“Profit/ Loss, Partnership, Averages And Interest”

Pre Read

Relevel
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Basic Terms

- **Cost Price (CP):** Cost incurred by the seller to produce/ procure the item.
- **Selling Price (SP):** The price which is used to sell an article to the buyer.
- **Profit (Gain):** It is the difference between the selling price and cost price when the selling price is greater than the cost price.
- **Loss:** It is the difference between the cost price and the selling price when the cost price is greater than the selling price

Profit and loss are generally represented as a percent of the cost price unless otherwise stated.

- **Overhead Charges:** If an individual spends money on transportation/ packaging, etc., then it is an extra expenditure, which is called overhead charges.
- **Marked Price (MP):** The price written on the label of a product is called the Marked price or list price.
- Discount: The reduction made on the marked price of an article is called a discount. When no discount is given, the selling price is the same as the marked price.
- **Markup:** The variance between the cost of an article and its marked price is called Markup. A markup is added to the cost price or purchase price of an article in order to create profit.

Important formulae in Profit and Loss:

- Profit = SP – CP..... (SP > CP)
- Loss = CP – SP..... (CP > SP)
- % Profit = (Profit/CP)*100 = ((SP-CP)/CP)*100
- % Loss= (Loss/CP)*100 = ((CP-SP)/CP)*100
- SP= {(100+ Profit%)/100}*CP
- SP= {(100- Loss%)/100}*CP
- Discount % = (Discount/ Marked Price)*100

Practice Questions

1. A boy bought oranges at the rate of 9 units for Rs. 9.60 and sold them at 11 for Rs. 12. What was his gain or loss percent?
2. A merchant professes to lose 4% on a certain tea, but he uses a weight equal to 840g instead of 1 kg. Find his real loss or gain percent.
3. Find the profit percentage, if the cost price of 10 articles is equal to the selling price of 9 articles.
4. A trader gives a discount of 5% for cash payments. How much percent above the cost price must he mark his goods to make a profit of 10%.
5. One merchant correctly calculates his percentage profit on the cost price; another wrongly calculates it on the selling price. Find the difference in actual profit if both claim to make 17.5% profit on goods sold at Rs. 3760.
6. Buy two and get one free. Which of the following is true?

i) The person is selling at a loss.
ii) The person is selling at a profit.
iii) The loss or gain depends on the profit from the sale of two articles.
iv) The person is selling at the cost price.

7. A tradesman bought 500 meters of electric wire at 75 paise per meter. He sold 60% of it at a profit of 8%. At what gain percent should he sell the remainder so as to gain 12% on the whole transaction?
8. A merchant imported 5 typewriters for Rs. 23000 and paid 10% as excise duty. He marks a price in his catalogue and, after deducting a discount of 8%, he gains 12%. What is the marked price of each typewriter?

Partnership

A formal arrangement of two or more people who invest their money to run a business is called a Partnership. A partner who does managerial or administrative work in the business is called Working Partner and the one who simply invests the money in it is called Sleeping Partner.

1. If the investment period is the same for each partner, then the profit or loss is divided in the ratio of their investment amounts.
2. If the amount of investment is the same for each partner, then the profit or loss is divided in the ratio of their time of investment.
3. If the amount of investment and time of investment for each partner is different then-

Let A invests Rs. 'a' for t1 time, B invests Rs. 'b' for t2 time and C invests Rs. 'c' for t3 time, then profit/loss is divided in the ratio: a*t1 : b*t2 : c*t3

Averages

A central value for a group of values is called an average. It is the sum of values divided by the number of values in a set of data.

- **Average or Arithmetic mean = (Sum of all values) / (Number of values)**

Example: Find the average of 10, 15, 17 and 20.
Average = (10+15+17+20)/4 = 15.5

Practice Questions

1. Find the average of –
i) First 81 natural numbers
ii) Cubes of natural numbers from 1 to 27.
iii) First 31 consecutive even numbers.
iv) First 50 consecutive odd numbers.

2. The average marks of three batches of students containing 70, 50 and 30 students are 50, 55 and 45 respectively. Find average marks of all the 150 students.

3. Which of the following is/ are true?
(a) The average age of 25 boys is 12 years and that of 25 girls is 10 years, then the average age of the entire group of 50 students is 11 years.
(b) If the average cost of 10 items is Rs. 7 and if the average cost of six of them is Rs.5, then the average cost of remaining 4 is Rs. 10.
(c) The average of the first 100 natural numbers is 50.
(d) The average of the first 15 even numbers is 16.
(i) a & b only (ii) b, c &d only (iii) a, b, & d only (iv) None

4. In the group of A, B and C, the average weight is 84 kgs. If D, joins their group, the average weight of the group becomes 80 kg. If another man E who weighs 3 kgs more than D, replaces A, then the average of B, C, D and E turns to 79 kg. What is the weight of A?

5. In the class of 15 students, the average mark obtained is 145, the maximum mark being 150. If the two lowest scores are dropped out, the average increases by 5. Also, the two lowest scores are consecutive multiples of 9. Find out the lowest score in the class.

6. A, B, and C enter into a partnership where A advances Rs. 1200, B Rs. 1400, and C Rs. 1000 for 4,8,10 months respectively. They gain Rs. 585 altogether. Find the profit share of each.

7. A is working and B is a sleeping partner in a business. A puts in Rs. 5000 and B put in Rs. 6000. A receives 12.5% of the profits for managing the business, and the rest is divided in proportion to their capitals. What share does each get out of a profit of Rs. 880?

8. A puts in Rs. 6000 more in a business than B, but B has invested his capital for 5 months while A has invested his sum for 4 months. If the A's share is Rs. 48 more than that of B out of the total profits of Rs. 528; find the capital contributed by each?

9. A grocer mixed two kinds of coffee in the ratio of m: n. The first kind costs him Rs. x/kg and the second kind Rs. y/kg. Find the cost, to the grocer, of 1 kg of the mixture (in Rs.)

10. A merchant has 100 kg of sugar, some of which he sells at 7% profit and the rest at 17% profit. He gains 10% on the total sale. Find how much is sold at 7% profit.

11. In what proportion should sugar at Rs. 11, at Rs. 13 and at Rs. 18 per kg be mixed so that the price of the mixture is Rs. 15 per kg.

12. A trader has 50 kg of pulses, some of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the total sale. How much quantity is sold at 18% profit?

13. Three friends A, B, C, together started a joint venture by investing money in the ratio of 2: 3: 4, respectively. A withdrew half of his money after some months. A few months prior to the end of the year, C too withdrew 1/4 of his money. If they distributed their profits in the ratio 2: 4: 5 respectively, then after how many months did C withdraw 1/4 of his money?

14. Suresh bought one writing table and one table fan together for Rs. 500. After some days he sold the fan with 25% profit and the table with 20% profit. The overall profit he made on the transaction was 23%. Find the individual prices of the table and fan.

15. The average of a, b, and c is more by 5 than the average of b, c, and d and 2 times of a is less than 3 times of d by 7. Find the average of a and d.

Simple Interest

Principal: Certain amount of money borrowed or lent out for a certain time
Interest: Extra money paid with borrowed money
Amount: Principal + Interest
Define Simple interest and talk about types of questions and the formulae SI= P*T*R/ 100, where P= principal, R= rate of interest, and T= time period

Compound Interest

When at the end of a fixed period the interest is not paid to the lender but is added to borrowed money and such amount becomes as principal for the next period, and this process is repeated until the last period, the difference between the final amount and the original principal is known as compound interest.
Principal = Rs. P, Rate = r%, Time = n years
Amount = P* {1+ (r/100)}^n
Compound Interest = Amount – Principal

Practice Questions

1. Find the simple interest on Rs. 500 at 10% p.a. for 3 years.

2. At what rate percent per annum will simple interest of Rs. 600 for 10 years be Rs. 120.
The simple interest of money is 3/16 of it. If the number of years is 3 times of number representing the rate percent, find the rate of interest.

3. On a certain sum, the difference between compound interest and simple interest at 5% p.a. for 3 years is Rs. 15.25. What is the sum?