

Profit and Loss formula is used in mathematics to determine the price of a commodity in the market and understand how profitable a business is. Every product has a cost price and selling price. Based on the values of these prices, we can calculate the profit gained or the loss of money for a particular product.

For example, for a shopkeeper, if the value of selling price is more than the cost price of a commodity, then it's a profit and if the cost price is more than the selling price, it becomes a loss.

Profit and Loss Basic Concepts

Profit(P)

The amount gained after selling a product more than its cost price.

Loss(L)

The amount, the seller gets after selling the product less than its cost price, is mentioned as a loss.

Cost Price (CP)

The amount paid for a product or commodity to purchase it is called a cost price. Also, denoted as CP. This cost price is further classified into two different categories:

- **Fixed Cost:** The fixed cost is constant, it doesn't vary under any circumstances
- **Variable Cost:** It could vary depending as per the number of units

Selling Price (SP)

The amount for which the product is sold is called Selling Price. It is usually denoted as SP. Also sometimes called a sale price.

Marked Price Formula (MP)

This is basically labelled by Shopkeepers to offer a discount to the customers in such a way that,

- **Discount = Marked Price – Selling Price**
- **And Discount Percentage = (Discount/Marked price) x 100**

Profit and Loss Formulas

Now let us find profit formula and loss formula.

- The profit or gain is equal to the selling price minus cost price.
- Loss is equal to cost price minus selling price.

Profit or Gain = Selling price – Cost Price

Loss = Cost Price – Selling Price

The formula for the profit and loss percentage is:

Profit percentage = (Profit / Cost Price) x 100

Loss percentage = (Loss / Cost price) x 100

Profit and Loss Examples

- If a shopkeeper brings a cloth for Rs.100 and sells it for Rs.120, then he has made a profit of Rs.20/-.
- If a salesperson has bought a textile material for Rs.300 and he has to sell it for Rs.250/-, then he has gone through a loss of Rs.50/-.
- Suppose, Ram brings a football for Rs. 500/- and he sells it to his friend for Rs. 600/-, then Ram has made a profit of Rs.100 with the gain percentage of 20%.

Directions for questions 1 to 35: Select the correct alternative from the given choices.

1. A person purchased a TV set for Rs. 16,000 and a DVD player for Rs. 6250. He sold both the items together for Rs. 31,150. What percentage of profit did he make?

- a. 30%
- b. 35%
- c. 40%
- d. 45%
- e. None of these

2. The owner of a furniture shop charges his customer 24% more than the cost price. If a customer paid Rs. 8339 for a computer table, then what was the cost price of the computer table?

- a. Rs. 5725
- b. Rs. 5275
- c. Rs. 6275
- d. Rs. 6725
- e. None of these

3. A shopkeeper loses 15%, if an article is sold for Rs. 102. What should be the selling price of the article to gain 20%?

- a. Rs. 150
- b. Rs. 144
- c. Rs. 138
- d. Rs. 132
- e. None of these

4. If an article is sold at 19% profit instead of 12% profit, then the profit would be Rs. 105 more. What is the cost price?

- a. Rs. 1505
- b. Rs. 1510
- c. Rs. 1500
- d. Rs. 1490
- e. None of these

5. The profit earned on selling an umbrella for Rs. 865 is equal to the loss incurred on selling the same umbrella for Rs. 465. What would be the profit earned on selling it at 20% profit?

- a. Rs. 98
- b. Rs. 133
- c. Rs. 184
- d. Rs. 110
- e. None of these

6. Sreenivas sells a table to Shiva at 10% profit and Shiva sells it to Mahesh at 10% loss. At what price did Sreenivas purchase the table if Mahesh paid Rs. 2178?

- a. Rs. 2100
- b. Rs. 2150
- c. Rs. 2200
- d. Rs. 2250
- e. None of these

7. If a trader sold two cars each at Rs. 325475 and gains 12% on the first and loses 12% on the second, then his profit or loss percent on the whole is _____.

- a. 1.44% loss
- b. 14.4% profit
- c. 14.4% loss
- d. 0%
- e. None of these

8. The cost prices of two articles are equal. A shopkeeper got a profit of 50% on the first article and the selling price of the second article is 20% less than the first article. What is the overall profit percentage?

- a. 25%
- b. 35%
- c. 50%
- d. 65%
- e. 70%

9. A sells an article to B for Rs. 4,740 thereby losing 21%. B sells it to C at a price which would have given 10% profit to A. Find B's gain.

- a. Rs. 1680
- b. Rs. 1920
- c. Rs. 2160
- d. Rs. 2080
- e. None of these

10. Raman mixed 24kg of butter costing Rs. 150 per kg with 36kg of butter costing Rs. 125 per kg. At what price per kg should he sell the mixture to make a profit of 40%?

- a. Rs. 135
- b. Rs. 162
- c. Rs. 189
- d. Rs. 198
- e. None of these

11. If the cost price of 50 articles is equal to the selling price of 40 articles, then the gain or loss percent is _____.

- a. 20% loss
- b. 20% profit
- c. 10% profit
- d. 25% loss
- e. None of these

12. A dealer purchases 15 articles for Rs. 25 and sells 12 articles for Rs. 30. Find the profit percentage.

- a. 25%
- b. 50%
- c. 20%
- d. 5%
- e. None of these

13. By selling 99 pens, a trader gains the cost of 33 pens. Find his gain percentage.

- a. $33\frac{1}{3}\%$
- b. 50%
- c. 25%
- d. $66\frac{2}{3}\%$
- e. None of these

14. A retailer sells fruits at a profit of 24%. If the cost price of the fruits is increased by 15% and the mentioned selling price of the fruits is increased by 25%, what would be the profit percent (approximately)?

- a. 34.78%
- b. 28.14%
- c. 22.42%
- d. 30.64%
- e. 39.42%

15. A man bought watermelons at the rate of 48 for Rs. 2400 and sold them at the rate of 4 for Rs. 280. How many watermelons should be sold to earn a profit of Rs. 1200?

- a. 60
- b. 72
- c. 56
- d. 64
- e. None of these

16. A vendor bought a certain number of chairs. He sold $\frac{1}{4}$ th of those at 28% loss. At what percentage should he sell the remaining chairs so that he earns an overall profit of 24%?

- a. $38\frac{2}{5}\%$
- b. $41\frac{1}{3}\%$
- c. $46\frac{1}{8}\%$
- d. $32\frac{3}{7}\%$
- e. None of these

17. A retailer bought a certain number of apples at a total cost of Rs. 3600. He sold $\frac{2}{5}$ th of apples at 20% loss. At what price should he sell the remaining apples to gain an overall profit of 20%?

- a. Rs. 3168
- b. Rs. 3056
- c. Rs. 2864
- d. Rs. 2568
- e. Rs. 2048

18. A salesman sells an article at 10% loss. Had he bought the article at 20% less and sold it at Rs.10 more, he would have made a profit of 25%. Find the selling price of the article.

- a. Rs. 45
- b. Rs. 90
- c. Rs. 130
- d. Rs. 175
- e. None of these

19. A shopkeeper sells his goods at an overall profit of 28%. He sells $\frac{1}{8}$ th of the goods at 50% profit and $\frac{2}{5}$ th of the total goods at 60% profit. What is the profit/loss earned/incurred on the remaining goods by the shopkeeper?

- a. $3\frac{16}{23}$ % profit
- b. $2\frac{3}{10}$ % loss
- c. $4\frac{14}{19}$ % loss
- d. $6\frac{1}{2}$ % profit
- e. None of these

20. The cost price of article P is Rs. 300 more than that of article Q. Q is sold at 20% profit and P is sold at 40% loss and the selling prices of P and Q are in the ratio 3:5. If P is sold at 20% profit, what would be the selling price of the P?

- a. Rs. 1440
- b. Rs. 1800
- c. Rs. 2160
- d. Rs. 2520
- e. Rs. 3000

21. An item was bought at Rs. A and sold at Rs. B, thereby earning a profit of 25%. Had the value of A been lower by 20% and the value of B been Rs. 40 less, a profit of 50% would have been earned. What was the value of B?

- a. Rs. 1000
- b. Rs. 1250
- c. Rs. 1500
- d. Rs. 18,000
- e. Rs. 800

22. A trader marks his articles 20% more than the cost price. If he allows 20% discount, then find his gain or loss percent.

- a. No profit No loss
- b. 4% profit
- c. 2% loss
- d. 2% profit
- e. None of these

23. Mahesh marks an article 15% above the cost price of Rs. 540. What must be his discount percentage if he sells it at Rs. 496.80?

- a. 18%
- b. 21%
- c. 20%
- d. 19%
- e. None of these

24. A person bought 38 almirahs at Rs. 12,500 each. For packing and transportation, he spent Rs. 76000. If he marked each almirah 16% above its cost price and allowed a discount of 10%, what is the profit percent?

- a. 3.8%
- b. 2.6%
- c. 5.9%
- d. 4.4%
- e. 7.2%

25. A shopkeeper sells an article at 15% discount on the marked price and makes a profit of 19%. How much discount percent should he offer in order to make a profit of 26% on the same article?

- a. 12%
- b. 10%
- c. 15%
- d. 18%
- e. None of these

26. Mohit sold an article for Rs. 18,000. Had he offered a discount of 10% on the selling price, he would have earned a profit of 8%. What is the cost price of the article?

- a. Rs. 15,000
- b. Rs. 16,200
- c. Rs. 14,700
- d. Rs. 15,900
- e. None of these

27. After allowing a discount of 15% on the marked price, the selling price is Rs. 6800 for an article. If it was sold at marked price, there would have been a profit of 60%. The cost price of the article is _____.

- a. Rs. 6400
- b. Rs. 5600
- c. Rs. 5000
- d. Rs. 4800
- e. None of these

28. The successive discounts 20% and 15% are equal to a single discount of _____.

- a. 35%
- b. 38%
- c. 32%
- d. 29%
- e. None of these

29. A trader marks up his goods by 40%. However, he could sell one-fourth of his stock at this price. He sold half of the remaining stock at a discount of 20% and the remaining at a discount of 50%. What was his total profit percentage?

- a. 2%
- b. 2.5%
- c. 2.75%
- d. 3%
- e. 3.25%

30. Ganesh bought an item which is marked at Rs. 13,500 for two successive discounts of 10% and 8%. He spent Rs. 822 on its transport. He sold it for Rs. 14,200. What is his percent of profit?

- a. $18\frac{1}{3}\%$
- b. $22\frac{2}{5}\%$
- c. $26\frac{1}{5}\%$
- d. $12\frac{1}{4}\%$
- e. None of these

31. A, B and C started a business with capitals of Rs. 8000, Rs. 10,000 & Rs. 12,000 respectively. At the end of the year, the profit share of B is Rs. 1500. The difference between the profit shares of A and C is _____.

- a. Rs. 300
- b. Rs. 400
- c. Rs. 500
- d. Rs. 600
- e. None of these

32. A started a business with an investment of Rs. 70,000 and after 6 months, B joined him investing Rs. 1,20,000. If the profit at the end of the year is Rs. 52,000, then the share of B is _____.

- a. Rs. 28,000
- b. Rs. 24,000
- c. Rs. 30,000
- d. Rs. 26,000
- e. None of these

33. X and Y started a business with capitals Rs. 20,000 and Rs. 25,000. After few months, Z joined them with a capital of Rs. 30,000. If the share of Z in the annual profit of Rs. 50,000 is Rs. 14,000, then after how many months from the beginning did Z join?

- a. 7
- b. 6
- c. 3
- d. 4
- e. None of these

34. In a business, A, B and C invested capitals in the ratio of 0.7 : 0.49 : 0.343. Find the total profit of the end of the year if B's share in the profit is Rs. 35,000, where A and B invested for the whole year and C withdrew $\frac{1}{7}$ of his capital after six months.

- a. Rs. 1,03,750
- b. Rs. 1,05,750
- c. Rs. 1,07,750
- d. Rs. 1,09,750
- e. None of these

35. P and Q started a business with respective investments of Rs. 4lakhs and Rs. 10lakhs. As P runs the business, his salary is Rs. 5000 per month. If they earned a profit of Rs. 2lakhs at the end of the year, then find the ratio of their earnings.

- a. 2:5
- b. 5:2
- c. 3:5
- d. 1:1
- e. None of these