MBA PIONEER 2024

Data Interpretation & Logical Reasoning

DPP -03

DILR Set Group - 3

Directions (1-5) Read the following passage and answer the given questions.

A total of 605 people participated in a survey. The survey was conducted to get an idea about the popularity of four different cars Audi, BMW, Mercedes and Lexus. Each participant liked at least one of the four cars. The number of people who liked Lexus is 350, those who liked Mercedes is 220 and those who liked Audi is 270. 60 liked only BMW, 30 liked only Mercedes and 60 liked only Lexus. 30 liked only Audi and BMW, 40 liked only Audi and Mercedes, 60 liked only Audi and Lexus, 25 liked only BMW and Mercedes, 95 liked only BMW and Lexus, 45 liked only Mercedes and Lexus. 15 liked only Audi, BMW and Mercedes, 10 liked only Audi, Mercedes and Lexus 20 liked only BMW, Mercedes and Lexus

Q1 How many people liked Audi and BMW but not Mercedes?

(A) 30 (B) 25
(C) 55 (D) 105

Q2 How many people liked at least two cars?

(A) 395 (B) 400
(C) 405 (D) 410

Q3 How many people liked neither Audi nor BMW?

(A) 135 (B) 200
(C) 210 (D) 195

Q4 How many people liked either Mercedes or Lexus?

(A) 400 (B) 395
(C) 355 (D) 460

Q5 How many people liked either one car or all four cars?

(A) 200 (B) 135
(C) 240 (D) 195

Directions (6-10) Read the following passage and answer the given questions.

The total no. of students in the class are 180, out of them 108 likes math subject, 81 likes science subject and 60 likes social science.

- It is known that at least one student likes only math, only science and only social science
- It is also known that at least one student likes science and math only, science and social science only and math and social science only
- At least one student also likes all 3 subjects
- Every student likes at least one subject

Q6 Find the maximum no. of students who likes all 3 subjects?

(A) 33 (B) 37
(C) 41 (D) 26

Q7 Find the maximum no. of students who like exactly 2 subjects?

(A) 58 (B) 63
(C) 67 (D) 74

Q8 If exactly 10 students like all 3 subjects then what is the maximum no. of students who like math and science only.

(A) 39 (B) 76
(C) 53 (D) 47

Q9 If the no. of students liked only Math and Science, only Science and Social Science and only Math and Social Science are

equal and the no. of students liked only math and science is not more than 10, then the minimum no. of students played all 3 games is

(A) 10 (B) 38
(C) 41 (D) 21

Q10 The no. of students who liked only science and social science cannot exceed (no. of students liked all 3 subject is 13)

(A) 22 (B) 41
(C) 53 (D) 47

Directions (11-15) Read the following passage and answer the given questions.

In Delhi, a society consists of a certain number of families which reads at least one of the three newspapers. 60 families read Indian Express (IE), 70 read Economic Times (ET) and 40 read The Hindu (TH). 10 families read both Economic Times and The Hindu but not Indian Express. 18 families read Indian Express and Economic Times, the number of families that read only Indian Express and The Hindu is 10 less than the number of families that read all three newspapers.

Q11 What can be the maximum number of families in society reading all three newspapers?

Q12 What can be the maximum number of families in the society?

Q13 What can be the minimum number of families that read only one newspaper in the society?

Q14 If the number of families reading all three newspapers is of the form (6k +1), then what is the number of families reading only The Hindu in the society?

Q15 If the number of families who read both Indian Express and Economic Times but not The Hindu is more than the number of families who read both Indian Express and The Hindu but not Economic Times, then what could be the minimum number of families who read only The Hindu?

Directions (16-20) Read the following passage and answer the given questions.

There are 200 employees in an organization. Every employee displayed one or more than one of the three traits P, Q, and R.

1. The number of employees who displayed the trait P only is less than the number of employees who displayed the trait Q only and more than the number of employees who displayed the trait R only.
2. The number of employees who displayed exactly two traits is more than the number of employees who displayed all the three traits but less than the number of employees who displayed the trait Q only.
3. The number of employees who displayed both the traits P and Q but not R is at least thrice the number of employees who displayed both the traits Q and R but not P (which is at least equal to 1)

Q16 The number of employees who displayed the trait P only is at most–––

(A) 99 (B) 98
(C) 97 (D) 96

Q17 The number of employees who displayed the trait Q only is at most –

(A) 195 (B) 196
(C) 99 (D) 97

Q18 The number of employees who displayed all the three traits is at most–

(A) 65 (B) 66
(C) 56 (D) 55

Q19 If the number of employees who displayed the trait R only and the number of employees who displayed all the three traits are 23 and 42 respectively, then

what is the maximum number of employees who displayed the traits P and Q but not R?

(A) 53 (B) 55
(C) 54 (D) 56

Q20 If the number of employees who displayed the trait P is maximum possible, then what is the minimum number of employees who displayed traits P and Q but not R?

(A) 0 (B) 1
(C) 2 (D) 3

Directions (21-25) Read the following passage and answer the given questions.

Each student of a school has to choose at least one among three games –
Football, Cricket and Hockey. Further it is known that:

1. The number of students who chose Football is less than one–fourth of those who chose Hockey.
2. The number of students who chose Cricket is more than thrice of those who chose Hockey.
3. The number of students who chose Cricket and Hockey but not Football is less than twice of those who chose only Hockey.

Q21 If the number of students who chose Football is 145, then the number of students is at least

(A) 1888 (B) 1889
(C) 1890 (D) 1891

Q22 If the maximum possible number of students chose at least two games, and the number of students who chose Cricket is 67, then the minimum number of students who chose only Cricket is

(A) 51 (B) 45
(C) 40 (D) 46

Q23 It is given that the number of students who chose Cricket is 45. If the ratio of the number of students who chose exactly one, exactly two and exactly three games is 49 : 2 : 3, then the number of students who chose only Hockey is

(A) 12 (B) 11
(C) 10 (D) 9

Q24 It is given that no student chose exactly two games and the number of students who chose all the three games is the maximum. If the number of students who chose Football is the maximum possible and the number of students who chose Cricket is 100, then at most how many students choose only Hockey?

(A) 28 (B) 27
(C) 26 (D) 25

Q25 It is given that the number of students who chose Cricket is 45. If the ratio of the number of students who chose exactly one, exactly two and exactly three games is 49 : 2 : 3, then the number of students who chose only Cricket is

(A) 45 (B) 42
(C) 43 (D) 40

Directions (26-30) Read the following passage and answer the given questions.

The following data contains the information regarding the number of people who like either tea or coffee or both or none in the city.

1. Number of people in the city is 1160, and the ratio of the number of males to females is 14:15, respectively. 20% of the total number of females does not like any of these two (tea and coffee).
2. Ratio of the number of females who like only tea to the number of females who like only coffee is 7:5, respectively while the number of males who like only coffee is 10 more than the number of females who like only coffee.
3. Number of males who like both tea and coffee are 50% of the number of males who like only coffee, and 180 less than the number of males who like only tea.

4. Number of females who like both tea and coffee is the same as the number of females who does not like any of these two.

Q26 Number of females who like only tea is what percentage more/less than the number of males who like only coffee?
(A) 26.50% (B) 31.25%
(C) 28.75% (D) 36.25%

Q27 Find the ratio of the number of males to the number of females who like both tea and coffee.
(A) 2 : 3 (B) 3 : 1
(C) 3 : 7 (D) 2 : 9

Q28 Find the difference between the number of males and females who like only tea.
(A) 88 (B) 45
(C) 67 (D) 50

Q29 How many males do not like any of these two (tea and coffee)?
(A) 67 (B) 72
(C) 60 (D) 55

Q30 Number of females who like only coffee is what percentage of the total number of females?
(A) 29% (B) 33%
(C) 25% (D) 42%

Answer Key

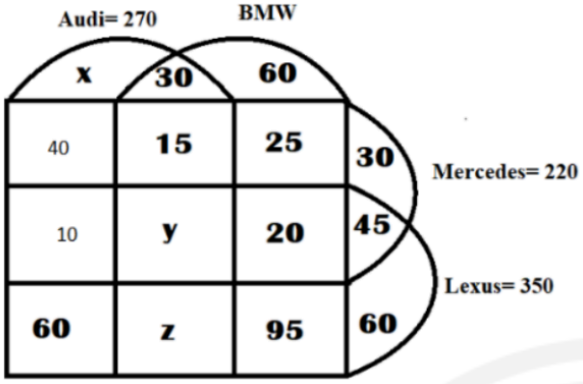
Q1	(C)	Q16	(C)
Q2	(B)	Q17	(A)
Q3	(A)	Q18	(A)
Q4	(D)	Q19	(C)
Q5	(C)	Q20	(D)
Q6	(A)	Q21	(B)
Q7	(C)	Q22	(A)
Q8	(D)	Q23	(D)
Q9	(D)	Q24	(D)
Q10	(B)	Q25	(D)
Q11	18	Q26	(B)
Q12	132	Q27	(A)
Q13	80	Q28	(D)
Q14	14	Q29	(C)
Q15	14	Q30	(C)

Hints & Solutions

Q1. Text Solution:

Topic: Venn Diagram

From the given information the data can be represented in the following diagram

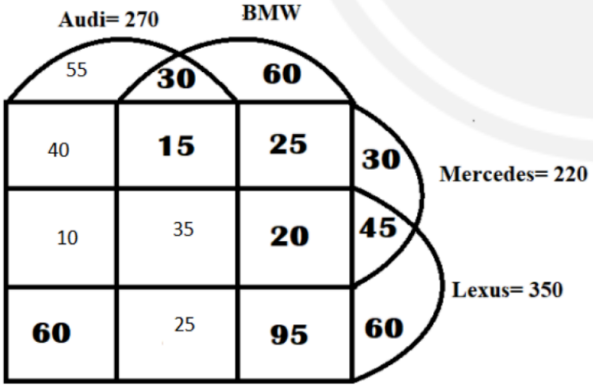


y = 220 – (40 + 15 + 25 + 30 + 45 + 20 + 10)
= 220 – 185
= 35

z = 350 – (10 + 35 + 20 + 45 + 60 + 95 + 60)
= 350 – 325
= 25

x = 270 – (30 + 15 + 35 + 25 + 60 + 10 + 40)
= 270 – 215
= 55

Hence the final table will be,



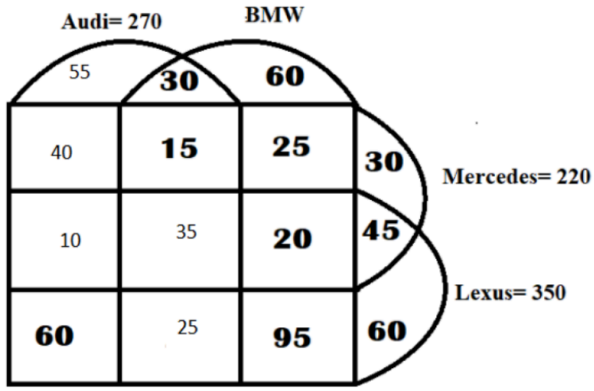
30 people liked only Audi and BMW.

25 people liked only Audi, BMW and Lexus.

30 + 25 = 55 people liked Audi and BMW but not Mercedes.

Q2. Text Solution:

Topic: Venn Diagram

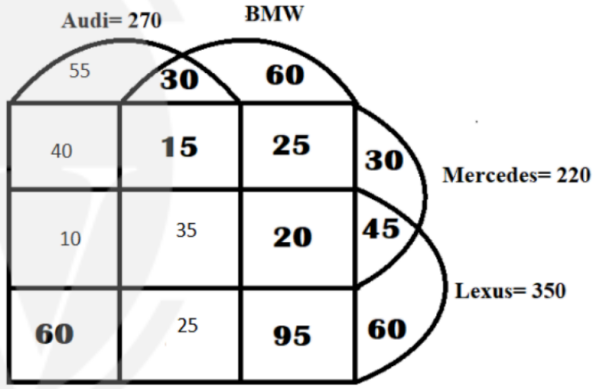


Number of people who likes exactly one car (55 + 60 + 30 + 60) = 205

Remaining people (605 – 205) = 400 people liked at least two cars.

Q3. Text Solution:

Topic: Venn Diagram



30 people liked only Mercedes.

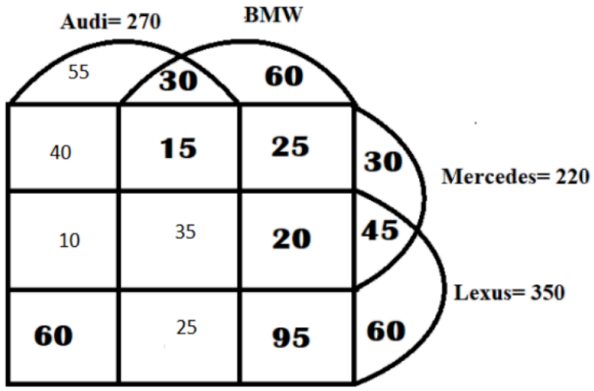
60 people liked only Lexus.

45 people liked only Mercedes and Lexus.

(30 + 60 + 45) = 135 people liked neither Audi nor BMW.

Q4. Text Solution:

Topic: Venn Diagram



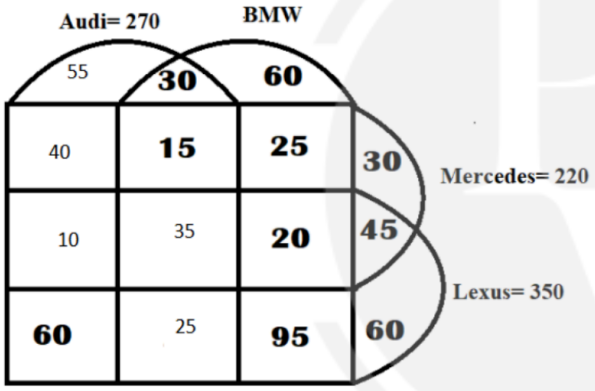
The number of people who liked Mercedes = 220

The number of people who liked Lexus but not Mercedes (60 + 25 + 95 + 60) = 240

220 + 240 = 460 people liked either Mercedes or Lexus.

Q5. Text Solution:

Topic: Venn Diagram



(55 + 60 + 30 + 60) = 205 people liked only one car.

35 people liked all four cars.

205 + 35 = 240 people liked either one car or all four cars.

Q6. Text Solution:

Topic: Venn Diagram

Let:

A = Number of students who have liked only Math

B = Number of students who have liked only math and Science

C = Number of students who have all 3 subjects

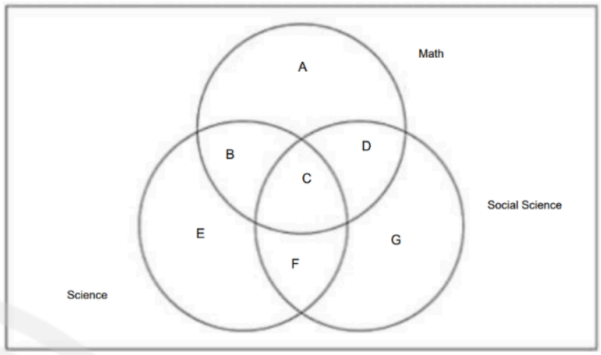
D = Number of students who have liked only math and Social Science

E = Number of students who have liked only Science

F = Number of students who have liked only Science and Social Science

G = Number of students who have liked only social science

As per the conditions given in the questions, A, B, C, D, E, F, G will be more than or equal to 1.



We know that,

A + B + C +D + E + F + G = 180 (Total students) .....eq 1

and if we add students who like math subject + students who like science + students who like social science = 108 + 81 + 60 = 249

(A + B + C + D) + (B + C + E + F) + (C + D + G + F) = 249

A + E + G + 2B + 2D + 2F + 3C = 249

(A + B + C +D + E + F + G) + (B + D + F + 2C) = 249

180 + (B + D + F + 2C) = 249.....From eq 1

(B + D + F + 2C) = 69

for C to be the maximum we have to minimize B, D, and F

Hence B, D, F = 1

3 + 2C = 69

2C = 66

C = 33

The maximum no. of students who like all 3 subjects is 33.

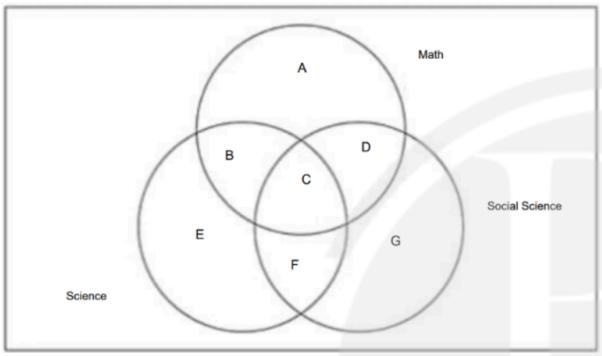
Q7. Text Solution:

Topic: Venn Diagram

Let:

A = Number of students who have liked only Math

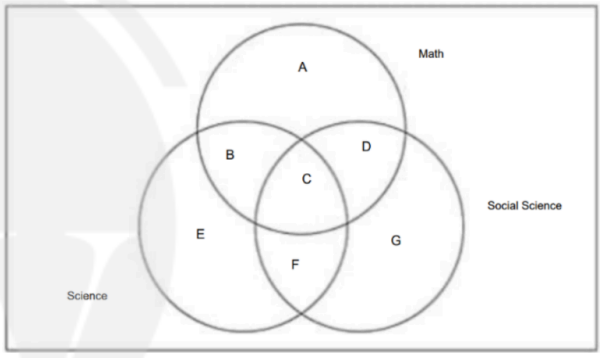
B = Number of students who have liked only math and Science
C = Number of students who have all 3 subjects
D = Number of students who have liked only math and Social Science
E = Number of students who have liked only Science
F = Number of students who have liked only Science and Social Science
G = Number of students who have liked only social science
As per the conditions given in the questions, A, B, C, D, E, F, G will be more than or equal to 1.



We know that,
A + B + C +D + E + F + G = 180 (Total students) .....eq 1
and if we add students who like math subject + students who like science + students who like social science = 108 + 81 + 60 = 249
(A + B + C + D) + (B + C + E + F) + (C + D + G + F) = 249
A + E + G + 2B + 2D + 2F + 3C = 249
(A + B + C +D + E + F + G) + (B + D + F + 2C)
= 249
180 + (B + D + F + 2C) = 249.....From eq 1
(B + D + F + 2C) = 69
for B + D + F to be maximum we have to minimize C
Hence minimum value of C is 1
Putting it in the equation to find the solution
B + D + F + 2(1) = 69
B + D + F = 67
Hence the maximum no. of students who like exactly 2 subjects are 67

Q8. Text Solution:

Topic: Venn Diagram
Let:
A = Number of students who have liked only Math
B = Number of students who have liked only math and Science
C = Number of students who have all 3 subjects
D = Number of students who have liked only math and Social Science
E = Number of students who have liked only Science
F = Number of students who have liked only Science and Social Science
G = Number of students who have liked only social science
As per the conditions given in the questions, A, B, C, D, E, F, G will be more than or equal to 1.



We know that,
A + B + C +D + E + F + G = 180 (Total students) .....eq 1
and if we add students who like math subject + students who like science + students who like social science = 108 + 81 + 60 = 249
(A + B + C + D) + (B + C + E + F) + (C + D + G + F) = 249
A + E + G + 2B + 2D + 2F + 3C = 249
(A + B + C +D + E + F + G) + (B + D + F + 2C)
= 249
180 + (B + D + F + 2C) = 249.....From eq 1
(B + D + F + 2C) = 69
Now, we know C = 10 and for maximizing the value B we have to keep D and F minimum and equal to 1
B + 1 + 1 + 20 = 69
B = 47

The maximum no. of students who like math and science only is 47.

Q9. Text Solution:

Topic: Venn Diagram

Let:

A = Number of students who have liked only Math

B = Number of students who have liked only math and Science

C = Number of students who have all 3 subjects

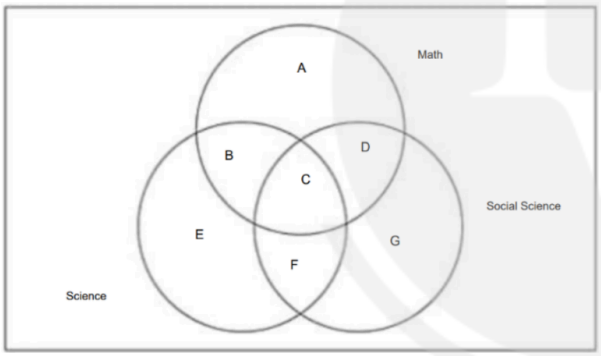
D = Number of students who have liked only math and Social Science

E = Number of students who have liked only Science

F = Number of students who have liked only Science and Social Science

G = Number of students who have liked only social science

As per the conditions given in the questions, A, B, C, D, E, F, G will be more than or equal to 1.



We know that,

A + B + C +D + E + F + G = 180 (Total students) .....eq 1

and if we add students who like math subject + students who like science + students who like social science = 108 + 81 + 60 = 249

(A + B + C + D) + (B + C + E + F) + (C + D + G + F) = 249

A + E + G + 2B + 2D + 2F + 3C = 249

(A + B + C +D + E + F + G) + (B + D + F + 2C) = 249

180 + (B + D + F + 2C) = 249.....From eq 1

(B + D + F + 2C) = 69

we know, that B = F = D

3B + 2C = 69

To minimize C we have to maximize B, so according to question maximum no. of students in only math and science is 10

But if put B = 10 then, the value of C is not an integer hence, we will take

B = 9

3(9) + 2C = 69

2C = 69 – 27

2C = 42

C = 21

So, the minimum no. of students played all 3 games is 21.

Q10. Text Solution:

Topic: Venn Diagram

Let:

A = Number of students who have liked only Math

B = Number of students who have liked only math and Science

C = Number of students who have all 3 subjects

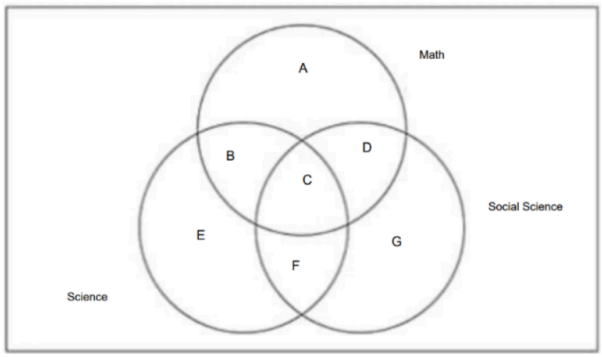
D = Number of students who have liked only math and Social Science

E = Number of students who have liked only Science

F = Number of students who have liked only Science and Social Science

G = Number of students who have liked only social science

As per the conditions given in the questions, A, B, C, D, E, F, G will be more than or equal to 1.



We know that,

A + B + C +D + E + F + G = 180 (Total students) .....eq 1

and if we add students who like math subject + students who like science + students who like

social science = 108 + 81 + 60 = 249

(A + B + C + D) + (B + C + E + F) + (C + D + G + F) = 249

A + E + G + 2B + 2D + 2F + 3C = 249

(A + B + C +D + E + F + G) + (B + D + F + 2C) = 249

180 + (B + D + F + 2C) = 249.....From eq 1

(B + D + F + 2C) = 69

(B + D + F + 2(13)) = 69

B + D + F = 43

So to maximize F. we need to put B, D as 1

1 + 1 + F = 43

F = 41

No. of students who liked only science and social science cannot exceed 41.

Q11. Text Solution:

Topic: Venn Diagram

We make a Venn diagram, depicting figures mentioned in question.

Let number of families reading all three newspapers = x

Number of families reading only ET and TH = 10

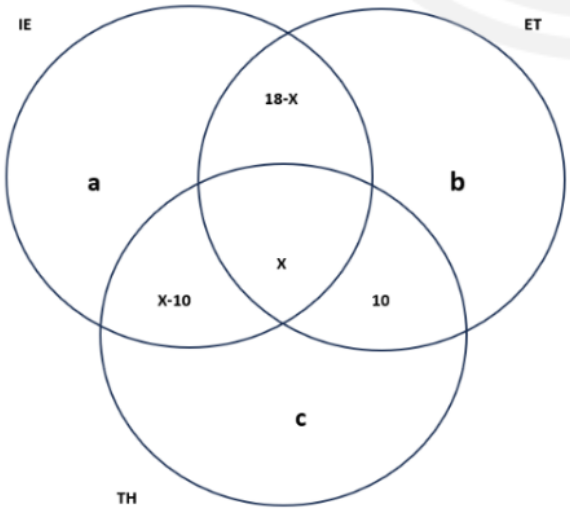
Number of families reading only ET and IE = 18–x

Number of families reading only IE and TH = x–10

Number of families reading only IE = a

Number of families reading only ET = b

Number of families reading only TH = c



Number of people reading only IE and ET can be greater or equal to zero.

This implies, 18–x ≥ 0 or 18 ≥ x

Number of people reading only IE and TH can be greater or equal to zero.

This implies, x–10 ≥ 0 or x ≥ 10

Hence, 10 ≤ x ≤ 18

Hence, the maximum value x can take is 18.

Q12. Text Solution:

Topic: Venn Diagram

We make a Venn diagram, depicting figures mentioned in question.

Let number of families reading all three newspapers = x

Number of families reading only ET and TH = 10

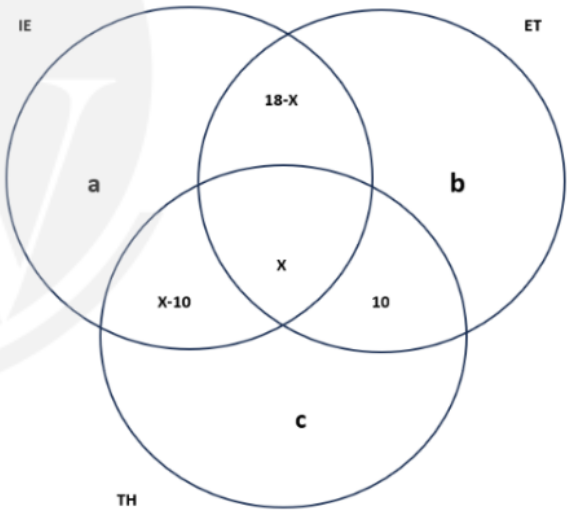
Number of families reading only ET and IE = 18 – x

Number of families reading only IE and TH = x – 10

Number of families reading only IE = a

Number of families reading only ET = b

Number of families reading only TH = c

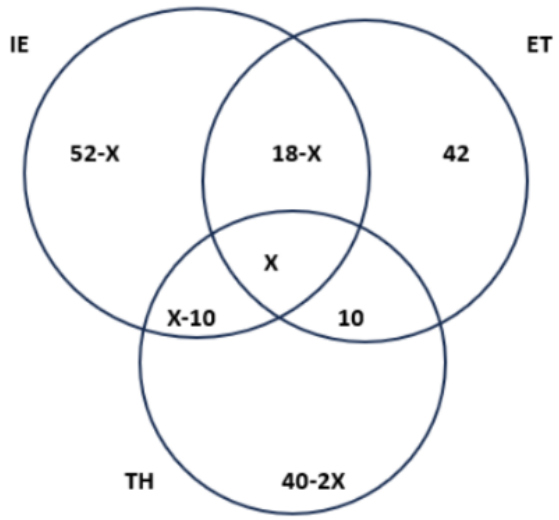


Consequently,

Number of families reading only IE = 60 –(18 –x + x + x – 10) = 52 – x

Number of families reading only ET = 70 – (18 –x + x + 10) = 42

Number of families reading only TH = 40 – (x – 10 + x + 10) = 40 – 2x

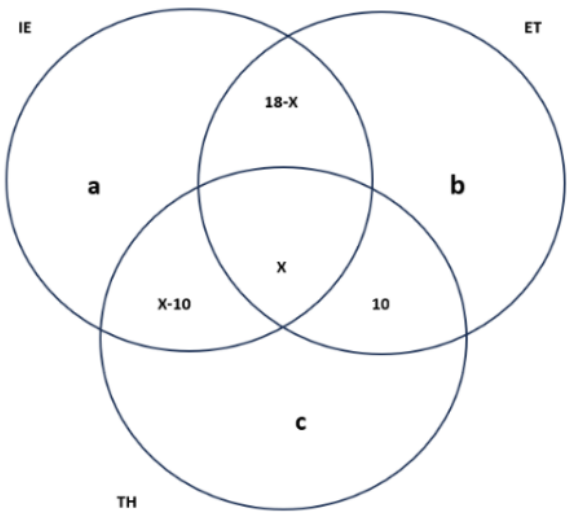


The number of people reading only IE and ET can be greater or equal to zero.
This implies, 18–x ≥ 0 or 18 ≥ x
The number of people reading only IE and TH can be greater or equal to zero.
This implies, x–10 ≥ 0 or x ≥ 10
Hence, 10 ≤ x ≤ 18
Total number of families = (52 – x + 42 + 40 – 2x + 18 – x + x – 10 + 10 + x) = 152 – 2x
For the number of families to be maximum, x must be the minimum
The least value that x can take is 10
Hence, the maximum number of families in society
= 152 – 2(10) = 152 – 20 = 132

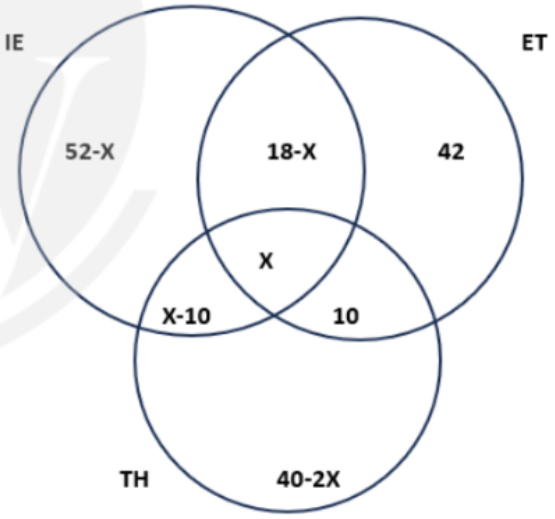
Q13. Text Solution:

Topic: Venn Diagram

We make a Venn diagram, depicting figures mentioned in question.
Let number of families reading all three newspapers = x
Number of families reading only ET and TH = 10
Number of families reading only ET and IE = 18–x
Number of families reading only IE and TH = x–10
Number of families reading only IE = a
Number of families reading only ET = b
Number of families reading only TH = c



Consequently,
Number of families reading only IE = 60 –(18–x+x+x–10) = 52–x
Number of families reading only ET = 70 –(18–x+x+10) = 42
Number of families reading only TH = 40 –(x–10+x+10) = 40–2x



Number of people reading only IE and ET can be greater or equal to zero.
This implies, 18–x ≥ 0 or 18 ≥ x
Number of people reading only IE and TH can be greater or equal to zero.
This implies, x–10 ≥ 0 or x ≥ 10
Hence, 10 ≤ x ≤ 18
Number of families reading only one newspaper in society = (52 – x + 42 + 40 – 2x) = 134 – 3x

For (134–3x) to be minimum, x has to be maximum, i.e. x = 18

Hence, minimum number of families reading only one newspaper

= 134 – 3(18) = 134 – 54 = 80

Q14. Text Solution:

Topic: Venn Diagram

We make a Venn diagram, depicting figures mentioned in question.

Let number of families reading all three newspapers = x

Number of families reading only ET and TH = 10

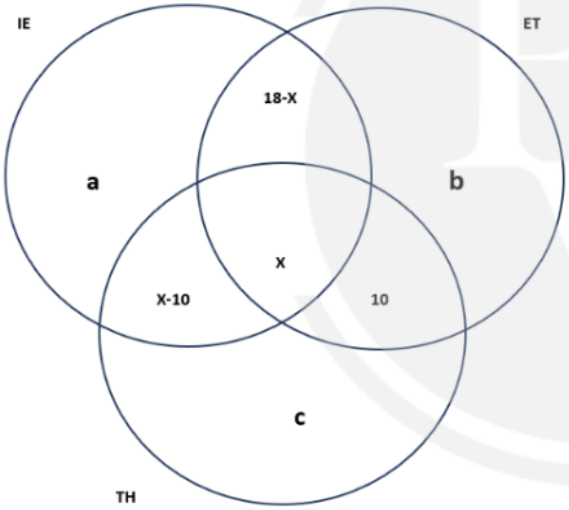
Number of families reading only ET and IE = 18–x

Number of families reading only IE and TH = x–10

Number of families reading only IE = a

Number of families reading only ET = b

Number of families reading only TH = c



The number of people reading only IE and ET can be greater or equal to zero.

This implies, 18–x ≥ 0 or 18 ≥ x

The number of people reading only IE and TH can be greater or equal to zero.

This implies, x–10 ≥ 0 or x ≥ 10

Hence, 10 ≤ x ≤ 18

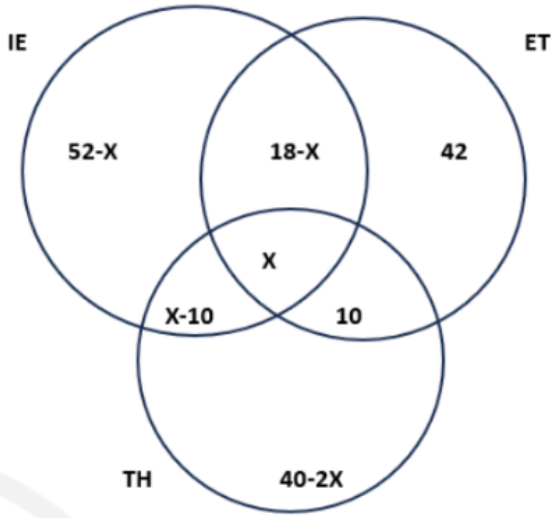
The only number of the form (6k+1) in the given range is 6(2) +1 = 13

Now,

Number of families reading only IE = 60 –(18–x+x+x–10) = 52–x

Number of families reading only ET = 70 –(18–x+x+10) = 42

Number of families reading only TH = 40 –(x–10+x+10) = 40–2x



Hence, families reading only The Hindu newspaper is 40 – 2(13) = 40 – 26 = 14.

Q15. Text Solution:

Topic: Venn Diagram

We make a Venn diagram, depicting figures mentioned in question.

Let number of families reading all three newspapers = x

Number of families reading only ET and TH = 10

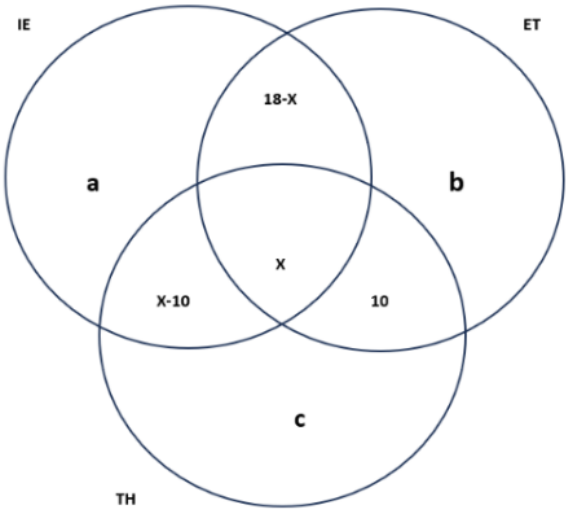
Number of families reading only ET and IE = 18–x

Number of families reading only IE and TH = x–10

Number of families reading only IE = a

Number of families reading only ET = b

Number of families reading only TH = c

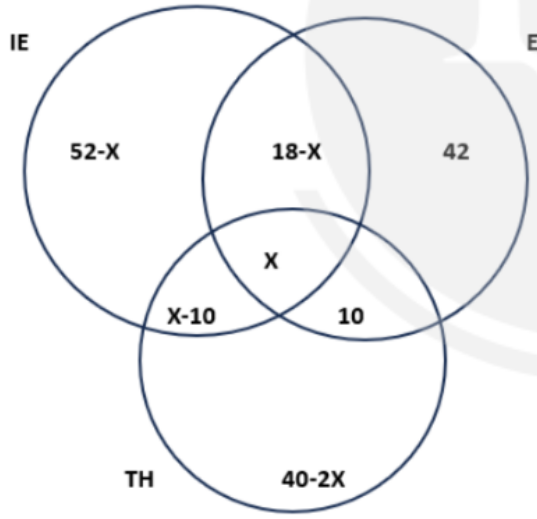


Consequently,

Number of families reading only IE = 60 –(18–x+x+x–10) = 52–x

Number of families reading only ET = 70 –(18–x+x+10) = 42

Number of families reading only TH = 40 –(x–10+x+10) = 40–2x



According to the question,

18–x > x–10

This implies, 2x < 28

x < 14

The number of people reading only IE and TH can be greater or equal to zero.

This implies, x–10 ≥ 0 or x ≥ 10

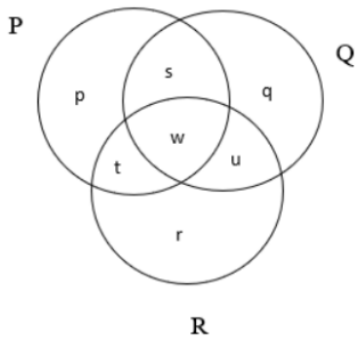
Hence, x can take values from 10, 11, 12, and 13.

Therefore, the minimum number of families reading The Hindu is

40 – 2(13) = 14

Q16. Text Solution:

Topic: Venn Diagram



Total 200

By (1):– p < q, p > r ⇒ r < p < q

By (2):– w < (s + t + u) < q

By (3):– 3u ≤ s

(given that minimum u = 1)

p + q + r + s + t + u + w = 200

p is maximum, when the rest of the variables are minimum.

Minimum value of u = 1.

So minimum value of s = 3 and t = 0, w = 0

Thus, p + q + r = 200 – 1 – 3 – 0 – 0 = 196

As r < p < q , taking the minimum value of r = 0, we get p + q = 196.

Possibilities for p and q are

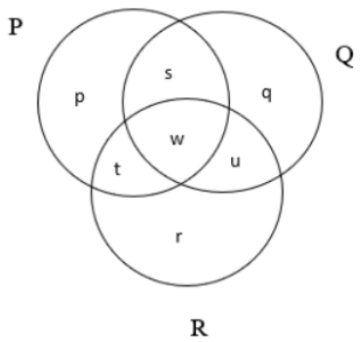
1. p = 98, q = 98
2. p = 97, q = 99
3. p = 99, q = 97

As p < q, Maximum value of q = 99 and maximum value of p = 97.

Required answer is 97

Q17. Text Solution:

Topic: Venn Diagram



Total 200

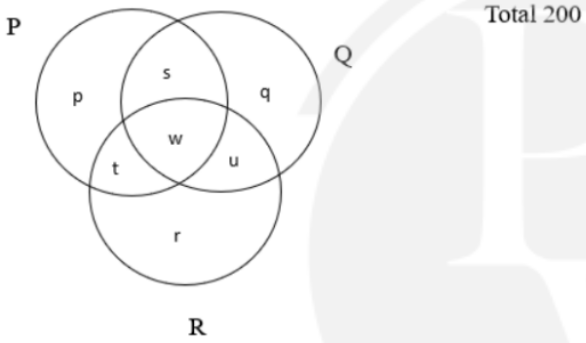
By (1):– p < q, p > r ⇒ r < p < q

By (2):– w < (s + t + u) < q

By (3):– 3u ≤ s
(given that minimum u = 1)
p + q + r + s + t + u + w = 200
p is maximum, when the rest of the variables are minimum.
Minimum value of u = 1.
So minimum value of s = 3 and t = 0, w = 0
Thus, p + q + r = 200 – 1 – 3 – 0 – 0 = 196
As r < p < q , taking the minimum value of r = 0, we get p + q = 196.
As p < q and r < p < q
Here r = 0 so p cannot be equal to zero so the minimum value p can take is 1.
So q = 196 – 1 = 195.

Q18. Text Solution:

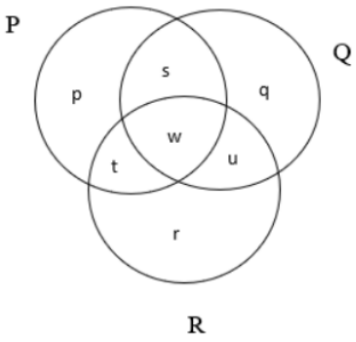
Topic: Venn Diagram



By (1):– p < q, p > r ⇒ r < p < q
By (2):– w < (s + t + u) < q
By (3):– 3u ≤ s
(given that minimum u = 1)
p + q + r + s + t + u + w = 200
To maximise w, p and r should be minimum.
Hence, choosing r = 0 and p = 1, we get
w + s + t + u + q = 199
By 2, w < (s + t + u) < q
We can have w = 65, s + t + u = 66 and q = 68
Required answer is 65.

Q19. Text Solution:

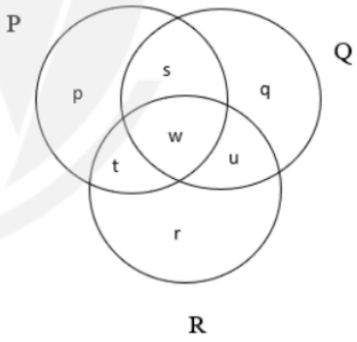
Topic: Venn Diagram



By (1):– p < q, p > r ⇒ r < p < q
By (2):– w < (s + t + u) < q
By (3):– 3u ≤ s
(given that minimum u = 1)
p + q + r + s + t + u + w = 200
Given that r = 23 and w = 42
So minimum value of p = 24 (as p > r)
Therefore, 24 + q + 23 + s + t + u + 42 = 200
Or q + s + t + u = 111
By 2, s + t + u < q, so maximum possible value of s + t + u = 55 and q = 56
Using t = 0 and u = 1 in s + t + u = 55,
we get the maximum possible value of s = 54.

Q20. Text Solution:

Topic: Venn Diagram



By (1):– p < q, p > r ⇒ r < p < q
By (2):– w < (s + t + u) < q
By (3):– 3u ≤ s
(given that minimum u = 1)
p + q + r + s + t + u + w = 200
p is maximum, when the rest of the variables are minimum.
Minimum value of u = 1.
So minimum value of s = 3.

Q21. Text Solution:

Topic: Venn Diagram

Let the number of students who chose Hockey, Football, and Cricket be H, F, and C respectively.

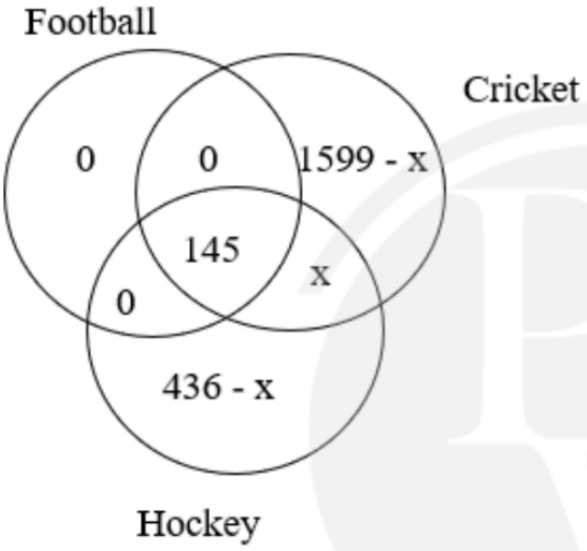
By 1, 4F < H

By 2, C > 3H

Given that the number of students who chose Football is 145 and we need to minimize the total number of students in the school.

The minimum possible values of H and C are 581 and 1744 respectively.

To minimize the total, take common to all as large as possible.



By 3, x < 2(436 – x) ⇒ x < 291

Total number of students

= 145 + x + 436 – x + 1599 – x

= 145 + 436 + 1599 – x

Hence, to minimize, let us maximize x and the maximum possible value of x = 290

Therefore, minimum possible value of total students

= 145 + 436 + 1599 – 290 = 1890.

Option c

Q22. **Text Solution:**

Topic: Venn Diagram

Let the number of students who chose Hockey, Football and Cricket be H, F and C respectively.

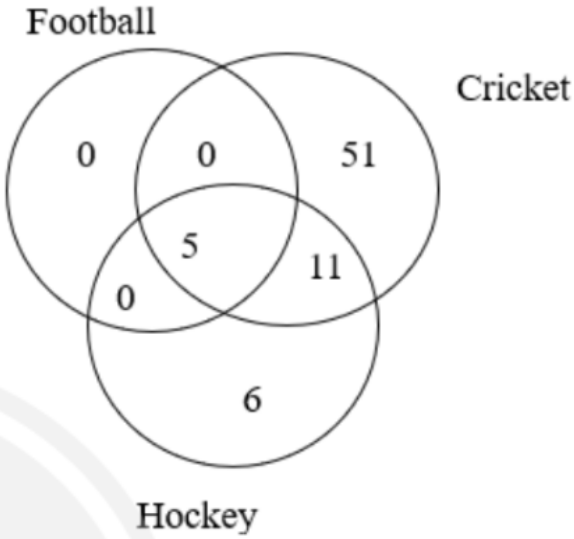
By 1, 4F < H

By 2, C > 3H

Given that C = 67 and we need to minimize the number of students who choose only Cricket.

Maximum possible values of F and H are 5 and 22 respectively.

The minimum number of students who chose only Cricket will be obtained if the number of students who chose Football also chose Cricket and Hockey.



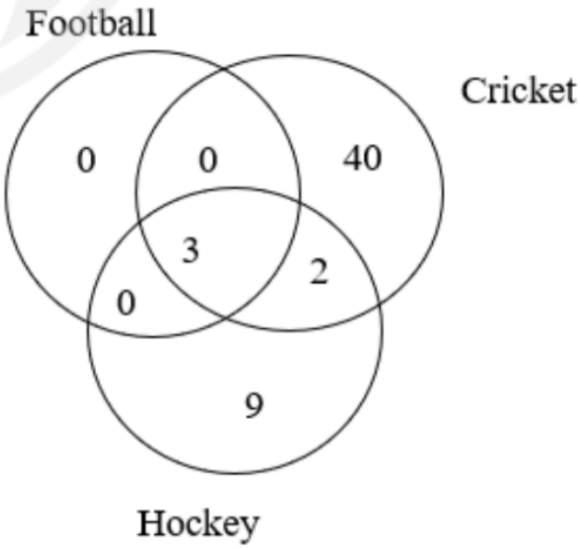
Therefore, the minimum number of students who choose only Cricket = 67 – 5 – 11 = 51.

Hence, option a.

Q23. **Text Solution:**

Topic: Venn Diagram

Given that C = 45. Therefore, the maximum values of F and H are 3 and 14 respectively.



Hence option d.

Q24. **Text Solution:**

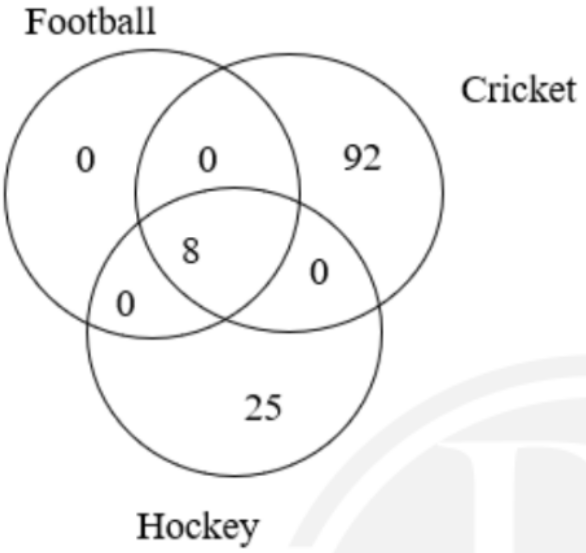
Topic: Venn Diagram

Given that C = 100

H < 34 and F < 9

So maximum possible value of F = 8 and that of H = 33.

Given that, exactly two parts is zero, we can have the following possible diagram

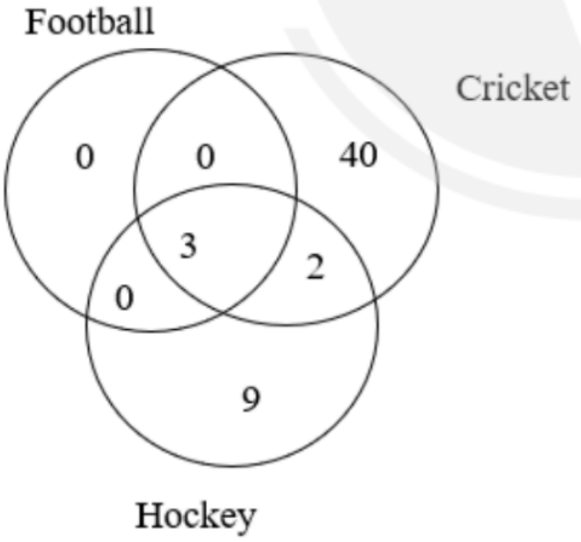


Hence option d is correct.

Q25. Text Solution:

Topic: Venn Diagram

Given that C = 45. Therefore, the maximum value of F and H are 3 and 14 respectively.



Hence option d.

Q26. Text Solution:

Topic: Venn Diagram

According to the question,

Number of males = $\frac{14}{29} \times 1160$ = 560

Number of females = $\frac{15}{29} \times 1160$ = 600

Total number of females who do not like any of these two = 20% of 600 = 120

Number of females who like both tea and coffee = 120

Let, the number of females who like only tea and the number of females who like only coffee be '7x' and '5x', respectively.

So, 7x + 120 + 5x + 120 = 600

12x = 360

x = 30

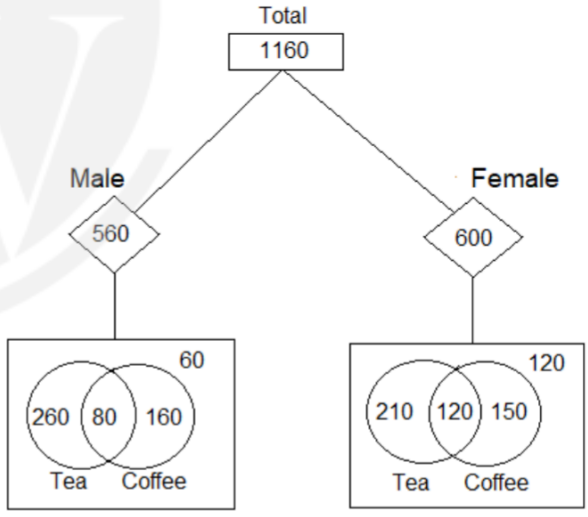
So, the number of females who like only tea and the number of females who like only coffee are 210 and 150, respectively.

Number of males who like only coffee = 150 + 10 = 160

Number of males who like both tea and coffee = 50% of 160 = 80

Number of males who like only tea = 180 + 80 = 260

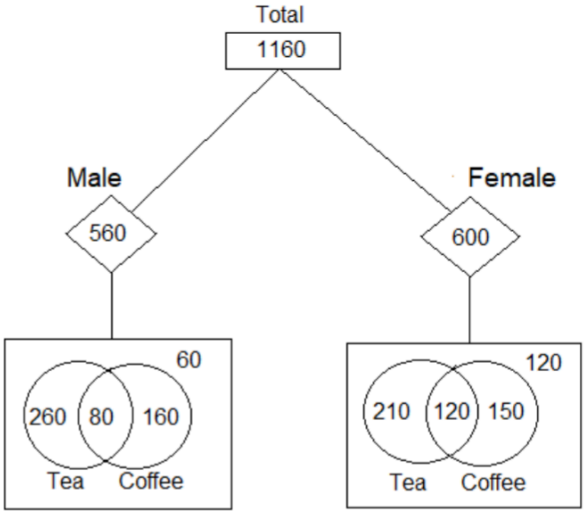
Number of males who does not like any of these two = 560 – 260 – 80 – 160 = 60



Required percentage = $\frac{210-160}{160} \times 100$ = 31.25%

Q27. Text Solution:

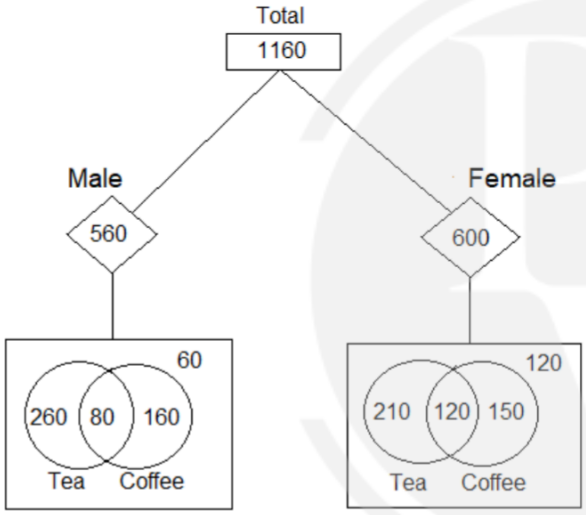
Topic: Venn Diagram



Required ratio = 80 : 120 = 2:3

Q28. Text Solution:

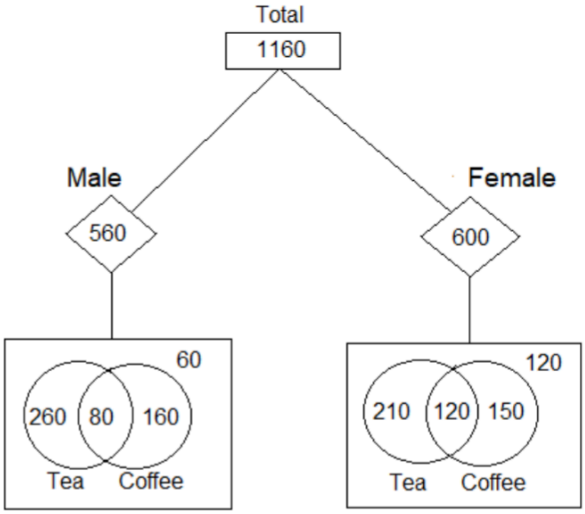
Topic: Venn Diagram



Required difference = 260 – 210 = 50

Q29. Text Solution:

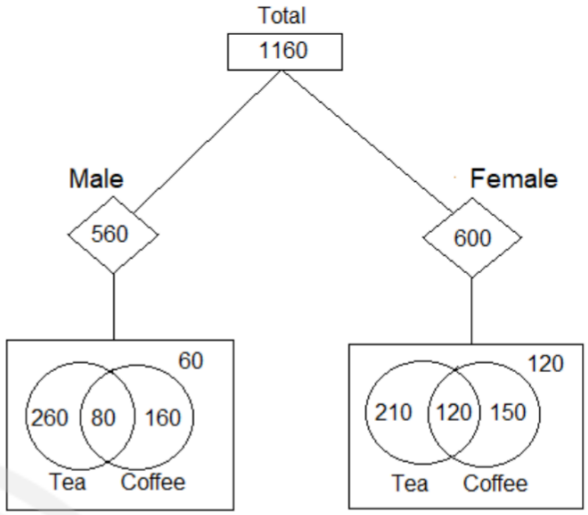
Topic: Venn Diagram



The number of males do not like any of these two (tea and coffee) = 60

Q30. Text Solution:

Topic: Venn Diagram



Required Percentage = $\frac{150}{600} \times 100$= 25%