

## CHAPTER – 5

### CASELETS

#### Worked out Examples:

These questions are based on the information given below.

In 2000, Ram and Shyam bought a company for ₹20 lakhs. They used it for manufacturing soaps. Their investments were in the ratio 3 : 2 respectively. Ram focussed on the manufacture of detergent soaps and Shyam focussed on the manufacture of toilet soaps. In that year, they had sold each detergent soap at ₹15 and each toilet soap at ₹10. The total revenue generated by them in that year was 65% of their total investment. The total revenues that year from detergent soaps and toilet soaps which were generated were in the ratio 9 : 4. All the manufactured were sold in that year.

- 5.01.** Find the total revenue received by Shyam from his sales (in ₹lakhs)  
 (A) 2 (B) 3 (C) 4 (D) 5

**Sol:** Total sales revenue = 65% (20) = ₹13 lakhs.

Total revenue received by Shyam =  $\frac{4}{13}$  (13) = ₹4 lakhs.  
 Choice (C)

- 5.02.** Total number of soaps sold that year is (in lakh)  
 (A) 5 (B) 1 (C) 0.12 (D) 0.16

**Sol:** Total number of soaps sold =  $\frac{(9)(10^5)}{15} + \frac{(4)(10^5)}{10}$   
 = 1 lakh.  
 Choice (B)

- 5.03.** Find the ratio of the quantities of detergent soaps and toilet soaps produced that year.

(A) 3 : 2 (B) 2 : 3 (C) 3 : 4 (D) 4 : 3

**Sol:** Ratio required =  $\frac{9}{15} : \frac{4}{10} = 3 : 2$ . Choice (A)

- 5.04.** What percentage of his investment was Ram's total sales revenue that year?

(A) 60% (B) 70% (C) 65% (D) 75%

**Sol:** Total revenue received by Ram =  $\frac{9}{13}$  (13) = ₹9 lakhs.

∴ Required percentage =  $\frac{9(100)}{\frac{3}{5}(20)} = 75\%$

Choice (D)

- 5.05.** Find the average revenue per soap generated from the sales (in ₹)

(A) 11 (B) 12 (C) 15 (D) 13

**Sol:** Average revenue =  $\frac{\text{Total revenue}}{\text{Total soaps manufactured}}$

$$= \frac{13 \text{ lakhs}}{\frac{(9)(10^5)}{15} + \frac{(4)(10^5)}{10}}$$

$$\text{i.e. } \frac{13 \text{ lakhs}}{1 \text{ lakh}} = ₹13.$$

Choice (D)

#### Exercise – 5(a)

**Directions for questions 1 to 5:** These questions are based on the information given below.

Six friends—Doorva, Mangala, Deepa, Srikanth, Radha and Suman, have ₹2100 among themselves. The amount with Doorva is as much less than that with Radha as it is more than that with Suman. The amount with Deepa is ₹200 less than that with Doorva, whereas Mangala has twice that of Doorva and Deepa has ₹400 less than that with Srikanth.

- The amount with how many of them is more than the average amount with them?  
 (A) 2 (B) 3  
 (C) 4 (D) Cannot be determined
- The amount with Srikanth is  
 (A) ₹400 (B) ₹500 (C) ₹300 (D) ₹200
- The ratio of the amounts with Deepa and Mangala is  
 (A) 5 : 6 (B) 2 : 3 (C) 1 : 3 (D) 1 : 6
- The amount with Radha is  
 (A) ₹400 (B) ₹200  
 (C) ₹350 (D) Cannot be determined
- Except Deepa, every other person has at least one ₹50 denomination currency note and one ₹100 denomination currency note, then what is the least number of currency notes with them?  
 (A) 20 (B) 22 (C) 24 (D) 25

**Directions for questions 6 to 10:** These questions are based on the following data.

Amar, Akbar and Anthony sold their three cycles manufactured in different years to Mr. Kishanlal. Mr. Kishanlal gave a total of ₹1700 to the three and said that Amar should get ₹50 more than half of the total amount as his cycle was used less. Akbar's cycle being used more than Amar's, he should get about  $\frac{6}{17}$ th the total amount and the last one gets the remaining amount. Each individual gets his amount only in denominations of ₹100.

- What is the difference between the amounts received by Amar and Anthony?  
 (A) ₹900 (B) ₹700 (C) ₹800 (D) ₹600
- The amount that Amar has is how much more than what Akbar and Anthony together have?  
 (A) ₹200 (B) ₹300 (C) ₹100 (D) ₹400
- If the shares of Amar and Anthony are interchanged, then Akbar has how much more than what Amar has?  
 (A) ₹300 (B) ₹200 (C) ₹400 (D) ₹100
- The ratio in which the amount shared among Akbar, Amar and Anthony is  
 (A) 2 : 9 : 6 (B) 9 : 6 : 2 (C) 2 : 6 : 9 (D) 6 : 9 : 2
- The difference of the amount that Anthony and Akbar have is what percentage of the amount that Amar has?

- (A)  $25\frac{3}{5}$  (B)  $44\frac{4}{9}$  (C)  $33\frac{1}{3}$  (D)  $66\frac{2}{3}$

**Directions for questions 11 to 15:** These questions are based on the following information.

In an MBA college  $83\frac{1}{3}\%$  of the students like either tennis or formula 1, and their ratio is 7 : 4 respectively. Of those who like either tennis or formula 1, the ratio of boys and girls is 2 : 9 respectively. Of the boys who like tennis or formula 1, 60% like tennis and 4 boys like formula 1. Also the number of boys and girls who does not like either tennis or formula 1 is in the ratio 6 : 5. No student likes both the games.

11. The number of girls who like formula 1 is what percentage of the boys who like tennis?  
(A) 220 (B)  $266\frac{2}{3}\%$   
(C)  $233\frac{1}{3}\%$  (D) Cannot be determined
12. What is the total number of girls?  
(A) 20 (B) 10  
(C) 35 (D) None of these
13. What is the ratio of the total number of boys to the number of girls who like tennis?  
(A) 4 : 3 (B) 3 : 2  
(C) 16 : 29 (D) 29 : 16
14. What is the total number of students in the college?  
(A) 55 (B) 66  
(C) 60 (D) Cannot be determined
15. The total number of girls who like tennis is what percentage of the total strength of the college.  
(A) 43.93% (B) 39.67%  
(C) 41.72% (D) 47.33%

**Directions for questions 16 to 20:** Answer these questions on the basis of the information given

After my retirement, I decided to invest my savings in four different categories.

I invested 20% of the amount in shares, 30% of the amount in National Savings Certificate (NSC), 40% of the remaining in land and the rest in FD's.

After the first year, the value of my shares increased by 20%. I get an 8% return, which is tax free, on my

investment in NSCs. My FD's fetched me 6% returns on which I had to pay 5% TDS on the interest earned and the land prices appreciated by 10%.

At the end of the second year, due to the stock market boom, the value of my shares increased by a further 45% and I sold off my shares and earned 100% tax free profits. NSCs again gave me an 8% tax free returns, the FD (my initial investment along with the interest earned after taxes in the first year) again gave me 6%, but again I had to pay 5% TDS on the interest earned in the second year and land prices appreciated by a further 10% when I sold it off and had to pay 10% tax on the gains I made.

At the end of two years I found that the difference between my gain from investment in shares and land was ₹55,100.

**Directions for questions 16 to 20:** Type in your answer in the input box provided below the question.

16. What was the amount invested (in lakhs) by me in shares in the first year?

17. What was the total amount invested (in lakhs) initially?

18. What is the value of all my investments (in lakhs) at the end of two years (approximately)

19. What is the approximate compounded annual return on my investment for the two-year period?

20. At the end of the two years, what was the approximate difference in the amounts due to me for my investments in NSC and FD?

### Exercise – 5(b)

**Directions for questions 1 to 3:** These questions are based on the information given below.

The following is the rate of income tax for different income groups.

Annual Income (₹)	Tax rate
Upto 1 lakh	0%
1 – 1.5 lakh	10% of income in excess of ₹1 lakh
1.5 to 5 lakh	Upto ₹1.5 lakh as above + 20% of income in excess of ₹1.5 lakh
More than 5 lakh	Upto ₹5 lakh as above + 30% of income in excess of ₹5 lakh

Tax is always calculated on income, after deductions, if any. The only allowed deductions are

- (a) maximum of ₹one lakh per year on investments in specified securities.
- (b) maximum of ₹.three lakh per year as housing loan repayment.

Eligibility for housing loan – minimum annual income of ₹1 lakh and annual repayment less than or equal to 20% of annual income. There is a service tax of .10% on the tax paid at the rate of 30%.

1. What can be the maximum income for which one need not pay any tax?  
(A) ₹1 lakh (B) ₹2 lakh  
(C) ₹2.5 lakh (D) ₹3 lakh
2. What is the minimum tax to be paid by a person with an annual income of ₹10 lakh?

- (A) 1.2 lakh  
(B) 1.245 lakh  
(C) 1.35 lakh  
(D) None of these
3. The difference between the minimum and the maximum tax that one has to pay on an annual income of ₹6 lakh is  
(A) ₹80,000  
(B) ₹54,000  
(C) ₹57,000  
(D) ₹83,000

**Directions for questions 4 to 6:** These questions are based on the information given below.

Mr. Ravi took voluntary retirement on January 1<sup>st</sup>, 2015 and received ₹16 lakhs as his retirement benefits. As on that day he also had ₹4.5 lakhs in the bank. Of the total amount he had, 60% was invested in the bank which gives an annual compounded interest of 10%, 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.

4. What was the value (in rupees lakhs) of Ravi's investment on January 1<sup>st</sup>, 2016?  
(A) 21.5 (B) 22.75 (C) 23.5 (D) 24.0
5. What was the approximate value (in rupees lakhs) of his investment on January 1<sup>st</sup>, 2018?  
(A) 23 (B) 24 (C) 25 (D) 26
6. In which year did his investment show the maximum percentage increase?  
(A) First (B) Second  
(C) Third (D) Both (A) and (C)

**Directions for questions 7 to 10:** These questions are based on the information given below.

Murali sells samosas for a living. He sells each samosa for ₹4 and works from Monday to Saturday every week. He observes that he sells X samosas less than the previous day on 2 days of any week and X samosas more than the previous day on the other three days of the week. Every week, the highest number of samosas that he sells on any day is 150 and the least number of samosas he sells is 90.

7. If Murali sells 750 samosas in a particular week, how many samosas does he sell on Friday?  
(A) 90 (B) 120  
(C) 150 (D) Cannot be determined
8. If Murali sold the minimum number of samosas on Friday and did not sell the maximum number of samosas on Thursday, then how much money did he earn that week?  
(A) ₹2760 (B) ₹2880  
(C) ₹3000 (D) ₹2840
9. How many samosas does Murali sell on Tuesday, if he sold 130 samosas on Friday?  
(A) 90

- (B) 110  
(C) 120  
(D) Cannot be determined

10. If Murali sells 130 samosas on Wednesday, then which of the following statement/s is/are necessary to find the number of samosas Murali sold on Saturday?  
I. He sold 150 samosas on Thursday.  
II. He sold 130 samosas on Friday.  
III.  $X = 20$   
(A) Only III (B) Only II  
(C) II and III (D) None of these

**Directions for questions 11 to 15:** These questions are based on the information given below.

The information below gives partial details of the employees of ABC Pvt. Ltd. It tells us about the number of employees who had specialized in Finance, Marketing and HR during their MBA programme. It also tells us about the number of engineers and that of the non-engineers who had specialized in each of these streams. Each employee who was an MBA graduate specialized in exactly one stream.

Specialization	F	M	H
Educational background			
Engineers			
Non-Engineers	7		5
Total		35	

Note: F = Finance, M = Marketing and H = HR

The following details are known:

- (i) The number of engineers is 20% more than the number of non-engineers.  
(ii) The number of employees who specialized in Finance and the number of non-engineers are in the ratio 8 : 15.  
(iii) The number of employees who specialized in HR and the number of engineers are in the ratio 5 : 12.
11. How many non-engineers specialized in Marketing?  
(A) 15 (B) 16 (C) 17 (D) 18
12. How many non-engineers did not specialize in Finance?  
(A) 19 (B) 20 (C) 23 (D) 22
13. Find the number of employees who specialized in HR.  
(A) 14 (B) 15 (C) 16 (D) 17
14. Which of the following is the least?  
(A) The number of non-engineers who specialized in HR.  
(B) The number of engineers who specialized in Finance.  
(C) The number of non-engineers who specialized in Marketing.  
(D) The number of engineers who specialized in Marketing.

15. What percentage of MBA graduates are engineers?

- (A)  $63\frac{7}{11}\%$  (B)  $72\frac{8}{11}\%$   
(C)  $54\frac{6}{11}\%$  (D)  $45\frac{5}{11}\%$

**Directions for questions 16 to 20:** These questions are based on the information given below.

The weights (in kg) of each of the five members of the Don Bosco school wrestling team – Ajay, Bhushan, Chetan, Deepak and Emmanuel – is a distinct integer. Before leaving for an inter-school competition, the coach decided to check the weights of all the five members. But in the only available weighing machine in the school, the weights from 0 to 100 were not properly visible. But as checking of weights was necessary to register them, he decided to weigh the students in groups of three making sure that no group of three students was repeated. The weights obtained while weighing them were as follows – 106 kg, 116 kg, 122 kg, 126 kg, 132 kg, 146 kg, 120 kg, 126 kg, 136 kg and 142 kg. It is also known that the weight of Ajay is the average of that of Bhushan and Emmanuel. Further, Emmanuel is heavier than Chetan but lighter than Deepak.

**Directions for questions 16 to 20:** Type in your answer in the input box provided below the question.

16. What is the weight (in kg) of the heaviest boy?

17. What is the weight (in kg) of Bhushan?

18. What is the weight (in kg) of Emmanuel?

19. What is the weight (in kg) of Chetan?

20. What is the average weight (in kg) of all the five boys?

### Key

#### Exercise – 5(a)

- |      |      |       |       |          |
|------|------|-------|-------|----------|
| 1. D | 5. C | 9. D  | 13. C | 17. 5    |
| 2. B | 6. B | 10. B | 14. B | 18. 6.35 |
| 3. D | 7. C | 11. B | 15. A | 19. 12   |
| 4. D | 8. C | 12. D | 16. 1 | 20. 7500 |

#### Exercise – 5(b)

- |      |      |       |        |          |
|------|------|-------|--------|----------|
| 1. C | 5. C | 9. B  | 13. B  | 17. 30   |
| 2. D | 6. A | 10. D | 14. A  | 18. 50   |
| 3. C | 7. D | 11. D | 15. C  | 19. 36   |
| 4. B | 8. A | 12. C | 16. 56 | 20. 42.4 |