

Profit & Loss

Basic Concept

=> Common Terms:-

CP (Cost Price) = Total investment for a product

SP (Selling Price) = Price at which a product is being sold

- Concept of Profit & Loss

$$SP > CP \rightarrow \text{Profit} = SP - CP$$

$$SP < CP \rightarrow \text{Loss} = CP - SP$$

$$SP = CP \rightarrow \text{No profit No loss}$$

- Profit & Loss Percentage

$$\text{Profit}\% = \frac{\text{Profit(Rs)}}{CP} \times 100\% = \frac{SP - CP}{CP} \times 100\%$$

$$\text{Loss}\% = \frac{\text{Loss}}{CP} \times 100 = \frac{CP - SP}{CP} \times 100\%$$

****Note:** Profit & Loss % is always calculated on CP

Type- 1 (Based on basic concept)

1. A man bought an old typewriter for Rs. 1200 and spent Rs. 200 on its repair. He sold the typewriter for Rs.1680, then what will be his profit percentage.
(a) 10% (b) 20% (c) 8% (d) 16%
2. A shopkeeper purchased a TV for Rs. 2000 and a radio for Rs. 750. He sells the TV at 20% profit and radio at 5% loss. His total loss or gain is ?
(a) Gain Rs.362.50 (b) Loss Rs.300 (c) Gain Rs.352.50 (d) Loss Rs.332

3. Ravi purchased 120 exercise books at the rate of Rs.3 each. He sold $\frac{1}{3}$ of them at rate of Rs.4 each, $\frac{1}{2}$ of them at rate of Rs.5 each and the rest at cost price. Find his overall profit percent.

- (a) 44% (b) $44\frac{2}{3}\%$ (c) 45% (d) $44\frac{4}{9}\%$

4. A fruit seller buys 240 apples for Rs. 600. Some of these apples are rotten and are thrown away. He sells the remaining apples at Rs.3.50 each and makes a profit of Rs 198. Find the percentage of apple thrown away .

- (a) 7% (b) 6% (c) 8% (d) 5%

5. A man purchased an article for Rs.1500 and sold it at 25% profit. If he has to pay Rs.75 as tax on it. Find his net profit percent.

(a) 25% (b) 20% (c) 30% (d) 35%

Type-2

Concept:-

If an object is sold on $r\%$ Profit.

यदि कोई वस्तु $r\%$ लाभ पर बेची जाती है।

$$\text{then, S.P.} = \text{C.P.} \left[\frac{100 + \text{Profit}\%}{100} \right] \text{ or C.P.}$$

$$= \text{S.P.} \left[\frac{100}{100 + \text{Profit}\%} \right]$$

Similarly, if an object is sold on $r\%$ loss, then

इसी प्रकार, यदि कोई वस्तु $r\%$ हानि पर बेची जाती है, तो

$$\text{S.P.} = \text{CP} \left[\frac{100 - \text{Loss}\%}{100} \right] \text{ or } = \text{S.P.} \left[\frac{100}{100 - \text{Loss}\%} \right]$$

6. If a chair sold for Rs.600 at a profit of 20% then the original price of the chair is ?

(a) Rs.350 (b) Rs.450 (c) Rs. 580 (d) Rs.500

7. On selling an article for Rs.651, there is a loss of 7%. The cost price of the article is ?

(a) Rs.744 (b) Rs.751 (c) Rs.700 (d) Rs.793

Type-3 (Successive increase and decrease)

8. A wholesaler sells a watch to a retailer at a profit of 25% and retailer sells it to a customer at a loss of 12%. If the customer pays Rs.1045, what had it cost the wholesaler.

- (a) Rs.950 (b) Rs.1149 (c) Rs.1244 (d) Rs.751

9. An item is sold at two successive gains of 30% and 20%. If the final selling price is Rs.31200, then what is the cost price of the item.

- (a) Rs.15000 (b)Rs.24000 (c) Rs.22250 (d) Rs.20000

Type-4 (Gain= N X Loss)

10. Raj sells a machine for Rs.51 lakh at a loss. Had he sold it for Rs.60 lakh, his gain would have been 8 times the earlier loss. What is the cost price of the machine ?

- (a) Rs.52 lakh (b) Rs.59 lakh (c) Rs. 66.375 lakh (d) Rs.45 lakh

Type-5 (Damage in transit)

11. A shopkeeper purchased 510 eggs at Rs.20 per dozen. 30 eggs were broken on the way. In order to make gain of 20%, he must sell the remaining eggs at a rate of?

- (a) Rs.22.50/dozen (b) Rs.25.50/dozen (c) Rs.26/dozen (d) Rs.26.50/dozen

Type-6 (Corresponds to)

12. An article was sold at 16% gain. Had it been sold for Rs.200 more, the gain would have been 20%. The cost price of the article is.

- (a) Rs.5000 (b) Rs.4800 (c) Rs.4500 (d) Rs.4200

13. By selling an article for Rs.240 a man incurs a loss of 10%. At what price should he sell the article so as to make a profit of 20%

- (a) Rs.250 (b) Rs.280 (c) Rs.300 (d) Rs.320

Type-7 (When profit is equal to loss or vice versa)

14. The profit earned on selling a bucket for Rs.680 is same as the loss incurred after selling the bucket for Rs.532. The CP of the bucket is

- (a) Rs.600 (b) Rs.594 (c) Rs.606 (d) Rs.610

15. The profit % earned by selling an article for Rs.2100 is equal to the % loss incurred by selling the same article for Rs.1460. What price should article be sold to make 20% profit.

- (a) Rs.2254 (b) Rs.2136 (c) Rs.2350 (d) Rs.2400

** (When profit & loss are not equal)

16. On selling a painting for Rs.1498, the gain is 25% more than the loss incurred on selling it at Rs.1300. The cost price of the painting is.

- (a) Rs.1300 (b) Rs.1398 (c) Rs.1388 (d) Rs.1400

Type-8 (When CP of two article is same)

In this type of questions two condition may be given.

Case(1):- When profit % and loss % is same .

Let profit % = $+x\%$

Let loss % = $-x\%$

Therefore, Net profit or loss % = 0

Case(2):- When Profit % & loss % is not same.

$$\text{Net profit/loss} = \frac{x \pm y}{2}$$

17. A trader buys two articles for Rs.3000 each. While selling he earns a profit of 10% and loses 20% on other. What is his overall profit/loss percent.

- (a) 5%loss (b) 5%profit (c) 8%loss (d) 3%profit

18. Meena purchased two books for Rs.500 each. She sold one book at 30% profit and other at 30% loss. What is her overall profit/loss percentage.

Type- 9 (When SP is same)

** If two articles are sold at same SP and same rate of profit and loss

$$\text{overall} = - \frac{x^2}{100} \%$$

** If two article are sold at same SP and rate of profit and loss is different

$$\text{Overall} = \frac{100(x+y) + 2xy}{200 + x + y} \%$$

** (-) => for loss , (+)=> for profit

(x,y are rate of profit and loss)

Note : This type of question can also be solved by ratio method (only when percentage values are easy)

19. A person sold two items selling each for Rs. 42600 on the first item , he made a loss of 25% while in second he gain 20%. Find his overall % of profit or loss.

- (a) loss 7.5% (b) profit 7.7% (c) loss 7.1% (d) loss 7.7%

20. A shopkeeper sold two watches for Rs.10591 each, on one he gained 19% and on other he lost 11%. What is his overall loss or gain percentage.

- (a) profit 2.2% (b) loss 1.8% (c) profit 2.8% (d) none

Type-10 (No profit & no loss)

21. Two articles were sold for Rs.3000 each with no loss and profit in the entire transaction. If one was sold at a profit of 25%, then the loss incurred on second article is

- (a) $16\frac{2}{3}\%$ (b) $12\frac{1}{2}\%$ (c) 20% (d) 25%

22. Lata purchase two fans for Rs.2160. By selling one fan at a profit of 15% and other at a loss of 9%, she neither gain nor loses in the entire transaction. Find the CP of each item.

Type-11 (SP of 1st item= CP 2nd item)

23. Rohan sold two articles. The SP of first article is equal to CP of second article. He sold the first item at profit of 20% and second item at loss of 10%. What is his overall profit% or loss% in whole transaction.

- (a) $3\frac{7}{11}\%$ profit (b) $6\frac{6}{11}\%$ loss (c) 8 % profit (d) None

Type-12 (Question Based on number of articles)

Concept:-

1. If cost price of ' x ' articles is equal to selling price of ' y ' articles, then
Selling Price = x . Cost Price = y

$$\text{Profit and Loss}\% = \frac{x - y}{y} \times 100$$

2. On selling ' x ' articles the profit or loss is equal to selling of ' y ' articles, then Profit%

$$\text{Loss}\% = \frac{y \times 100}{x + y}$$

24. The selling price of 28 items is equal to the cost price of 17 items. What is the percentage of profit or loss ?

- (a) loss $33\frac{2}{7}\%$ (b) profit $39\frac{2}{7}\%$ (c) loss $33\frac{2}{7}\%$ (d) profit $33\frac{2}{7}\%$

25. If the cost of 20 books is equal to the selling price of 18 books, then the gain percentage is .

- (a) $11\frac{1}{9}\%$ (b) $11\frac{1}{3}\%$ (c) $11\frac{2}{9}\%$ (d) $11\frac{4}{9}\%$

26. On selling 12 articles the profit earned is equal to selling price of 4 articles. Find profit%.

- (a) 30% (b) 25% (c) 50% (d) 45%

Type-13 (When SP is fraction of actual SP)

27. When an article is sold at $\frac{7}{8}^{\text{th}}$ of its actual SP, there is a loss of 37%. What will be the profit % when the same article is sold at $\frac{19}{12}^{\text{th}}$ of its actual SP.

- (a) 14% (b) 15% (c) 20% (d) 25%

28. By selling an article at $\frac{19}{24}$ of its actual SP, a man loses 5%. If he sell it at 90% of the actual SP, then what will be his profit percentage.

(a) 12%

(b) 15%

(c) 9%

(d) 8%

Type-14 (Profit on SP)

29. Siraj earns a profit of 25% on SP. Find his actual profit percentage.

- (a) 33.33% (b) 25% (c) 28% (d) 16.66%

Type- 15 (When Profit%=CP or Loss%=CP)

Concept:-

$$CP = \sqrt{100 \times SP}$$

30. A wrist watch is sold for Rs.1200 at a profit % equal to its cost price. Find the CP of the watch.

- (a) Rs.300 (b) Rs.500 (c) Rs.350 (d) Rs.600

Dishonest Shopkeeper

Concept:-

1. A dishonest shopkeeper sells his goods at C.P. but uses false weight, then his profit =

$$\text{Gain\% / लाभ\%} = \frac{\text{True weight} - \text{False weight}}{\text{False weight}} \times 100$$

$$\text{or Gain\% /} = \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100$$

2. If a vendor used to sell his articles at $x\%$ loss on cost price but uses y grams instead of z grams, then his profit or loss% is

$$\left[(100 - x) \frac{y}{z} - 100 \right] \%$$

**** Note: (Use “+” for profit & “-” for loss)**

31. A dishonest shopkeeper sells his goods at CP but uses 750 gm weight instead of 1000 gm. Find his profit percent?

(a) 25%

(b) 33.33%

(c) 30%

(d) 20%

32. A dishonest shopkeeper claims to sell his products at 13% loss on CP but uses weight of 150 gm instead of 200 gm. His profit or loss percent is.

(a) 13%

(b) 15%

(c) 18%

(d) 16%

33. A dishonest shopkeeper sells his goods at 20% loss on CP but uses a faulty weight that weighs 25% less. His profit or loss % is

(a) 6.67%

(b) 8.25%

(c) 7.78%

(d) 10%

Type-16 (Miscellaneous)

34. Aditya buys 300 mangoes for Rs.1100. Some of these mangoes are rotten and are thrown away. He sells the remaining mangoes for Rs.5 each and makes a profit of Rs.150. Find the % of mangoes that are thrown away.

- (a) 16.66% (b) 33.33% (c) 15.75% (d) 20%

35. A merchant sells 195Kg of wheat for Rs.10,260 at a profit of Rs.4.50 per kg of wheat. What is the CP of 15kg of Wheat.

- (a) Rs.850 (b) Rs.636 (c) Rs.772 (d) Rs.722

36. By selling 45m of cloth a trader gains by 15m of the SP, the traders profit % is ?

- (a) 25% (b) 50% (c) 35% (d) 40%

37. If naman had purchased 25 article for Rs.20 and sold them all at the rate of 20 article for Rs.25. Then find his overall profit or loss %

38. The difference between the cost price and selling price of a pair of shoes is Rs.1,200. If the profit is 15%, the selling price is:

(a) Rs.8200

(b) Rs.9200

(c) Rs.5200

(d) Rs.9000