

## Caselet DI Tricks & Tips

In caselets, the mathematical data is represented in the form of a paragraph. Hence extracting data and establishing relationships between different data values becomes difficult. However caselets are very popular with CAT examiners.

Positives	Negatives
1. Most caselets seem difficult due to lack of data values, but are very easy when you get down to solving them.	1. Data values are not easily available and hence you need to have a lot of patience to decipher a lot of it after reading the passage.

### Shortcuts to crack DI sets containing Caselets

- Represent the data in a form such that you can easily extract the data for the questions that follow  
Let us look at this CAT 2005 set to understand this.  
Help Distress (HD) is and VGO involved in providing assistance to people suffering from natural disasters. Currently, it has 37 volunteers. They are involved in three projects: Tsunami Relief (TR) in Tamil Nadu, Flood Relief (FR) in Maharashtra and Earthquake Relief (ER) in Gujarat. Each volunteer working with Help Distress has to be involved in at least one relief work project.
  - ⇒ A maximum number of volunteers are involved in the FR project. Among them, the number of volunteers involved in the FR project alone is equal to the volunteers having additional involvement in the ER project
  - ⇒ The number of volunteers involved in the ER project alone is double the number of volunteers involved in all the three projects.
  - ⇒ 17 volunteers are involved in the TR project.
  - ⇒ The number of volunteers involved in the TR project alone is one less than the number of volunteers involved in the ER project alone.
  - ⇒ Ten volunteers involved in the TR project are also involved in at least one more project.

The above set can be represented in the form of a Venn Diagram having three sets TR, FR and ER. Similarly, you can represent data in the form of a Table or a Network. The idea is to help us get the required data with a single glance upon reading the question.

- Always start a caselet with a value that you can directly plug in.  
Have a look at this CAT 1991 caselet:  
Ghosh Babu deposited a certain sum of money in a bank in 1986. The bank calculated interest on the principal at 10 percent simple interest, and credited it to the account once a year. After the 1st year, Ghosh Babu withdrew the entire interest and 20% of the initial amount. After the 2nd year, he withdrew the interest and 50% of the remaining amount. After the 3rd year, he withdrew the interest and 50% of the remaining amount. Finally after the 4th year, Ghosh Babu closed the account and collected the entire balance of Rs. 11,000.

The only value that one can see in the entire caselet is that at the end, he had a balance of Rs. 11,000/-. This is good place to start this caselet from. Try to work out other values from this value now.

### How to Solve Caselet / Paragraph DI Questions

Let us now understand, what exactly is a Caselet DI.

Data interpretation normally consists of questions involving pie charts, bar graphs, line graphs, radar graphs or table with the required information for solving the questions. In a paragraph type data interpretation question, a set of information is provided in a paragraph form. It doesn't consist of any charts or tables. You have to read the given information carefully and draw a suitable table/chart listing out all the given data to answer the questions.

### How to solve caselets/paragraph data interpretation questions?

Under mentioned steps will help you all while solving questions of Caselet or paragraph based Data Interpretation questions.

- Solving caselets involves a thorough understanding of the subject matter of the passage given. Read the paragraph with utmost care and analyse what the question demands. Basically be clear on what is given and what is asked.

2. Try to underline all the important points in a caselet while reading it. You can always use symbols in place of names of persons, places etc. to make your work a lot easier. Focus only on useful data and don't do unnecessary approximations just to simplify the task.
3. With all the important information in your hand, try to represent the data in graphical or tabular form. Represent the data in a pie chart, bar graph, table etc depending upon the feasibility and the motive of the question.
4. Read the figures closely. You can use options and approximations to avoid tedious and lengthy calculations. If the question asks for relative values, there is no need to find the accurate values. Use approximation but never over-approximate.

### Let us illustrate this with an example.

**Question:** Based on the following passage, answer the questions which follow

A took a voluntary retirement on February 1<sup>st</sup>, 2014 and received 10 lakhs as retirement benefits. As on that day he also had Rs 3 lakhs in the bank. Of the total amount he had, 60% was invested in the bank which gives an annual compounded interest of 15%, for three years. Of the remaining part, half was invested in shares, which appreciated by 15% in the first year, 6% in the second year and depreciated by 10% the next year. The remaining part was invested in real estate. The real estate values increased by 10% in the first year, reduced by 10% in the next year and remained steady in the third year.

#### 1. What was the value (in rupees lakhs) of A's investment on February 1<sup>st</sup>, 2015?

- A) 21 lakhs      B) 14.82 lakhs      C) 15.36 lakhs      D) 15.97 lakhs

**SOLUTION:** Total amount 1<sup>st</sup> February 2014 = 10 + 3 = Rs 13 lakhs

**Bank Shares    Real estate**

7.8 lakhs      2.6

For 1<sup>st</sup> year, value in bank will increase by 15%. So, total value will be 1.15 times of previous value. Hence, value after 1 year in bank =  $7.8 \times 1.15 = 8.97$

For the first year, share value increases by 15%. Hence, value after 1 year in shares =  $2.6 \times 1.15 = 2.99$

Similarly, Value after 1 year in real estate =  $2.6 \times 1.1 = 2.86$

Total value in 2015 = Rs 14.82 lakhs

#### 2. What was the approximate value (in rupees lakhs) of his investment on 1<sup>st</sup> February 2017?

- A) 16.21 lakhs      B) 16.82 lakhs      C) 17.286 lakhs      D) 17.87 lakhs

**SOLUTION:**

Money in bank =  $7.8 \times (1 + 0.15)^3 = 7.8 \times 1.52 = 11.86$  (use compound interest formula for three years)

For the first year, share value increases by 15%, for the second year it increases by 6% and for the third year it decreases by 10%. So, value of share at the end of three years is  $2.6 \times 1.1 \times 1.06 \times 0.9 = 2.852$

Similarly, Value of real estate =  $2.6 \times 1.1 \times 0.9 = 2.574$

Total value = 17.286

#### 3. In which year did the investment show the maximum increase?

- A) First      B) Second      C) Third      D) Both (A) and (C)

**SOLUTION:**

Value of investment on 1<sup>st</sup> February 2014 = 13 lakhs

Value of investment on 1<sup>st</sup> February 2015 = 14.82 lakhs

Value of investment on 1<sup>st</sup> February 2016 = 16.063

Value of investment on 1<sup>st</sup> February 2017 = 17.286

It is clearly seen that maximum %increase is in 2015.

### Some points to remember

1. Improve your calculation speed: Caselets being calculation intensive, you have to be good with your calculations. Learn speed math techniques and practice them regularly. The more you practice the faster you become in calculations. After a considerable amount of practice, you can do the calculations in your mind. This is going to save a lot of your precious time in exam conditions. So build a intuitive number sense.
2. Be thorough with the arithmetic related topics like percentages, interests, ratios and proportions as caselets are often based on these type of concepts. Otherwise you will face a lot off difficulty tackling these questions.

Get the basics; understand the difference between growth and growth rate, average growth rate, cumulative average growth rate, market share by volume and market share revenue etc.

3. Practice makes a man perfect. The more you practice these types of questions, the easier the questions will become. Practice questions will improve your speed and accuracy. While attempting these type of questions in exam, always try to choose the questions which will give you the answer with lesser effort, or you will end up spending a significant amount of time on lengthy calculations.

**Directions: Refer to the information given below and answer the questions that follow.**

There are 4 players in the cigar market of the Dominican Republic: Amergio, Byford, Christie's and Ducatti. The sales in 1995 are of \$ 100,000 (100,000 boxes of cigars) – the volumes shared by Amergio, Byford, Christie's and Ducatti are in the ratio of 1: 2: 3: 4 and the sales is in the ratio of 4:3:2:1 respectively. The sales in 1996 show a sharp drop – both in terms of volume and in dollars. In volume terms, the demand fell by 60% and in dollar terms the figure was 50%. The shares of Amergio, Byford, Christie and Ducatti in volume terms was 2:2:3:3 and that of the ratio of prices charged was 9:6:3:1. The market picked up dramatically in 1997 – the volumes were the sum total sold in 1995 and 1996 and the sales rose by 390% over that of 1996. For 1997, sales by Christie have amounted to \$84,000, which was 20% more than that made by Amergio and thrice the sales of Ducatti. The volumes share in that year was in the ratio of 1:3:4:2.

**Example 1:** What was the ratio of the prices charged by Amergio, Byford, Christie's and Ducatti in 1997?

**SOLUTION:** Summarising the whole information, we can deduce the following:

**1. Value**

**For year 1995:** Sales (in value) 100,000 \$

Ratio of value for:

Amergio: Byford: Christie: Ducatti= 4 : 3 : 2 : 1 = 40,000 : 30,000 : 20,000 : 10,000

**For year 1996:** Sales (in value) = 50,000\$

**For year 1997:** Total Sales (Value) =  $50 \times 4.9 = 245,000$

**Example 2:** In which year was Sohan born?

A. Sohan at present is 25 years younger to his mother.

B. Sohan's Sister, who was born in 1964, is 35 years younger to his mother.

**SOLUTION:** From both I and II, we find that Sohan is  $(35 - 25) = 10$  years older than his sister, who was born in 1964. So, Sohan was born in 1954.

Since, we are getting unique answer from both statements when combined, so the answer is 3rd option.

Data Sufficiency: Key Learning

- In this article, you learned how a Data Sufficiency question is asked and what steps are to be followed in order to solve these questions systematically.
- In order to get hold on such questions you need to solve variety of questions to get exposure to different kind of Data Sufficiency questions. Read the question carefully and then solve each statement individually and combine them if required.

## More Tricks To Solve Caselet DI With Example

### Introduction

Caselet DI is trending these days and whenever anything starts trending, we must know about that. Caselet DI is not new or not even out of way. It is just a mathematical form of English Comprehension. In Caselet DI, a long paragraph is given and on the basis of that, some questions are asked. Isn't it English Comprehension?

- In a given paragraph of Caselet DI, lots of information is given.
- You have to read the paragraph carefully and then you have to note down all the key information as short as possible.
- The given information will let you draw some diagrams such as Venn diagram, tabular chart or any other diagram.
- The difference between simple DI and Caselet DI is – In simple DI, information is already given in diagrammatical forms but in Caselet DI, you have to draw a diagram on the basis of given information.

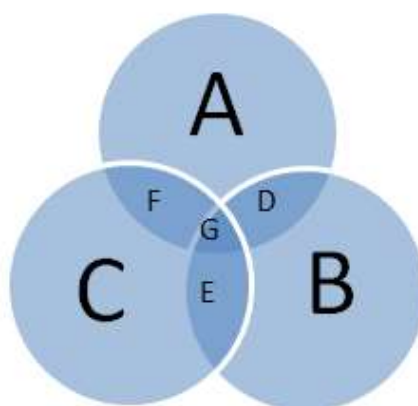
### Before start solving Caselet DI, you must have knowledge of following things.

- How to draw a diagram on the basis of given information.
- Which diagram is the need of the question?
- Knowledge of Venn diagram.
- Knowledge of the relationship between fractions and their percentage forms.
- Knowledge of simplification and approximation.
- If the question belongs to CI & SI or Profit & Loss or Speed, time and distance then you must have knowledge of basic formulae of these topics.
- Must have knowledge of Ratio and Proportion.

### To make few things more clear, let us take a simple question:

In a college, some students like English, some like Maths and some like Science. Some like both English and Maths but not Science, some like both Maths and Science but not English and Some like both Science and English but not Maths. Some like all three subjects.

The given information can be simply put in a Venn diagram as follow:



- 1) A, B and C are representing the whole circle.
- 2) A means some like English, B means some like Maths and C means some like Science.
- 3) Region D means some like both English and Maths but not Science, region E means some like both Maths and Science but not English and region F means some like both Science and English but not Maths.
- 4) Region G means some like all these three subjects.

After arranging the information in Venn diagram, we conclude following more information:

- Students who like only English=  $A - (D + F + G)$ .
- Students who like only Maths=  $B - (D + E + G)$ .
- Students who like only Science=  $C - (E + F + G)$ .

**NOTE:** Practice more problems so that you may know the different forms of Caselet DI. While solving, must follow the above steps.

### A Caselet Question Asked In BOB PO Exam, 2017

A total of 1650 employees is working in a company in different departments. The ratio of male employees to female employees in the organisation is 86:79. There are total 5 departments in the company i.e. Product Development, Sales and Marketing, R & D and Reinvestment, Finance and HR. Total 198 males work in Product Development department. 18% employees work in Sales and Marketing department in which male to female ratio is 5:4. In Finance Department, 77 males are working and the number of females in this department is  $\frac{5}{7}$ th of the number of males. The number of males in Sales and Marketing department is equal to the number of females in Product Development department. The number of males in Finance department is half of the number of males in HR department. Male to female ratio in R & D and Reinvestment department is 14:19.

1. The number of males in R & D and Reinvestment department is how much more than females in Product Development?
2. Female in R & D and Reinvestment department is what % of the total number of females in the company (approximately)?
3. The number of females in Finance department is what percent less than the number of females in Product Development department?

#### SOLUTION:

##### Step 1

	PRODUCT DEVELOPMENT	SALES & MARKETING	R & D AND REINVESTMENT	FINANCE	HR	TOTAL
MALE						
FEMALE						
TOTAL						

##### Step 2

- Note down the given data and make calculation as per as the requirement
- TOTAL=1650
- M:F=86:79 then we can find the number of males and females as follows:
- $86+79=165=1650$ ,
- $1=10$ ,
- $86=860$  (total number of male),
- $79=790$  (total number of female).
- Males in Product Development department= 198
- 18% employees work in Sales and Marketing department i.e.  $(18/100)*1650=297$ ;
- Male to female ratio is 5:4 in the Sales and Marketing department, so  $5+4=9=297$ .
- Therefore, number of male in this department= $5*33=165$  and the number of female in this department= $4*33=132$ .
- Number of Male in Finance department=77 and female in this department is  $\frac{5}{7}$ th of male. So number of female in this department=  $(5/7)*77=55$ .
- Number of males in Sales and Marketing department is equal to the number of females in Product Development department. So number the number of female in Product Development= 165.
- Number of males in Finance department is half of the number of males in HR department. So the number of male in HR department= $2*77=154$ .
- Male to female ratio in R & D and Reinvestment department is 14:19.

##### Step 3

Now put these data in the table.'

	PRODUCT DEVELOPMENT	SALES & MARKETING	R & D AND REINVESTMENT	FINANCE	HR	TOTAL
MALE	198	165		77	154	860
FEMALE	165	132		55		790
TOTAL	363	297		132		1650

- Number of males in R & D and REINVESTMENT=  $860-(198+165+77+154) = 266$ .
- $14=266$  so  $19=19*19=361$  (Number of female in R & D and REINVESTMENT).
- Number of female in HR department=  $790-(165+132+361+55)=77$ .

Step 4

Now put these data in remaining blanks in the table:

	PRODUCT DEVELOPMENT	SALES & MARKETING	R & D AND REINVESTMENT	FINANCE	HR	TOTAL
MALE	198	165	266	77	154	860
FEMALE	165	132	361	55	77	790
TOTAL	363	297	627	132	231	1650

Step 5

- 1) **Male in R & D and Reinvestment=266.**  
Female in Product Development=165.  
So, the number of males in R & D and Reinvestment department is more than females in Product Development= 266-165=101.
- 2) **Female in R & D and Reinvestment=361.**  
The total number of females=790. So,  $(361/790)*100=45.7\%$ .
- 3) **Female in Finance Department=55.**  
Female in Product Department=165.  
So,  $\{(165-55)/165\}*100 = (1/3) * 200 = 33(1/3)\% *2=66(2/3)\%$  (use the concept of percentage and fraction)  
Caselet seems like a word problem but it is actually data interpretation. In a simple language we may call it an English comprehension. When we deduce the caslete problems, it becomes tabular DI or Venn diagram DI or both. It is easy to solve if you follow the below steps.

**Step-1** Read the given paragraph thoroughly.

**Step-2** Then try to note down each and every data.

**Step-3** Then deduce these data in a graphical form like tabular, Venn diagram or both.

**Step-4** Now you can easily answer the questions asked.

**To make it clear, I am solving a caselet problem asked in SBI PO mains.**

In a medical college there are 1600 students studying Dentistry and Homeopathy. Each student from each course knows one or more languages out of English, Hindi and Bengali. 45% of the students study Dentistry and the remaining students study Homeopathy. Out of the students studying Dentistry, boys and girls are in the ratio 5:3. Out of the boys studying Dentistry, 16% know only English, 10% know only Hindi and 4% know only Bengali. 24% know English as well as Hindi, 20% know English as well as Bengali and 14% know Hindi as well as Bengali. The remaining boys know all the three languages.

Out of the girls studying Dentistry, 20% know only English, 10% know only Hindi and 10% know only Bengali. 20% know English as well as Hindi, 20% know English as well as Bengali and 10% know Hindi as well as Bengali. The remaining girls know all the three languages.

Out of the students studying Homeopathy, boys and girls are in the ratio 4:7. Out of the boys studying Homeopathy, 20% know only English, 15% know only Hindi and 5% know only Bengali. 15% know English as well as Hindi, 25% know English as well as Bengali and 10% know Hindi as well as Bengali. The remaining boys know all the three languages.

Out of the girls studying Homeopathy, 15% know only English, 15% know only Hindi and 5% know only Bengali. 20% know English as well as Hindi, 20% know English as well as Bengali and 15% know Hindi as well as Bengali. The remaining girls know all the three languages.

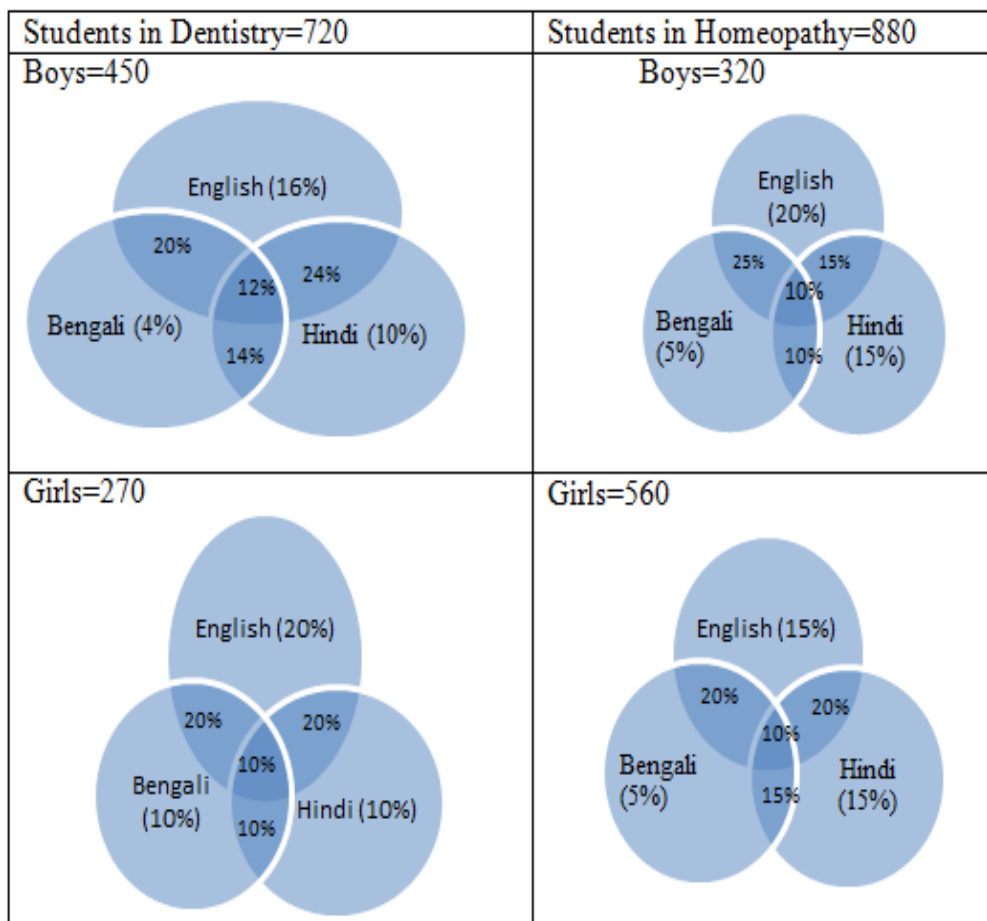
**Questions:**

- 1) How many students studying Dentistry know only either English or Hindi?
- 2) How many students in the college know all the three languages?
- 3) What percent of the total number of girls in the college know Bengali?
- 4) How many students studying Homeopathy do not know English?
- 5) Out of the students studying Homeopathy, what is the ratio of the number of boys knowing English to the number of girls knowing Hindi?



**SOLUTION:**

Total number of students=1600.  
 Number of students in Dentistry= 45% of 1600= 720.  
 Number of students in Homeopathy= 1600-720=880.  
 Ratio of boys and girls studying Dentistry= 5:3.  
 Number of boys studying Dentistry=  $(5/8) \times 720 = 450$ .  
 Number of girls studying Dentistry=  $(3/8) \times 720 = 270$ .  
 Ratio of boys and girls studying Homeopathy= 4:7.  
 Number of boys studying Homeopathy=  $(4/11) \times 880 = 320$ .  
 Number of girls studying Homeopathy=  $(7/11) \times 880 = 560$ .  
 Now make a diagram to put these values.



- 16% of 450 + 10% of 450= 117.  
 20% of 270 + 10% of 270= 81.  
 On adding these two, we get 198.  
**Note:** In case of either or, we use addition concept.
- 12% of 450 + 10% (320+560+270) =169.
- $[(50\% \text{ of } 270 + 50\% \text{ of } 560) / (270 + 560)] \times 100 = 50\%$ .
- 30% of 320 + 35% of 560= 292.
- $(70\% \text{ of } 320) / (60\% \text{ of } 560) = 2:3$ .

**What are Caselets?**

Caselets are paragraphs in which complete information is presented in the form of sentences. The data is in the raw form and questions are asked on its basis. Before solving questions on caselets, data has to be extracted from the paragraph. The length of the paragraph may vary from short to medium in length. Sometimes, caselets are combined with other sources of data such as tables, graphs etc.

The only disadvantage of caselets over other data interpretation questions is that we need to analyse the paragraph and the questions carefully before answering them.

### 3 tips to solve Data Interpretation Question Asked on Caselets

- ⇒ Read the caselets and associated questions carefully before directly jumping to solve them.
- ⇒ Arrange the data in an order to have a better understanding towards them.
- ⇒ Underline the important sentences while reading the paragraph because it will help you to draw conclusions easily.

### Example: Data Interpretation Questions on caselets

A school has 400 students- boys and girls, who are in the ratio of 3:5. The students speak Hindi, English or both the languages. 12% of the boys speak only Hindi, 22% of the girls speak only English, 24% of the total students speak only Hindi and the number of boys speaking both the languages is six times the number of boys speaking only Hindi.

- 1) How many boys speak Hindi?
- 2) How many girls speak only Hindi?
- 3) How many students speak English?
- 4) The number of girls speaking only Hindi is what percent of the total number of students speaking only Hindi?
- 5) What is the ratio of the number of boys to the number of girls speaking both the languages

### SOLUTION:

#### Information analysis -

Total Number of students = 400

Ratio of boys and girls; B: G = 3: 5

Number of boys =  $\frac{3}{8} \times 400 = 150$

Number of girls =  $\frac{5}{8} \times 400 = 250$

Organise the data in a systematic order. Here, we have arranged them in a form of table.

Only Hindi	Only English	Both the languages	
Number of Boys (150)		12% of 150 = 18	$150 - 18 - 108 = 24$ $6 \times 18 = 108$
Number of Girls (250)		96 - 18 = 78	22% of 250 = 55 $250 - 78 - 55 = 117$
Total number of students	(400)	24% of 400 = 96	

**Question 1:** How many boys speak Hindi?

#### Step 1:

**SOLUTION:** In this question, we need to calculate the percentage of boys who speak Hindi. It means that we need to calculate the percentage of boys who speak only Hindi and boys who speak Hindi + English.

**Step 2:** Number of boys who speak only Hindi = 18

Number of boys who speak Hindi + English = 108

$18 + 108 = 126$

Therefore, the number of boys who speak Hindi are 126

**Question 2:** How many girls speak only Hindi?

#### SOLUTION:

#### Step 1:

In this question, we need to calculate the number of girls who speak only Hindi.

From the table above, we get to know that number of girls who speak only Hindi are 78.

Therefore, the number of girls who speak Hindi are 78.

To have an edge over data interpretation questions, practice more questions from data interpretation.

**Question 3:** How many students speak English?

#### SOLUTION:

#### Step 1:

In this question, we need to calculate the number of students who speak English. So we subtract the number of students who speak only Hindi from the total number of students

Total number of students - Number of students who speak only Hindi

$400 - 96 = 304$

Therefore, the number of students who speak English are 304.



**Question 4:** The number of girls speaking only Hindi is what percent of the total number of students speaking only Hindi?

**SOLUTION:**

**Step 1:**

Number of girls who speak Hindi – 78 [x]

Total number of students who speak only Hindi – 96 [y]

As we need to find the percentage change we know that  $x/y \times 100$

**Step 2:**

$78/96 \times 100$

81.25%

Therefore, 81.25% is the percentage change.

**Question 5:** What is the ratio of the number of boys to the number of girls speaking both the languages?

**SOLUTION:**

**Step 1:**

Number of boys speaking both the languages = 108

Number of Girls speaking both the languages = 117

The ratio of the number of boys who speak both the languages: Number of girls who speak both languages  
= 108: 117

**Step 2:**

By further simplification we get, 12:13

Therefore, the ratio of boys is to girls who speak both the languages are 12:13.

## Practice Problems For Caselet DI

### Example 1:

Directions for Q. 1 to 5: Refer to the following information and the answer the following questions.

People Power Corporation presently employs three Managers (A, B and C) and five recruitment agents (D, E, F, G and H). The company is planning to open a new office in San Jose to manage placement of software professionals in the US. It is planning to relocate two of the three managers and three of the five recruitment agents to the office at San Jose. As it is an organization which is highly people oriented the management wants to ensure that the individuals who do not function well together should not be made as a part of the team going to the US.

The following information was available to the HR department of People Power Corporation.

- Managers A and C are at each others throat and therefore cannot be sent as a team to the new office.
- C and E are excellent performers in their own right. However, they do not function together as a team. They should be separated.
- D and G have had a major misunderstanding during the last office picnic. After the picnic these two have not been in speaking terms and should therefore not be sent as a team.
- D and F are competing for a promotion that is due in another 3 months. They should not be a team.

1. If D goes to the new office which of the following is (are) true?  
I. C cannot go II. A cannot go III. H must also go  
(a) I only (b) II and III only (c) I and III only (d) I, II and III
2. If A is to be moved as one of the Managers, which of the following cannot be a possible working unit?  
(a) ABDEH (b) ABFGH (c) ABEGH (d) ABDGH
3. If C and F are moved to the new office, how many combinations are possible?  
(a) 4 (b) 1 (c) 3 (d) 5
4. Given the group dynamics of the Managers and the recruitment agents, which of the following is sure to find a berth in the San Jose office?  
(a) B (b) H (c) G (d) E
5. If C is sent to the San Jose office which member of the staff cannot go with C?  
(a) B (b) D (c) G (d) F

**ANSWERS:** 1. (c) 2. (d) 3. (b) 4. (a) 5. (b)

### Example 2

Ghosh Babu took voluntary retirement in Dec. 1991 and received a certain amount of money as retirement benefits. On Jan 1, 1992, he invested the entire amount in shares. At the end of the month, he sold all his shares and realised 25% profit. On Feb 1, he reinvested the entire amount in shares which he sold at the end of the month at a loss of 20%. Again, he invested the entire amount on Mar 1 in a new company. At the end of the month, he sold the new company to a friend and realised a profit of 20% in the process. He invested the entire amount in shares on Apr 1, which he sold at the end of the month for Rs. 1,08,000 incurring a loss of 10%.

1. What is the amount of retirement benefits received by Ghosh Babu?  
a) Rs. 1,08,000 b) Rs. 1,25,000 c) Rs. 1,20,000 d) Rs. 1,00,000
2. The percentage profit received by Ghosh Babu between Jan 1 and Apr 30 is:  
a) 8.00% b) 15.00% c) - 10.00% d) None of these
3. The amount of loss incurred by Ghosh Babu based on his operation in Apr 1992 is:  
a) Rs. 25,000 b) Rs. 12,000 c) Rs. 20,000 d) Rs. 8,000
4. The maximum amount invested by Ghosh Babu in any one month was in:  
a) January b) February c) March d) April

### Answers:

1. d Let the amount received by Ghosh Babu in Dec. 1991 be Rs.  $x$ , as retirement benefits:

Therefore, investment in the month of Jan 1992 = 100

Profit of 25% at the end of Jan 1992.

Hence, investment in the month of Feb 1992 = 125

Loss of 20% at the end of Feb 1992

Hence, investment in the month of March 1992 = 100

Profit of 20% at the end of March 1992

Hence, investment in the month of April 1992 = 120

Loss of 10% at the end of April 1992

Therefore the amount left at the end of April 1992 = 108

Amount at the end of April 1992 = Rs. 1,08,000

Therefore, simply equating figures, he would have started with Rs 1,00,000

2. a % Profit between Jan 1 and Apr 30 =  $(1.08x - x/x) \times 100$

3. b Investment in the month of April = Rs. 1,20,000

Amount received at end of April = Rs. 1,08,000

Therefore, Loss = Rs. 12,000

4. b Maximum amount invested by Ghosh Babu is in the month of February = Rs. 1,25,000

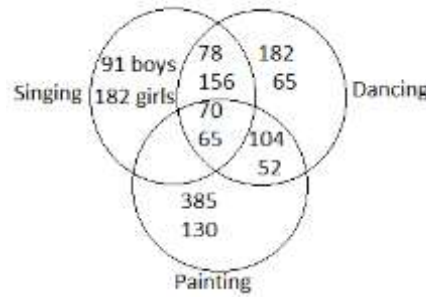
### Directions : (1-5) Study the information carefully to answer the questions that follow

A school consisting of a total of 1560 students has boys and girls in the ratio of 7 : 5 respectively. All the students are enrolled in different types of hobby classes, viz., Singing, Dancing and Painting. One-fifth of the boys are enrolled in only Dancing classes. Twenty per cent of the girls are enrolled in only Painting classes. Ten percent of the boys are enrolled in only Singing classes. Twenty-four per cent of the girls are enrolled in both Singing and Dancing classes together. The number of girls enrolled in only Singing classes is two hundred per cent of the boys enrolled in the same. One-thirteenth of the boys are enrolled in all the three classes together. The respective ratio of boys enrolled in Dancing and Painting classes together to the girls enrolled in the same is 2 : 1 respectively. Ten per cent of the girls are enrolled in only Dancing classes whereas eight per cent of the girls are enrolled in both Dancing and Painting classes together. The remaining girls are enrolled in all the three classes together. The number of boys enrolled in Singing and Dancing classes together is fifty per cent of the number of girls enrolled in the same. The remaining boys are enrolled in only Painting classes.

- Total number of girls enrolled in Singing is approximately what per cent of the total number of students in the school?  
(1) 37                      (2) 19                      (3) 32                      (4) 14                      (5) 26
- What is the respective ratio of the number of girls enrolled in only Painting classes to the number of boys enrolled in the same?  
(1) 77 : 26                      (2) 21 : 73                      (3) 26 : 77                      (4) 73 : 21                      (5) None of these
- Number of girls enrolled in only Dancing classes is what per cent of the boys enrolled in the same?  
(1) 38.67                      (2) 35.71                      (3) 41.83                      (4) 28.62                      (5) None of these
- What is the total number of boys who are enrolled in Dancing?  
(1) 318                      (2) 364                      (3) 292                      (4) 434                      (5) None of these
- What is the total number of students enrolled in all the three classes together?  
(1) 135                      (2) 164                      (3) 187                      (4) 142                      (5) None of these

**Answers with Explanation!!!!!!!!!!!!!!**

No. of boys = 910 and No. of Girls = 650



1. (5) Required % =  $\frac{182+156+65}{1560} \times 100$
2. (3) Required ratio =  $130 : 385 = 26 : 77$
3. (2) Required % =  $\frac{65 \times 100}{182} = 35.71\%$
4. (4) Required number =  $(78 + 182 + 70 + 104) = 434$
5. (1) Required number =  $(70 + 65) = 135$
6. (4)  $x = -15, 13$  &  $y = -15$
7. (2)  $x = 4, 3$  &  $y = 2, 1$
8. (4)  $x = 5, 3$  &  $y = 2, 3$
9. (5)  $x = -6, -3$  &  $y = -3, 4$
10. (2)  $x = 9/4, 1$  &  $y = -2, -1$

**Directions (1-5): Read the information given and answer the following questions accordingly.**

Not surprisingly the growth of the hotel industry is driven by the increase in the number of people using hotels and the increase in per person use of the hotel. In 2004, it is expected that there will be 200 million hotel users in India or about 20 per cent of the population will generate Rs. 50 billion in hotel revenues. Industry revenues should expand from Rs. 50 billion to Rs. 150 billion by 2008, while the number of users should grow to over 560 million or to about half the population of India in the same period.

- Q1. What is the estimated population of India in 2004?  
(a) 98 crore (b) 100 crore (c) 110 crore (d) 115 crore (e) None of these
- Q2. What will be the simple average growth rate of population of India in the given period 2004-2008?  
(a) 2% (b) 3% (c) 4% (d) 4.5% (e) None of these
- Q3. What will be the growth in percentage of users in India by 2008?  
(a) 100% (b) 150% (c) 180% (d) 200% (e) None of these
- Q4. What will be the percentage growth of the revenues of the hotel industry in the given period?  
(a) 200% (b) 230% (c) 260% (d) 300% (e) None of these
- Q5. It is believed that if 50% of the population of any country can afford hotel-use, it is economically developed. Can we say that India will be a developed country by 2007?  
(a) Yes (b) No (c) Cannot say (d) Data inadequate (e) None of these

**Solutions**

S1. Ans.(b)

Sol. 200 million = 20% of population

$\Rightarrow$  Population =  $200 \times 5 = 1000$  million = 100 crore

S2. Ans.(b)

Sol. 2004 population = 1000 million

Population in 2008 or after 4 years =  $560 \times 2 = 1120$  million

$\therefore$  Growth rate =  $(120 \times 100)/(1000 \times 4) = (12/4)\% = 3\%$  per annum simple growth rate.

S3. Ans.(c)

Sol. Hotel users in 2004 = 200 million

Hotel users in 2008 = 560 million

∴ Growth in percentage  $= (560 - 200) / 200 = 360 / 200 = 180\%$

S4. Ans.(a)

Sol. Total revenue in 2004 = 50 billion

Total revenue in 2008 = 150 billion

∴ Growth in percentage  $= (150 - 50) / 50 \times 100 = 100 / 50 = 200\%$

S5. Ans.(d)

Sol. By 2008 half or 50% of the India population will be using hotels.

We do not have any information about 2007. Hence the data is inadequate.

**Directions (6-12): Read the information given and answer the following questions accordingly.**

Bihar and Orissa are the most deprived states of India. While they contain one-fifth of India's population, they have almost one-third of India's illiterates. In 1998, only a small fraction of Orissa and Bihar's population was literate versus 85 per cent of Kerala's population. More than two-thirds of the births are not attended by any medical facility, 1/10th of the infants born in Orissa and Bihar die in infancy and an equal number before reaching the age of five. Almost 90 per cent of the under five deaths are due to malnutrition.

From amongst the lucky kids who have survived for the first five years, 1/3rd of them work as child labourers and only half of the remaining are sent to school. Of those who attend classed, only 40 per cent are able to reach Std V. In India, 30 per cent of the children under 16 work as labourers. Orissa and Bihar contain 1/3rd of the child labourers in India. India has the largest population of child labourers, which is 1/15th of its total population.

In Orissa and Bihar, out of 100 children enrolled in school, 32 are girls. And out of 100 who attend Std X, only 10 are girls. Only 38 out of 100 Indian women are literate versus 57 per cent of males. Even in wealthy states such as Punjab, girls suffer from malnutrition seven times more than boys do. The total population of the country was 90 crore in 1998 and the ratio of male to female in India was 10 to 9.

Q6. According to the information provided, what percentage of the infants in Orissa and Bihar attend Std V?

- (a) 11.33                      (b) 10.66                      (c) 13.33                      (d) 12.33                      (e) None of these

Q7. The number of child labourers in India in 1998 are:

- (a) 15 crore                      (b) 16 crore                      (c) 12 crore                      (d) 6 crore                      (e) None of these

Q8. The Orissa and Bihar, out of 100 born, approximately how many children work as child labourers?

- (a) 27                      (b) 32                      (c) 13                      (d) 38                      (e) None of these

Q9. What percentage of girl children enrolled in school reach Std X in Orissa and Bihar?

- (a) 10%                      (b) 32%                      (c) 60%                      (d) Insufficient data                      (e) None of these

Q10. In 1998, the literates in Kerala exceed the literates in Orissa and Bihar by:

- (a) 30%                      (b) 35%                      (c) 27%                      (d) Insufficient data                      (e) None of these

Q11. The number of literates in India in 1998 is:

- (a) 16.2 crore                      (b) 27 crore                      (c) 43.2 crore                      (d) Insufficient data                      (e) None of these

Q12. The number of illiterates in Orissa and Bihar in 1998 is almost:

- (a) 18 crore                      (b) 13.2 crore                      (c) 15.6 crore                      (d) Insufficient data                      (e) None of these

S6. Ans.(b)

Sol. Born 100  $\Rightarrow$  10 die at infancy

90  $\Rightarrow$  10 die till age 5

80  $\Rightarrow$  2/3  $\times$  1/2  $\times$  80 go to school

∴ Who attend Std. V  $= 80 \times 1/3 \times 0.4 = 10.66\%$

S7. Ans.(d)

Sol. Number of child labourers in India  $= (90 \times 1/15)$  crore = 6 crore

S8. Ans.(a)

Sol. Out of 100 born, 20 die by the age of 5.

Number of child labourers in Orissa and Bihar  $= 1/3 \times 80 \cong 27$

S9. Ans.(d)

Sol. Since we do not know how many children reach Std X, the answer cannot be found. Hence, option (d).

S10. Ans.(d)

Sol. Since we do not know the exact population of Kerala, Orissa and Bihar, the answer cannot be found.

S11. Ans.(c)

Sol. Number of female literates =  $90 \times 9 / 19 \times 0.38 = 16.2$  crore

Number of male literates =  $90 \times 10 / 19 \times 0.57 = 27$  crore

$\therefore$  Total literates =  $16.2 + 27 = 43.2$  crore

S12. Ans.(c)

Sol. Total illiterates in India =  $90 - 43.2 = 46.8$  crore

$\therefore$  Number of illiterates in Orissa and Bihar =  $1/3 \times 46.8 = 15.6$  crore

**Directions (13-15): Read the information given and answer the following questions accordingly.**

AMS, Inc. is the leader in selling ideas universe wide but its maximum revenue comes from three principal planets only, viz. Earth, Mars, Jupiter. Further, it has three products, viz. CSP, CC and CP. In a particular year, the number of units sold had a distribution as follows: The number of units of CCs sold on Mars was 12 per cent of the number of units of CPs sold on Earth. The number of units of CPs sold on Jupiter was 1000. Total number of CC units sold was 2600. Total number of CP units was 200 higher than that of the total number of units of CCs sold. The number of units of CSP sold on Mars was 10 per cent of the number of units of CP sold on Jupiter. The number of units of CSP sold on Earth was 2000. The number of units of CC sold on Earth was 15 per cent of the number of units CSP sold on Jupiter.

The prices of the units on the different planets were as follows:

Earth  $\rightarrow$  Rs. 15 per unit

Mars  $\rightarrow$  Rs. 10 per unit

Jupiter  $\rightarrow$  Rs. 8 per unit

The number of units of CSP sold on Jupiter was 300.

The number of units of CP sold on Earth was 600.

Q13. The number of units of CC sold on Jupiter is:

- (a) 1520      (b) 2483      (c) 3423      (d) 600      (e) None of these

Q14. The revenue generated on Earth is greater than that generated on Jupiter by about

- (a) Rs. 8000      (b) Rs. 9000      (c) Rs. 10,000      (d) Cannot be determined      (e) None of these

Q15. The overall revenue generated is the highest from

- (a) CSPs      (b) CP      (c) CCs      (d) Can't be determined      (e) None of these

**Solution for (13-15):**

Earth			Mars		Jupiter	Total		
	Sales	Revenue	Sales	Revenue	Sales	Revenue	Sales	Revenue
CSP	2000	30,000	100	1000	300	2400	2400	33,400
CC	45	675	72	720	2483	19864	2600	21259
CP	600	9000	1200	12,000	1000	8000	2800	29,000
<b>Total</b>		<b>39,675</b>		<b>13,720</b>		<b>30,264</b>		

The answers can be read out of the table itself.

S13. Ans.(b)

Sol. 2483

S14. Ans.(e)

Sol. None of these

S15. Ans.(a)

Sol. CSP



**Directions (Q. 1 – 5): Study the given information carefully to answer the questions that follow:**

An organization consists of 3500 employees working in different departments, viz HR, Marketing, IT, Production and Accounts. The ratio of male to female employees in the organisation is 3:2. 8% of the males work in the HR department. 22% of the female work in the account department. The ratio of males to females working in the HR department is 3 : 5. One-seventh of the females work in the IT department. 46% of the males work in the Production department. The number of females is one-sixth of the males working in the same. The remaining females work in the Marketing department. The total number of employees working in the IT department is 375. 22% of the males work in the Marketing department and remaining work in the Account department.

1. The number of males working in the Account department forms approximately what per cent of the total number of males in the organisation?

(a) 6 (b) 8 (c) 10 (d) 11 (e) 12

**Correct Answer : Answer: a**

2. How many females work in Production department?

(a) 140 (b) 200 (c) 180 (d) 160 (e) None of these

**Correct Answer : Answer: e**

3. The total number of employees working in the Account department forms approximately what per cent of the total number of female employees in the organisation?

(a) 28 (b) 32 (c) 29 (d) 31 (e) 30

**Correct Answer : Answer: d**

4. The ratio of the numbers of females working in IT department to the numbers of males working in the same department is

(a) 15 : 8 (b) 1 : 2 (c) 8 : 15 (d) 2 : 1 (e) 7 : 11

**Correct Answer : Answer: c**

5. What is the total number of employees working in the Marketing and Production departments together?

(a) 1900 (b) 2040 (c) 2020 (d) 2031 (e) 2042

**Correct Answer : Answer: b**

6. Kartik, Bhuvan and Sid entered into a partnership and invested Rs 13,000, Rs 16,000 and Rs 19,000 respectively. After 7 months, Kartik and Bhuvan added Rs 1,000 and Rs 5,000 respectively while Sid withdrew Rs 5,000. If at the end of year their annual profit is Rs 43,160, find the total profit share of Kartik and Sid.

A) Rs 28,030 B) Rs 27,190 C) Rs 26,830 D) Rs 28,420 E) Rs 27,040

**Option E**

**SOLUTION:**

Karti : Bhuvan : Sid

$13000 \times 7 + 14000 \times 5 : 16000 \times 7 + 21000 \times 5 : 19000 \times 7 + 14000 \times 5$

23 : 31 : 29

So required share =  $(23+29)/(23+31+29) \times 43160 = \text{Rs } 27,040$

7. Megha, Isha and Rani entered into a partnership by investing Rs 20,000, Rs X, and Rs 22,000 respectively for 6 months, 8 months and 10 months respectively. If Isha earns a profit of Rs 16500 out of a total profit of Rs 44,550, find the total investment done by all three.

A) Rs 47,000 B) Rs 25,000 C) Rs 54,000 D) Rs 39,000 E) Rs 67,000

**Option E**

**SOLUTION:**

Megha : Isha : Rani

$20000 \times 6 : X \times 8 : 22000 \times 10$

30000 : 2X : 55000

15000 : X : 27500

So  $X/(15000+X+27500) \times 44550 = 16500$

Gives  $X/(15000+X+27500) \times 270 = 100$

Solve,  $X = 25,000$

So total investment =  $20+25+22 = 67,000$

8. Kamya, Prisha and Tisha started a business by investing Rs X, Rs (X+400) and Rs (X-200). If after the end of year, total share of profit of Kamya and Tisha is Rs 8100 out of a total profit of Rs 13,500, find the profit share

of Prisha.

- A) Rs 6100      B) Rs 5400      C) Rs 5100      D) Rs 6600      E) Rs 5500

**Option B**

**SOLUTION:**

Kamya : Prisha : Tisha

$X : (X+400) : (X-200)$

So  $(X+X-200)/(X + X+400 + X-200) * 13500 = 8100$

Solve,  $X = 1600$

So ratio of profit share is

$1600 : 2000 : 1400 = 8 : 10 : 7$

So profit share of Prisha =  $10/25 * 13500 = \text{Rs } 5400$

9. Preeti, Anu and Aarti entered into a business. Preeti invested Rs 2500 for some months, Anu invested Rs 3000 for 2 more months than Preeti and Aarti invested Rs 3500 for 3 months less than Anu. If Anu got Rs 8400, out of a total profit of Rs 19,000, then Aarti invested her money for how many months?

- A) 3 months      B) 5 months      C) 4 months      D) 6 months      E) 2 months

**Option C**

**SOLUTION:**

Preeti : Anu : Aarti

$25000*x : 3000*(x+2) : 3500*(x-1)$

$5x : 6(x+2) : 7(x-1)$

So  $(6x+12)/(5x + 6x+12 + 7x-7) * 19000 = 8400$

Solve,  $x = 5$

So Aarti invested money for 4 months

**Directions (10-12):** A, B and C started a business by investing Rs 800, Rs 1600 and Rs 2000 respectively. After a quarter they invested amounts in a ratio 1 : 4 : 2. After another quarter, they invested amounts in ratio 3 : 2 : 3. In the last quarter the ratio of investments was same as in 2<sup>nd</sup> quarter. Also in the last quarter, the respective amounts of A, B and C was double than the respective amounts invested in 2<sup>nd</sup> quarter. The total investment of C before 4<sup>th</sup> quarter was Rs 1400 more than that of A during same duration. Also ratio of B's share in profit to total profit at the end of year was 66 : 153.

10. Find the total investment of A, B and C.

- A) Rs 10,200      B) Rs 11,300      C) Rs 9,800      D) Rs 10,080      E) Rs 11,090

**Option A**

**SOLUTION:**

Quarters means 3 months each

Ratio of investments in 2<sup>nd</sup> quarter – 1 : 4 : 2, so let amounts –  $x, 4x, 2x$

Ratio of investments in 3<sup>rd</sup> quarter – 3 : 2 : 3, so let amounts –  $3y, 2y, 3y$

In last quarter, respective amount is double then in 2<sup>nd</sup> quarter, so amounts –  $2x, 8x, 4x$

**In the last quarter the ratio of investments was same as in 2<sup>nd</sup> quarter. — this is not required to solve question.**

Given:

$(2000 + 2x + 3y) = 1400 + (800+x+3y)$

Solve,  $x = \text{Rs } 200$

Now ratio of profit share — A : B : C is

$800*3 + x*3 + 3y*3 : 1600*3 + 4x*3 + 2y*3 : 2000*3 + 2x*3 + 3y*3 + 4x*3$

3 gets cancelled, gives

$(800+3x+3y) : (1600+12x+2y) : (2000+6x+3y)$

Put  $x = 200$  gives

$1400+3y : 4000+2y : 3200+3y$

Now given

$(4000+2y)/(1400+3y + 4000+2y + 3200+3y) = 66/153$

$(2000+y)/(4300+4y) = 22/51$

Solve,  $y = \text{Rs } 200$

So now the total investment is— $(800+3x+3y) + (1600+12x+2y) + (2000+6x+3y) = (4400 + 21x + 8y)$

put  $x = 200, y = 200$ , total investment = Rs 10,200

11. If they respectively had invested same amounts in each quarter after quarter 1 which is equal to their respective investments in quarter 1, then what would be the profit of A at the end of year out of a total profit of

Rs 19,350?

- A) Rs 2510      B) Rs 3320      C) Rs 2560      D) Rs 3150      E) None of these

**Option D**

**SOLUTION:**

800, 1600, 2000 as it is for 3 months, and then for next 9 months x, 4x and 2x

So ratio of profit share – A : B : C is

$$800*3 + 200*9 : 1600*3 + 800*9 : 2000*3 + 400*9$$

$$7 : 20 : 16$$

$$\text{So profit share of A} = \frac{7}{43} * 19350 = \text{Rs } 3150$$

12. If the respective investments in third quarter was changed and this was in ratio 2 : 4 : 1 (other investments being the same), then what would be the total investment of all three in third quarter, if the average investment of all A B and C was Rs 3100 for whole year?

- A) Rs 700      B) Rs 800      C) Rs 500      D) Rs 900      E) None of these

**SOLUTION: Option A**

New investments – 3z, 2z, and 2z

Investment of A = (800+3x+2z), B = (1600+12x+4z) and C =(2000+6x+1z)

Put x = 200

$$A = 1400+2z, B = 4000+4z, C = 3200+1z$$

$$\text{Now given } (1400+2z + 4000+4z + 3200+1z)/3 = 3100$$

Solve, z = Rs 100

$$\text{So total investment for quarter 3} = 2z+4z+z = 7z = \text{Rs } 700$$

**Directions (13-15):** A, B and C started a business. They invested amounts in the ratio 1 : 3 : 2 respectively for 8 months. After this they invested amounts in ratio 2 : 3 : 4 respectively for 4 months. The average investment of A and B is Rs 2800 while average investment of B and C is Rs 3800.

13. Find the total investment of C?

- A) Rs 4000      B) Rs 5000      C) Rs 6000      D) Rs 4500      E) Rs 3500

**SOLUTION: Option A**

A : B : C is

$$x*8 + 2y*4 : 3x*8 + 3y*4 : 2x*8 + 4y*4 \text{ gives } (2x+2y) : (6x+3y) : (4x+4y)$$

Given::

$$(x+2y+3x+3y)/2 = 2800$$

$$4x+5y = 5600$$

$$\text{Also } (3x+3y+2x+4y)/2 = 3800$$

$$5x+7y = 7600$$

Solve both equations, x = 400, y = 800

$$\text{So total investment of C} = (2x+4y) = \text{Rs } 4000$$

14. If B's investment for both the terms (4 months and 8 months) was swapped, then find the total profit share of B and C if annual profit is Rs 46,200.

- A) Rs 45,600      B) Rs 32,800      C) Rs 43,600      D) Rs 37,800      E) None of these

**SOLUTION: Option D**

B's investment for 8 months = 3x = 3\*400 = Rs 1200 and for 4 months = 3y = 3\*800 = Rs 2400

Now swapped, means for 8 months = Rs 2400 and for 4 months is Rs 1200

So now ratio of A : B : C is

$$400*8 + 1600*4 : 2400*8 + 1200*4 : 800*8 + 3200*4$$

$$2 : 5 : 4$$

$$\text{So required profit} = (5+4)/(2+5+4) * 46200 = \text{Rs } 37,800$$

15. If A's share in annual profit is Rs 9030, find the total profit after a year.

- A) Rs 41,390      B) Rs 45,150      C) Rs 42,610      D) Rs 46,240      E) Rs 43,170

**SOLUTION: Option B**

Ratio of profit share is

$$(2x+2y) : (6x+3y) : (4x+4y)$$

$$x = 400, y = 800$$

So ratio becomes

$$1 : 2 : 2$$

$$\text{So } \frac{1}{5} * x = 9030$$

$$\text{Total profit} = x = \text{Rs } 45,150$$

