



GMAT

Quant Section Test [SETS AND VENN DIAGRAMS] - Solutions

1. Solution:

Topic: Data Analysis

Concept Tested: Sets and Venn Diagram (Mutually Exclusive - Table method)

Type of Question: Data Sufficiency (DS)

Given:

At a certain motel, 75 percent were rented, including 60 percent of its air-conditioned rooms.

Question:

What percent of the rooms that were not rented were airconditioned?

Approach:

Table Method:

Let's make rows and columns using the information provided in the question.

Let 100 be the total number of rooms.

So 75 rooms are rented and Let "x" be the number of rooms which is air-conditioned. As the question 60 percent of AC rooms are rented.

	Rented	Not rented	Total
AC	60%(x)		x
NON AC			
Total	75	25	100

Statement I is sufficient:

50 percent of the rooms in the motel were air conditioned.

Lets further fill this information in the above table.

	Rented	Not rented	Total
AC	$60\%(50) = 30$	20	$x = 50$
NON AC	45	5	50
Total	75	25	100

We can clearly see it is sufficient. Number of not rented air-conditioned rooms are 20.

Therefore, Statement I by itself is sufficient to answer the question.

So, eliminate B, C and E.

The answer is either A or D.

Statement II is insufficient:

25 percent of the rooms in the motel were not rented.

This piece of information we already from the question.

i.e.,

75 percent of the rooms are rented. So this doesn't add anything.

Therefore, Statement II by itself is insufficient to answer the question.

So, eliminate D.

Hence, the answer is A.

2. Solution:

Topic: Data Analysis

Concept Tested: Sets and Venn Diagram (Mutually Inclusive-Venn-Diagram)

Type of Question: Data Sufficiency (DS)

Given:

Table given the number of students in three clubs.

Also given that, people who have chosen Math also have opted Chess.

Question:

Total number of students in three clubs?

Approach:

Venn-Diagrams or Inflated total sum concept.

Inflated Sum = Exactly-I + 2 * Exactly II + 3 * Exactly III

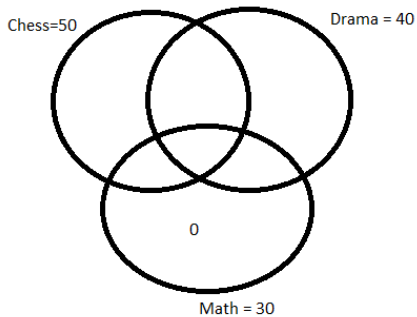
Also,

At least One = Exactly-I + Exactly II + Exactly III

Here inflated Sum = $50 + 40 + 30 = 120$.

$120 = \text{Exactly-I} + 2 * \text{Exactly II} + 3 * \text{Exactly III}$

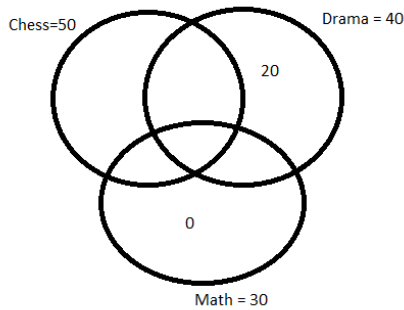
OR we can draw the Venn-diagram



We need to find the atleast one i.e., total?

Statement I is insufficient:

20 students opted only Drama.



We don't know the other information.

Therefore, Statement I by itself is insufficient to answer the question.

So, eliminate A and D.

The answer is either B, C or E.

Statement II is insufficient:

No student was there be in all 3 Clubs.

That means,

Formula will become,

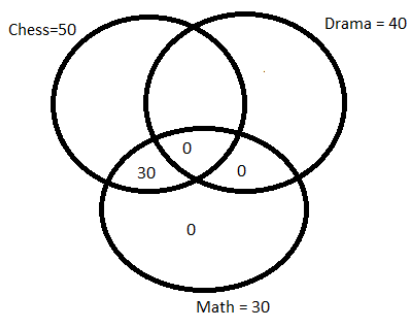
$$120 = \text{Exactly-I} + 2 * \text{Exactly II}$$

And

$$\text{Alteast One} = \text{Exactly-I} + \text{Exactly II}$$

And

Venn-diagram



Still we don't the number of people who study drama and Chess.

Therefore, Statement II by itself is insufficient to answer the question.

So, eliminate B.

The answer is either C or E.

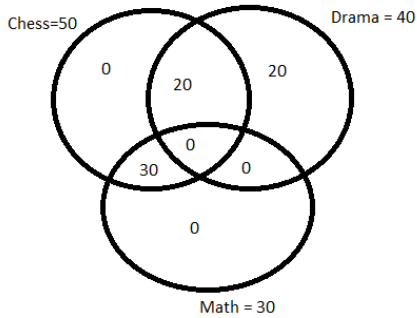
Combine both Statements:

From statement-I, we know that 20 people study only drama and from statement II we know nobody opted for all three clubs.

So, number of people who study drama and Math is also zero.

Similarly,

There will be 20 people who will study both Chess and Drama.



So total no. of people will be 70.

Using the formulae also we will get the same thing,

$$120 = \text{Exactly-I} + 2 * \text{Exactly II} \dots(1)$$

And

$$\text{Atleast One} = \text{Exactly-I} + \text{Exactly II} \dots(2)$$

Subtracting (1) and (2)

$$120 - \text{Atleast one} = \text{Exactly-II}$$

$$120 - 50 = \text{Atleast one}$$

$$\text{Atleast one} = 70$$

Therefore, combining the statements I and II is sufficient to answer the question asked.

So, eliminate E.

Hence, the answer is C.

3. Solution:

Topic: Data Analysis

Concept Tested: Sets and Venn Diagram (Mutually Inclusive-Venn-Diagram)

Type of Question: Problem Solving (PS)

Given:

Total Number of students = 300

Swimming = 120

Skating = 100

Chess = 180

All three = 0

Question:

Number of students exactly two classes?

Approach:

Inflated total sum concept.

Inflated Sum = Exactly-I + 2 * Exactly II + 3 * Exactly III

Also,

At least One = Exactly-I + Exactly II + Exactly III

Here inflated Sum = 120 + 100 + 180 = 400.

400 = Exactly-I + 2 * Exactly II + 3 * Exactly III

Given, all three is zero.

So,

400 = Exactly-I + 2 * Exactly II(1)

At least One(Total) = Exactly-I + Exactly II

300 = Exactly-I + Exactly II.....(2)

Subtracting (1) and (2)

100 = Exactly-II

Hence, the answer is C.

4. Solution:

Topic: Data Analysis

Concept Tested: Sets and Venn Diagram (Mutually Exclusive - Table method)

Type of Question: Problem Solving (PS)

Given:

Men = 60% and 10% of men come late.

Late = 30%

Question:

What percent of the employees who were women and don't come late to the office?

Approach:

Table Method:

Let's make rows and columns using the information provided in the question.

Let 100 be the total number of employees.

So, 60 employees are Men and 30 employees are Late.

	Late	Not late	Total
Men			60
Women			40
Total	30	70	100

10% of Men come late to office. So, 10% of 60 = 6.

We can fill rest of the information as shown below.

	Late	Not late	Total
Men	6	54	60
Women	24	16	40
Total	30	70	100

Hence, the answer is C.

5. Solution:

Topic: Data Analysis

Concept Tested: Sets and Venn Diagram (Mutually Exclusive - Table method)

Type of Question: Problem Solving (PS)

Given:

Total = 300.

Neither College bus or Public transport = 40

Only College bus = 80(means no public transport and only college bus)

Question:

how many students used both College bus and Public transport?

Approach:

Table Method:

Let's make rows and columns using the information provided in the question.

	College	Not college	Total
Public transport			180
Not Public transport	80	40	120
Total			300

Also given that,

$$\frac{\text{Both college bus \& Public transport}}{\text{Only public transport}} = \frac{1}{3} = \frac{x}{3x}$$

We can fill rest of the information as shown below.

	College	Not college	Total
Public transport	x	3x	180
Not Public transport	80	40	120
Total			300

We can see that, $4x = 180$ and $x = 45$.

	College	Not college	Total
Public transport	45	135	180
Not Public transport	80	40	120
Total	125	175	300

So, both College bus and Public transport = 45.

Hence, the answer is C.

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