA of Gujarat in 2019, we need to calculate the total rainfall from 2010-2019. In 2009, the rainfall was 500 mm and the total rainfall from 2009-18 is 4800 mm. Hence, the total rainfall from 2010-2019 is 4800 – 500 + 600 = 4900 mm.

The LPA of Gujarat in 2019 is 490 mm (4900/10).

The correct option is A.

###TOPIC###Data Interpretation||Mixed Charts and Graphs||Mixed Charts and Graphs###

29.

|||Common|||

Direction: 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

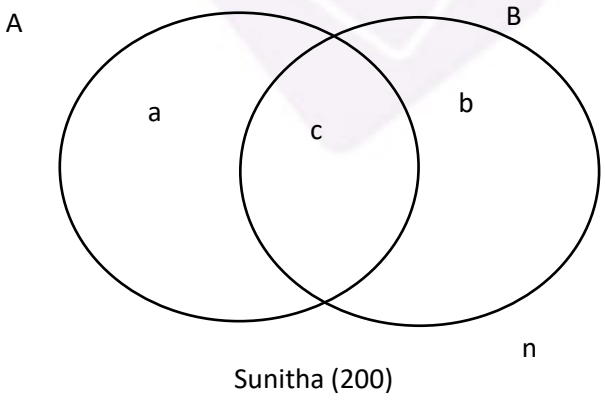
7) Among those who preferred Ragini, 20% did not support any of the proposals.

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

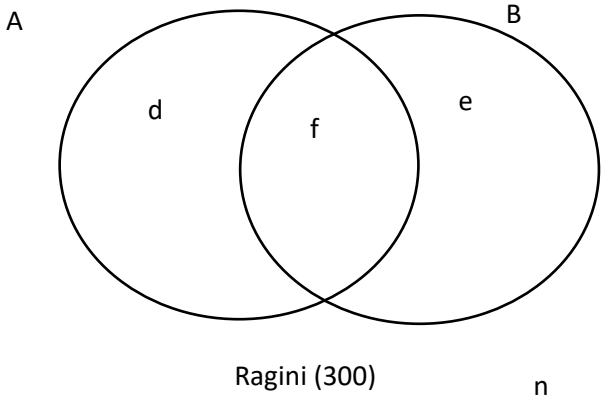
Answer ||| 64

Solution |||

Let us take 2 venn diagrams.



Sunitha (200)



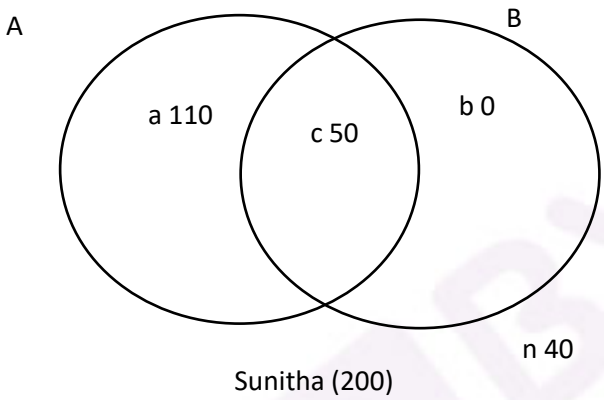
Ragini (300)

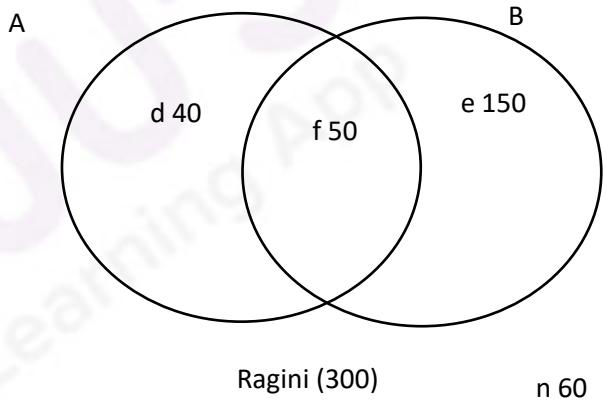
From ii, 200 preferred Sunitha and 300 preferred Ragini.

From i, a + c + d + f = 250 and b + c + e + f = 250

From ii, a + c = 80% (200) = 160
Hence, d + f = 90
From iv, b + c = 20%(250) = 50
Hence, e + f = 200
From vi, c = 50 and hence, b = 0
a = 110. Hence, n(Sunitha) = 40
From vii, n(Ragini) = 60
From v, d + n = 40% (250) = 100

Hence, d = 40





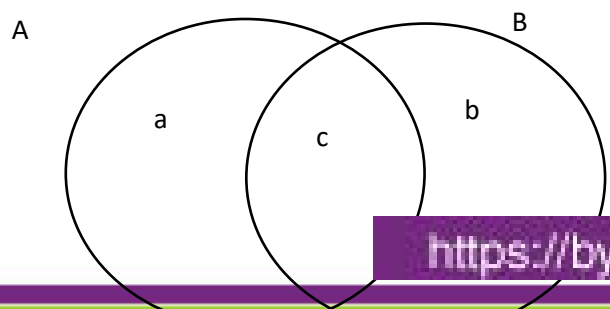
Required answer = $\frac{160}{250}(100\%) = 64\%$

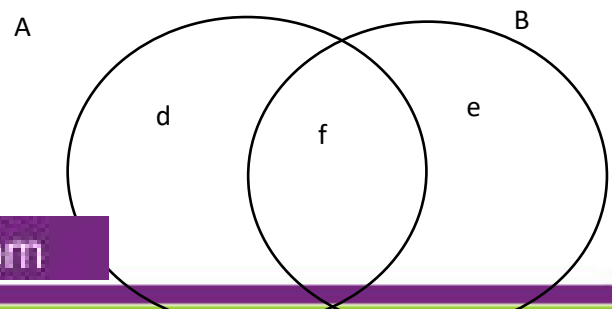
30.What percentage of the students surveyed who did not support proposal A preferred Ragini as student union president?

Answer ||| 84

Solution |||

Let us take 2 venn diagrams.

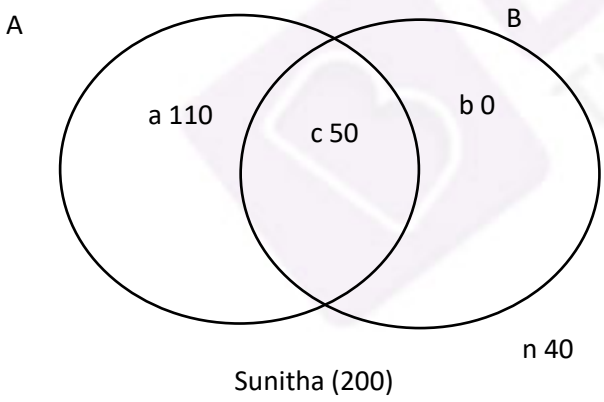


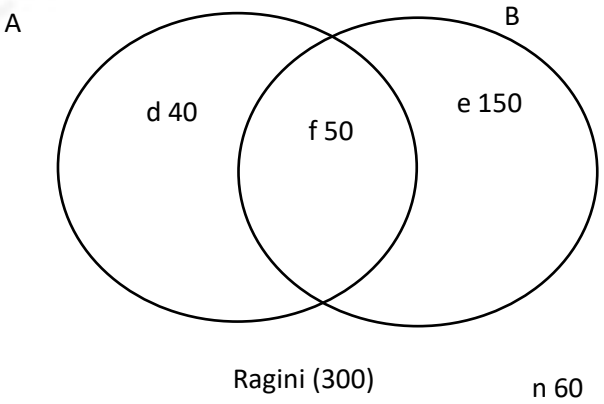


From ii, 200 preferred Sunitha and 300 preferred Ragini.

From i, a + c + d + f = 250 and b + c + e + f = 250

From ii, a + c = 80% (200) = 160
Hence, d + f = 90
From iv, b + c = 20%(250) = 50.
Hence, e + f = 200
From vi, c = 50 and hence, b = 0
a = 110. Hence, n(Sunitha) = 40
From vii, n(Ragini) = 60.
From v, d + n = 40% (250) = 100.Hence, d = 40.





Required percentage = $\frac{210}{250}(100\%) = 84\%$

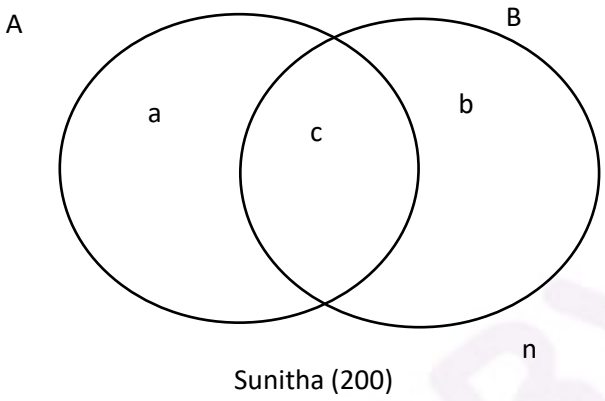
31.What percentage of the students surveyed who supported both proposals A and B preferred Sunita as student union president?

A. 20
B. 25
C. 40
D. 50

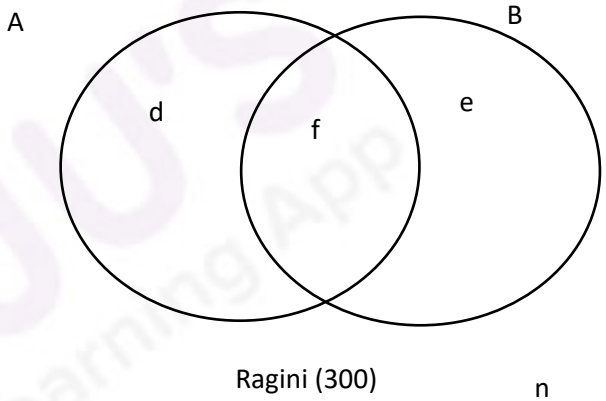
Answer ||| D

Solution |||

Let us take 2 venn diagrams.



Sunitha (200)

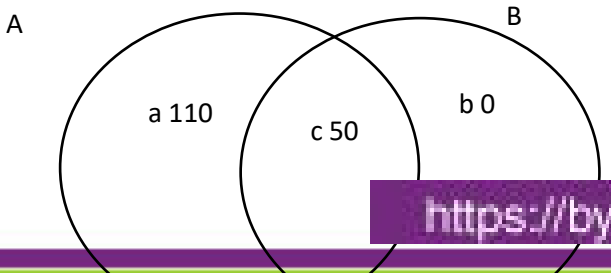


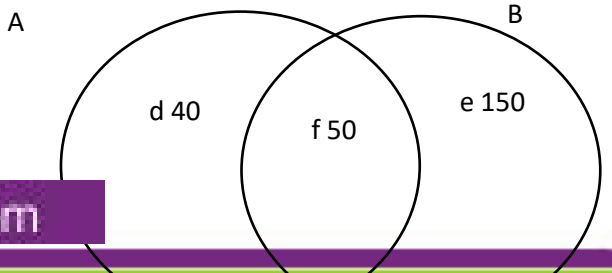
Ragini (300)

From ii, 200 preferred Sunitha and 300 preferred Ragini.

From i, a + c + d + f = 250 and b + c + e + f = 250

From ii, a + c = 80% (200) = 160
Hence, d + f = 90
From iv, b + c = 20%(250) = 50.
Hence, e + f = 200
From vi, c = 50 and hence, b = 0
a = 110. Hence, n(Sunitha) = 40
From vii, n(Ragini) = 60.
From v, d + n = 40% (250) = 100.Hence, d = 40.





Required percentage = $\frac{50}{100}(100\%) = 50\%$

The correct option is D

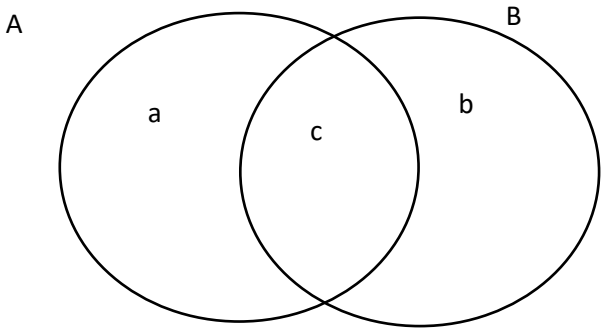
32.How many of the students surveyed supported proposal B, did not support proposal A and preferred Ragini as student union president?

A. 150
B. 200
C. 40
D. 210

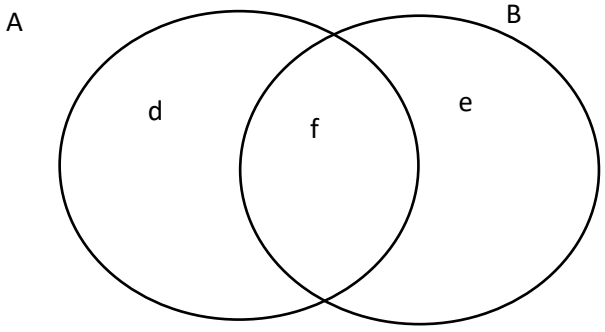
Answer ||| A

Solution |||

Let us take 2 venn diagrams.



Sunitha (200)

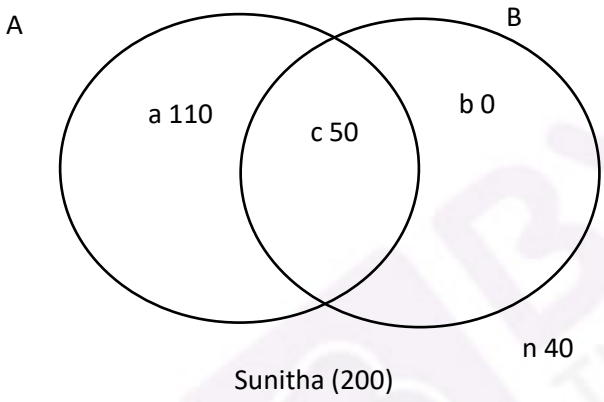


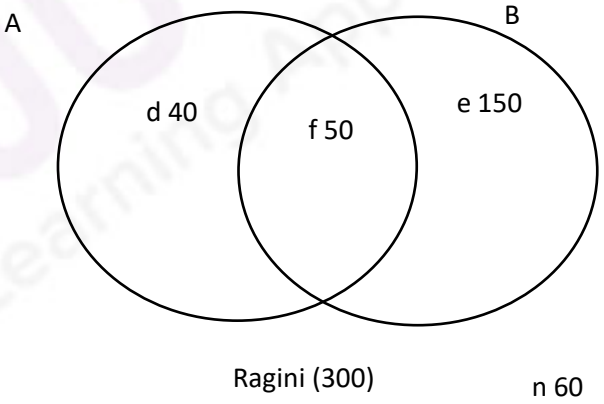
Ragini (300)

From ii, 200 preferred Sunitha and 300 preferred Ragini.

From i, a + c + d + f = 250 and b + c + e + f = 250

From ii, a + c = 80% (200) = 160
Hence, d + f = 90
From iv, b + c = 20%(250) = 50.
Hence, e + f = 200
From vi, c = 50 and hence, b = 0
a = 110. Hence, n(Sunitha) = 40
From vii, n(Ragini) = 60.
From v, d + n = 40% (250) = 100.Hence, d = 40.





e = 150

The correct option is A.

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