

Lecture-6 : Profit & Loss (Written)

Teacher's Work

01. A trader, while selling an item, was asking for such a price that would enable him to offer a 20% discounts and still make a profit of 30% on cost. If the cost of the item was Tk. 50 what was his asking price? [BB (AD) 08, Standard Bank (TAO) 16, Pubali JO (Cash) 11, Premier Bank (JO) 19]
02. A man sells articles at a profit of 25%. If had bought it at 20% less and sold it for tk. 10.50 less, he would have gained 30%. Find the cost price of the article? [BB AD 17]
03. An article is sold at 20% profit. If its cost price is increased by tk. 50 and at the same time if its selling price is also increased by tk. 30, the percentage of profit decreases by $3\frac{1}{3}\%$. Find the cost price?
04. The percentage profit earned by selling an article for Tk. 1920 is equal to the percentage loss incurred by selling the same article for Tk 1280. At what price should the article be sold to make 25% profit [South East Bank MTO 13, BB AD (ff) 15, SJIB MTO 13, IBBL PO 19]
05. On selling a chair at 5% loss and a table at 15% gain, a man gains Tk 7. If he sells the chair at 5% gain and the table at 10% gain, then he gains TK 13. The actual price of the table is?
06. A dealer buys dry fruits at the rate of Tk. 100, Tk. 80 & Tk. 60 per kg. He bought them in the ratio 12:15:20 by weight. He in total gets 20% profit by selling the 1st two & at last he finds he has no gain & no loss in selling the whole quantity which he had. What was the percentage loss he suffered for the third quantity? [Janata (EO) 18]
07. If 12 candies are sold for Tk. 10 then there is a loss of x%. If 12 candies are sold for Tk. 12 than there is a profit of x%. What is the value of x? [Dhaka Bank TAO 18, SEBL (PO) 17, Standard Bank (TAO) 18]
08. A shopkeeper sells two shirts at the same price. He makes 10% profit on one and loses 10% on the other. How much in percentage does he gain or lose? [Agrani SO (Auditor) 17, Rupali (Cash) 18]
09. A retailer buys 40 pens at the market price of 36 pens from a wholesaler. If he sells these pens giving a discount of 1%, what is the profit percent? [Pubali (Cash) 16]

10. The cost price of 10 pens is the same as the selling price of n pens. If there is a loss of 40%, approximately what is the value of n? [BEZA AM 20, Dhaka Bank TO 19, BSEC (PA) 2021]
11. A trade man gives 4% discount on the market price and gives 1 article free for buying every 15 articles and thus gains 35%. The marked price is above the cost price by what percent?

Illustrative Questions

01. A seller incurs a loss of 15% when a table is sold at Tk. 10,200. At what price the table should be sold to make a profit of 35%?

Sol. Let, cost price be Tk. 100

∴ Selling price at 15% loss is $(100-15) =$ Tk. 85

If selling price is Tk. 85, cost price is Tk. 100

If selling price is Tk.10200, cost price is Tk

$$\frac{100 \times 10200}{85}$$

$$= \text{Tk. } 12000$$

At 35% profit,

Now if cost price Tk. 100, selling price Tk. 135

∴ If cost price Tk.12,000, selling price Tk

$\frac{12000 \times 135}{100}$

$$= \text{Tk. } 16,200$$

Ans: Tk. 16,200

02. An article is sold at 20% profit. If its cost price is increased by Tk. 50 and at the same time if its selling price is also increased by Tk. 30, the percentage of profit decreases by $3\frac{1}{3}\%$. Find the cost price.

- Sol.** Let, the cost price be Tk. x
 Selling price = 120% of Tk. x = Tk. 1.2x
 Profit = Tk. $(1.2x - x) = 0.2x$
 New cost price = Tk. $(x + 50)$
 New selling price = Tk. $(1.2x + 30)$
 New profit = $(1.2x + 30) - (x + 50) = \text{Tk. } (0.2x - 20)$
 According to the question,

$$\frac{0.2x - 20}{x + 50} = (20 - 3\frac{1}{3})\%$$

$$\text{Or, } \frac{0.2x - 20}{x + 50} = \frac{50}{3} \times \frac{1}{100} = \frac{1}{6}$$

$$\text{Or, } \frac{0.2x - 20}{x + 50} = \frac{1}{6}$$

$$\text{Or, } 1.2x - 120 = x + 50$$

$$\text{Or, } 1.2x - x = 50 + 120$$

$$\text{Or, } 0.2x = 170$$

$$\therefore x = \frac{170}{0.2} = 850$$

\therefore The cost price = Tk. 850 (Ans)

03. A man sells an article at a profit of 20%. If he had bought it at 20% less and sold for Tk. 37 less, he would have gained 25%. Find the cost price of the article.

Sol. Let the C.P be Tk. x . Then, S.P. = Tk (120% of x)
 $= \text{Tk} \left(\frac{120}{100} \times x \right) = \text{Tk} \frac{6x}{5}$

$$\text{Now C.P.} = 80\% \text{ of Tk } x = \text{Tk} \left(x \times \frac{80}{100} \right) = \text{Tk} \frac{4x}{5}$$

$$\text{C.P} = \text{Tk} \frac{4x}{5}, \text{ Gain} = 25\%.$$

$$\text{New S.P.} = 125\% \text{ of Tk } \frac{4x}{5} = \text{Tk} \left(\frac{4x}{5} \times \frac{125}{100} \right) = \text{Tk } x.$$

$$\therefore x - \frac{4x}{5} = 37 \Rightarrow x = 185.$$

\therefore C.P. = Tk 185 (Ans)

04. An article is sold at a certain price. By selling it at $\frac{2}{3}$ of that price one loses 10%. Find the gain percent at original price.

Sol. Let the original S.P. be Tk x . Then, New S.P. = Tk $\frac{2}{3}x$, Loss = 10%.

$$\text{So, C.P.} = \text{Tk} \left(\frac{100}{90} \times \frac{2x}{3} \right) = \frac{20x}{27}$$

$$\text{Now, C.P.} = \text{Tk} \frac{20x}{27}, \text{ S.P.} = \text{Tk } x.$$

$$\text{Gain} = \text{Tk} \left(x - \frac{20x}{27} \right) = \text{Tk} \frac{7x}{27}$$

$$\therefore \text{Gain}\% = \frac{\frac{7x}{27}}{\frac{20x}{27}} = \left(\frac{7x}{27} \times \frac{27}{20x} \times 100 \right) \% = 35\%$$

Ans: 35%

05. A man sells an article at a profit of 25%. If he had bought it at 20% less and sold it for Tk 10.50 less, he would have gained 30%. Find the cost price of the article.

Sol. Let the C.P be Tk x .

$$1^{\text{st}} \text{ S.P.} = 125\% \text{ of } x = \frac{125}{100}x = \frac{5x}{4}$$

$$\text{Now, } 2^{\text{nd}} \text{ C.P.} = 80\% \text{ of } x = \frac{80}{100}x = \frac{4x}{5}$$

$$2^{\text{nd}} \text{ S.P.} = 130\% \text{ of } \frac{4x}{5} = \left(\frac{130}{100} \times \frac{4x}{5} \right) = \frac{26x}{25}$$

$$\therefore \frac{5x}{4} - \frac{26x}{25} = 10.50$$

$$\Leftrightarrow \frac{21x}{100} = 10.5$$

$$\Leftrightarrow x = \left(\frac{10.50 \times 100}{21} \right) = 50.$$

Hence, C.P. = Tk 50. (Ans)

06. Two-thirds of a consignment was sold at a profit of 5% and the remainder at a loss of 2%. If the total profit was Tk 400, find the value of the consignment.

Sol. Let the value of the consignment be Tk. x .

$$\text{C.P. of } \frac{2}{3} \text{ rd} = \text{Tk} \frac{2x}{3}; \text{ C.P. of } \frac{1}{3} \text{ rd} = \text{Tk} \frac{x}{3}.$$

$$\text{Total S.P.} = \text{Tk} \left[\left(105\% \text{ of } \frac{2x}{3} \right) + \left(98\% \text{ of } \frac{x}{3} \right) \right]$$

$$= \text{Tk} \left(\frac{7x}{10} + \frac{49x}{150} \right) = \text{Tk} \left(\frac{154x}{150} \right) = \text{Tk} \left(\frac{77x}{75} \right).$$

$$\text{Gain} = \text{Tk} \left(\frac{77x}{75} - x \right) = \text{Tk} \frac{2x}{75}.$$

$$\therefore \frac{2x}{75} = 400$$

$$\Rightarrow x = \left(\frac{400 \times 75}{2} \right) = 15000.$$

Hence, value of the consignment = Tk 15000. (Ans)

07. When a producer allows 36% commission on the retail price of his product, he earns a profit of 8.8%. What would be his profit percent if the commission is reduced by 24%?

Sol. Let retail price = Tk 100. Then, commission = Tk 36.

$$\therefore \text{S.P.} = \text{Tk} (100 - 36) = \text{Tk } 64. \text{ But, profit} = 8.8\%.$$

$$\therefore \text{C.P.} = \text{Tk} \left(\frac{100}{108.8} \times 64 \right) = \text{Tk} \frac{1000}{17}.$$

$$\text{New commission} = \text{Tk} (36 - 24) = \text{Tk } 12.$$

New S.P. = Tk (100 - 12) = Tk 88.

$$\text{Gain} = \text{Tk} \left(88 - \frac{1000}{17} \right) = \text{Tk} \frac{496}{17}.$$

$$\therefore \text{Gain}\% = \left(\frac{496}{17} \times \frac{17}{1000} \times 100 \right) \% = 49.6\% \text{ Ans.}$$

08. A dishonest merchant makes a 10% profit at the time of Buying and a 5% loss at the time of selling the goods he/she trades. By doing so it the said merchant made a profit of Tk. 900 on a particular item, what was the real cost of item sold?

Sol. Let, the real cost = Tk. 100.

The showing price = Tk. $(100 \times 110\%) = \text{Tk. } 110.$

At 5% loss, the selling price be = 95% of 110 = 104.5

Then the ultimate profit = Tk. $(110 - 104.5) = \text{Tk. } 5.5.$

So, When profit is Tk. 4.5, then real cost = Tk. 100.

\therefore When profit is Tk. 900, then real cost = $\frac{100 \times 900}{4.5}$

= Tk. 20,000

Ans: Tk. 20,000

09. A grocer sells rice at a profit of 10% and uses weights which are 20% less than the market weight. The total gain earned by him will be-

Sol. Let us consider a packet of rice marked 1 kg.

Its actual weight is 80% of 1000 gm = 800gm

Let, C.P. of each gm be Tk. 1

Then, C.P. of this packet = Tk. 800

S.P. of this packet = 110% of C.P. of 1 kg

= $\left(\frac{110}{100} \times 1000\right) = \text{Tk. } 1100$

\therefore Gain = Tk $(1100 - 800) = \text{Tk } 300$

\therefore Gain % = $\left(\frac{300}{800} \times 100\right) \% = 37.5\%$

Ans: 37.5%

10. A dishonest dealer sells the goods at $6\frac{1}{4}\%$ loss on cost price but uses $12\frac{1}{2}\%$ less weight. What is his percentage profit or loss?

Sol. Let us consider a packet of rice marked 1 kg

Its actual weight is $(100 - 12\frac{1}{2})\% = 87.5\%$ of 1000gm

= 875 gm

Let, C.P. of each gm be Tk. 1

\therefore C.P. of this packet = Tk $(875 \times 1) = \text{Tk } 875$

\therefore S.P. of this packet = $(100 - 6\frac{1}{4})\%$ of C.P. of 1 kg

= Tk $\left(\frac{400 - 25}{4} \times \frac{1}{100} \times 1000\right)$

= Tk $\left(\frac{375}{400} \times 1000\right)$

= Tk 937.5

\therefore Gain = Tk $(937.5 - 875) = \text{Tk } 62.5$

\therefore Gain % = $\left(\frac{62.5}{875} \times 100\right) \% = 7\frac{1}{7}\%$ (Ans)

Home Practice

01. A trader purchases a watch and a wall clock for Tk. 390. He sells them making a profit of 10% on the watch and 15% on the wall clock. He earns a profit of Tk. 51.50. The difference between the original price of the wall clock and the watch is equal to [SBL FF (SO) 19] **Tk. 110**
02. On a certain product, the producer, the wholesaler and the retailer make a profit of 10%, 5% and 10% respectively. If the retail price of the product is Tk. 200, what is the manufacturing cost of the product? [RAKUB (SO) 11, BEPZA (AM) 15] **Tk. 157.41**
03. A good has been sold at a loss of 12%. If it could be sold by Tk. 1000 more, there would have been profit of 8%. What is the cost price of that goods? [Combined officer 08, RAKUB (SO) 10] **Tk. 5000**
04. A trade while selling an item was asking for such a price that would enable him to offer a 10% discount and still make a profit of 20%. If the cost of the product was Tk. 50, what was his asking price? [BE (Off) 01] **Tk. 66.67**
05. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit now? [PKB (SEO) 18, Jarmuna Bank (PO) 12, BHBFC (SO) 15, Janata (AEO) 20] **70.24%**
06. A shopkeeper bought 84 identical shirts priced at Tk. 240 each. He spent a total of Tk. 3200 on transportation and packaging. He put the label of marked price of Tk. 420 on each shirt. He offered a discount of 15% on each shirt at the marked price. What is the total profit of the shopkeeper in the whole transaction? [SBL FF (Cash) 19] **Tk. 6628**
07. A person sold two articles. Each for the same price of Tk. 1040. He incurs 20% loss on the first and 10% loss on the second. Find his overall percentage of loss. [BB (officer) 15] **15.29%**
08. A video magazine distributor made 3500 copies of the May issue of the magazine at a cost of Tk. 4,00,000. He gave 5000 cassettes free to some key video libraries. He also allowed a 25% discount on the market price of the cassette. In this manner, he was able to sell all the 3500 cassettes that were produced. If the markup price of a cassettes was Tk. 160, what is his gain or loss for the May issue of the video magazine? [NBL (PO) 15] **Loss Tk. 40,000**

09. A person bought an article and sold it at a loss of 10%. If he had bought it for 20% less and sold it for Tk. 55 more, he would have made a profit of 40%. What was the cost of the article? [Pubali (SO) 2011]

Tk. 250

10. A book and a pen were sold for Tk. 3040 making a profit of 25% on the book and 10% on the pen. By selling them for Tk. 3070, the profit realized would have been 10% on the book and 25% on the pen. Find the cost of each. [SEBL (PO) 16]

Book Tk. 1200, pen tk 1400.

11. Sagar purchased a product and sold at a loss of 10%. If the selling price were increased by Tk. 45, there would have been a 5% profit. What was the purchased price of the product? What would be the selling price of the product if he wants to make a profit of 20% [Exim Bank (MTO) 2010]

Tk.300, Tk. 360

12. A shopkeeper buys pens which are Tk. 360 a dozen, He quotes a selling price the customers and offers a discount of 10% realizing that even with the discount he can earn a profit of 20%. What was the initial selling price of each pen quoted by him? [Natal Bank (PO) 14, BKB Supervisor 12]

Tk. 40

13. You purchase some apple at the rate of Tk. 12 for 20 apples and sell all of them at the rate of Tk. 20 per dozen. What is your profit/loss in percentage? [City Bank (Officer) 96]

177.77%

14. 10% fruit of a seller was damaged during transportation, another 15% was rotten. At what profit in percentage should he sell rest fruit so that he can make an overall profit of 20%? **Tk. 60%**

15. A fruit seller bought some bananas at the cost of Tk. 36 for 12 pieces from Jessore and Tk. 36 for 18 pieces from Kustia. He bought equal pieces of bananas both from Jessore and Kustia. His salesman sold the bananas at Tk. 36 for 15 pieces. If the salesman sold all bananas, how much would be profit% or loss% [Class 8 (2.1)] **4%**

16. A shopkeeper lost 7.5% by selling an article. If he had bought it at 10% less and sold it for Tk. 31 more, he would have gained 20%. Find the cost price of the article. **Tk. 20**

17. The cost price of two watches taken together in Tk. 840. If by selling one at profits of 16% and the other at loss 12%, there is no loss and gain in the whole transaction. Find the cost price of two watches. **Tk. 360, & Tk 480**

18. The cost price of two watches taken together is Tk 840. If by selling one at a profit of 16% and the other at a loss of 12%, there is no loss or gain in the whole transaction, find the cost price of the two watches. [SJIB (MTO) 11, SIBL (PO) 17, NRBC BANK (MTO) 18]

Tk. 360 and Tk. 480

19. A Dishonest merchant makes a 10% profit at the time of Buying and a 5% loss at the time of selling the goods he/she trades. By doing so it the said merchant made a profit of Tk. 900 on a particular item, what was the real cost of item sold? [Bank Asia (MTO) 15]

Tk. 2,000

20. A man bought a horse and a carriage for TK 3000. He sold the horse at a gain of 20% and the carriage at a loss of 10%, thereby gaining 2% on the whole. Find the cost of the horse. **Tk. 1200**

21. Padma purchased 30 kg of rice at the rate of Tk 17.50 per kg and another 30 kg rice at a certain rate. He mixed the two and sold the entire quality at the rate of Tk 18.60 per kg and made 20% overall profit. At what price per kg did he purchase the lot of another 30 kg rice? **Tk. 13.50**

22. A grocer sells rice at a profit of 10% and uses weights which are 20% less than the market weight. The total gained earned by him will be: **37.5%**

23. A fruit seller has 24 kg of apples. He sells a part of these at a gain of 20% and the balance at a loss of 5%. If on the whole he earns a profit of 10%, the amount of apples sold at a loss is: **9.6 kg**

24. A shopkeeper sold an article offering a discount of 5% and earned a profit of 23.5%. What would have been a percentage of profit earned if no discount is offered? **30%**

25. A dishonest merchant make a 15% profit at the time of buying and a 10% loss at the time of selling the goods. By doing so if the merchant made a profit of Tk. 3500 on a particular item, what was the real cost of the goods the merchant sold? [Agrani Bank SO 17]

100,000