6.   **Three-Variable Graphs**
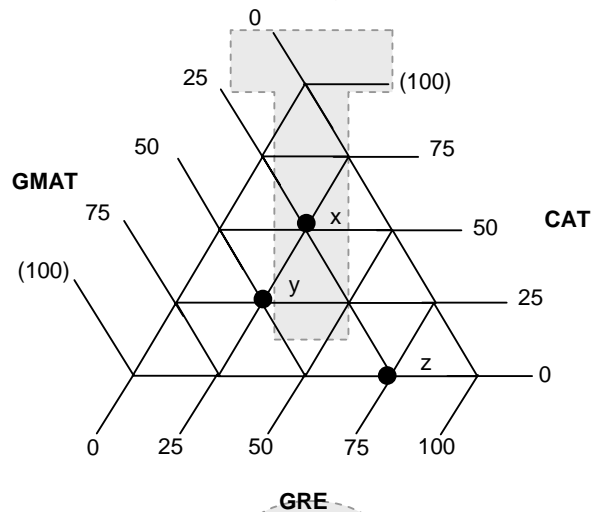
Look at the following example to understand the concept. The graph represents percentage of GRE, GMAT and CAT students in three institutes x, y, z.

The above diagram gives the percentage of students of each category (GRE, GMAT, CAT) in each of the institutes x, y, z.

EXAMPLE :

1.   In institute 'x', what is the ratio of the number of CAT students to that of GMAT students?

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

Sol.   Number of CAT students in institute x = 50% of total

Number of GMAT students in institute x = 25% of total

Therefore, required ratio = 2 : 1   **Answer: (3)**

2.   If there are 132 GRE students in institute 'y', how many GMAT students are there in the same institute?

(1) 132   **(2) 264**   (3) 396   (4) Can't say

Sol.   Let the total number of students in institute y be T

Percentage of GRE students = 25%

25% of T = 132

T = 132 × 4 = 528

Number of GMAT students in institute y = 50% of 528 = 264

Answer: (2)

3. The total number of students in institute 'x' is twice the number of GRE students in institute 'z', what is the ratio of the number of CAT students of institute 'x' to the number of GMAT students of institute z?

(1) 1 : 2   (2) 2 : 1   (3) 1 : 3   **(4) 3 : 1**

Sol. Let the total number of students in institute z be T

Total number of students in institute x = 2 × 75% of T = $\frac{3}{2}$T

Number of CAT students in institute x = 50% of 3/2T = $\frac{3}{4}$T

Number of GMAT students in institute z = 25% of T = $\frac{1}{4}$T

Required ratio = $\frac{3}{4}$T : $\frac{1}{4}$T = 3 : 1

Answer: (4)

4. If the ratio of the number of students of institutes x, y, z is 1 : 2 : 3 respectively, what is the ratio of the CAT, GRE, GMAT students (in all the institutes together)?

(1) 1 : 2 : 3   **(2) 1 : 3 : 2**   (3) 2 : 3 : 1   (4) 3 : 2 : 1

Sol. Let the total number of students in institutes x, y, z y be T, 2T and 3T respectively.

Number of CAT students in all the institutes = 50% T + 25% 2T + 0% 3T = T

Number of GRE students in all the institutes = 25% T + 25% 2T + 75% 3T = 3T

Number of GMAT students in all the institutes = 25% T + 50% 2T + 25% 3T = 2T

Required ratio = T : 3T : 2T = 1 : 3 : 2

Answer: (2)

7. PERT Charts

The word PERT stands for "Project Evaluation and Review Technique". The progress of any project is monitored and the execution of various activities is scheduled keeping in mind resource constraints (like labour) and time constraints. For the purpose of Data Interpretation questions, the data may be given in the form of a table or a chart.

We will take a table and draw a PERT chart from the table.

INTERIOR DECORATION OF AN OFFICE ROOM

The interior decoration work of an office is taken up. The activities involved, along with the time taken by each activity is given below:

Activity	Duration (in week)	Other activities to be completed before this activity can be taken up.
False roofing	2	-----
Making Furniture	1	-----
Fixing Furniture	1	False roofing, Partition systems.
Fixing Venetian Blinds	1	Painting of Doors and Windows.

Fixing Air-Conditioner	1	-----
Painting Walls	1	False roofing.
Partition Systems	2	False roofing, Laying the carpet.
Laying of the carpet	1	False roofing, Painting of Doors and Windows, Painting of walls.
Painting of Doors and Windows	1	False roofing.

We will now represent the above data pictorially making sure each activity will start only after other" prerequisite" activities are completed.

No. / Activity Name	Weeks	1	2	3	4	5	6	7
1	False roofing	①	①					
2	Making Furniture	①						
3	Fixing Furniture							⑤
4	Fixing Venetian Blends				③			
5	Fixing Air-Conditioner	①						
6	Painting Walls			②				
7	Partition System					④	④	
8	Laying Carpet				③			
9	Painting of Door and Windows			②				

As can be seen from the chart the entire work can be completed by the 7th week. In this chart we could also have shown in another column, the "prerequisite" activities to be completed for any activity to be taken up.

From the chart, we can also easily take up rescheduling of activities depending on the "slack" available. For example, the activity "making furniture" can be taken up in the second week without delaying the project. These types of decisions may be important form the point of view of resources and manpower availability.