

Bank Probationary Officer

Quantitative Aptitude

PROFIT & LOSS

Cost Price: The price for which an article is purchased is called the Cost Price (C.P.)

Selling price : The price at which an article is sold is called the Selling Price (S.P.)

Profit (Gain) : The difference between the selling price and the cost price (when S.P. is more than C.P) is called the Profit.

Loss:The difference between the cost price and selling price (when C.P. is more than S.P.) is called the Loss.

Points to remember:

1. $\text{Gain} = (\text{S.P}) - (\text{C.P}); \text{Loss} = (\text{C.P}) - (\text{S.P})$

2. $\text{Gain}\% = \frac{\text{Gain} \times 100}{\text{C.P.}} = \left(\frac{\text{SP} - \text{CP}}{\text{CP}} \right) \times 100$

$$\text{Loss}\% = \frac{\text{Loss} \times 100}{\text{C.P.}} = \left(\frac{\text{CP} - \text{SP}}{\text{CP}} \right) \times 100$$

3. When the cost price and gain percent are given,

$$\text{S.P.} = \text{C.P.} \times \left(\frac{100 + \text{Gain}\%}{100} \right)$$

4. When the cost price and loss percent are given

$$\text{S.P.} = \text{C.P.} \times \left(\frac{100 - \text{Loss}\%}{100} \right)$$

5. When the selling price and gain percent are given

$$\text{C.P.} = \text{S.P.} \times \left(\frac{100}{100 + \text{Gain}\%} \right)$$

6. When the selling price and loss percent are given

$$\text{C.P.} = \text{S.P.} \times \frac{100}{(100 - \text{Loss}\%)}$$

7. The discount percent is calculated on the marked price.

Discount percent

$$= \frac{\text{Discount}}{\text{Marked price}} \times 100$$

8. If there are two successive profits of $x\%$ and $y\%$ in a transaction then the resultant profit percent is

$$x + y + \frac{xy}{100}$$

9. If there is a profit of $x\%$ and loss of $y\%$ in a transaction, then the resultant profit and loss percent is

$$x - y - \frac{xy}{100} \text{ according to the (+)ve and}$$

the (-)ve signs respectively.

10. If cost price of x articles is equal to the selling price of y articles, then profit percent.

$$= \left(\frac{x - y}{y} \right) \times 100$$

SOLVED EXAMPLES

1. A man buys a toy for Rs. 25 and sells it for Rs. 30. Find his gain percent.

Ans: $\text{Gain} = 30 - 25 = \text{Rs. } 5$

$$\text{Gain \%} = \frac{5}{25} \times 100 = \text{Rs. } 20\%$$

2. By selling a watch for Rs. 144 a man loses 10%. At what price should he sell it in order to gain 10%?

Ans: $\text{S.P.} = \text{Rs. } 144; \text{Loss} = 10\%$

$$\therefore \text{C.P.} = \text{Rs.} \left(\frac{100}{100 - 10} \right) \times 144$$

$$= \text{Rs. } \frac{100}{90} \times 144 = \text{Rs. } 160$$

Gain required = 15%

$$\therefore \text{S.P.} = \text{Rs. } \frac{115}{100} \times 160 = \text{Rs. } 184$$

Short cut:

$$\text{Required SP} = \frac{144}{90} \times 115 = \text{Rs. } 184$$

3. I sold a book at a profit of 16%. Had I sold it for Rs. 18 more, 20% would have been gained. Find the cost price.

Ans: Here 120% of C.P. – 116% of C.P.

$$= \text{Rs. } 18$$

$$\therefore 4\% \text{ of cost} = \text{Rs. } 18$$

$$\therefore \text{C.P.} = \frac{18 \times 100}{4} = \text{Rs. } 450$$

Formula :

$$\text{C.P.} = \frac{\text{More gain} \times 100}{\text{Diff. in percentage profit}}$$

$$= \frac{18 \times 100}{20 - 16} = \text{Rs. } 450$$

4. A shopkeeper mixes two varieties of tea, one costing Rs. 35 per kg. and another at Rs. 45 per kg. in the ratio 3:2. If he sells the mixed variety at Rs. 41.60 per kg. what is his gain or loss percent?

Ans: - C.P. of 5 kg. mix

$$= \text{Rs. } (35 \times 3 + 45 \times 2) = \text{Rs. } 195$$

$$\text{S.P. of 5 kg. mix} = \text{Rs. } (41.60 \times 5) \\ = \text{Rs. } 208$$

$$\text{Gain} = \text{Rs. } (208 - 195) = \text{Rs. } 13$$

$$\text{Gain\%} = \frac{13}{195} \times 100 = 6 \frac{2}{3}\%$$

5. By selling a table for Rs. 40 instead of Rs. 50, 5% more is lost. Find the cost of the table.

Ans : Let the C.P. be Rs. x

Then if S.P. = Rs. 40, loss = Rs. ($x - 40$)

If S.P = Rs. 50, loss = Rs. ($x - 50$)

$$\therefore (x - 40) - (x - 50) = \frac{5}{100} \times x$$

$$\Rightarrow 10 = \frac{5}{100} \times x \Rightarrow x = \text{Rs. } 200$$

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

Ans: Let us consider a packet of rice marked 1 Kg.

Then its actual weight = 80% of 1Kg. = 0.8 Kg.

Let C.P. of 1 Kg be Rs. x

Then C.P. of 0.8Kg = Rs. $0.8x$

Now, S.P. = 110% of C.P. of 1 Kg

$$= \frac{110}{100} \times x = \text{Rs. } 1.1x$$

$$\text{Gain \%} = \frac{0.3x}{0.8x} \times 100\% = 37.5\%$$

7. The cost price of 10 articles is equal to the selling price of 9 articles. Find the gain percent.

Ans: Let the cp of 1 article = Rs. 1

Then CP of 9 articles = Rs. 9

CP of 10 articles = Rs. 10

\therefore SP of 9 articles = Rs. 10

$$\text{Gain} = \left(\frac{10 - 9}{9} \right) 100 = \frac{100}{9} = 11 \frac{1}{9}\%$$

8. A boy buys oranges at Rs. 2 for 3 oranges and sells them at one rupee each. To make a profit of Rs. 10 he must sell:

Ans: Suppose he sells x oranges.

$$\text{CP of } x \text{ oranges} = \text{Rs. } \frac{2}{3}x$$

$$\text{SP of } x \text{ oranges} = \text{Rs. } x$$

$$\text{Profit on } x \text{ oranges} = x - \frac{2x}{3} = \frac{x}{3}$$

$$\therefore \frac{x}{3} = 10 \Rightarrow x = 30$$

9. A man sells two horses for Rs. 4000 each neither losing nor gaining in the deal. If he sold one horse at a gain of 25%, the other horse would be sold at a loss of:

Ans: Let the other horse be sold at $x\%$ loss

$$\begin{aligned} \text{Then } 25 - x - \frac{25x}{100} &= 0 \\ \Rightarrow x &= 20\% \end{aligned}$$

10. A discount series of 10%, 20% and 40% is equal to a single discount of

Ans: Equivalent single discount

$$= 100 - \frac{60}{100} \times \frac{80}{100} \times 90 = 56.8\%$$

PRACTICE TEST

1. By selling an article for Rs. 100, one gains Rs. 10. Then the gain percent is

- 1) 10% 2) 9%
3) $11\frac{1}{9}\%$ 4) $10\frac{1}{2}\%$

2. A loss of 5% was suffered by selling a plot for Rs. 4,085. The cost price of the plot was:

- 1) Rs. 4350 2) Rs. 4259.25
3) Rs. 4200 4) Rs. 4300

3. A dealer sold a mixer for Rs. 420 at a loss of 12.5%. At what price should he have sold it to gain 12.5%?

- 1) Rs. 620 2) Rs. 540
3) Rs. 650 4) Rs. 750

4. On selling 33m. of cloth, a person gained an amount equivalent to the S.P. of 11m. of cloth. The profit in the deal is

- 1) 50% 2) 20%
3) 70% 4) 30%

5. There are two consecutive discounts of 35% and 10% on a saree. If a person paid Rs. 1170 for that, then what was the original price of the saree before the discounts?

- 1) Rs. 2,000 2) Rs. 1,800
3) Rs. 1,900 4) Rs. 1,700

6. A dishonest dealer claims to sell his goods at cost price, but he uses a weight of 960 gm for the kg weight. His gain percent is

- 1) 4% 2) $4\frac{1}{6}\%$
3) $2\frac{1}{2}\%$ 4) $3\frac{3}{4}\%$

7. By selling a vehicle for Rs. 36,300, a person gains 21% profit. What was his gain in Rupees?

- 1) Rs. 3,000 2) Rs. 7,623
3) Rs. 3,600 4) Rs. 6,300

8. Hameed bought a calculator for Rs. 520 and sold it with 15% profit on the price he bought. At what price did he sell the calculator?

- 1) Rs. 598/- 2) Rs. 542/-
3) Rs. 528/- 4) Rs. 780/-

9. Ramesh purchased four old cycles at the rate of Rs. 625 for each. He spent Rs. 175 on each cycle for repairing and painting. At what price should he sell each cycle in order to make 35% profit on the money he spent?

- 1) Rs. 1,019 2) Rs. 1,000
3) Rs. 1,080 4) Rs. 844

10. Raghu bought 10kg. of sugar at the rate of Rs. 14 per kg and 15kg. of sugar at the rate of Rs. 16 per kg. He mixed the two varieties and sold the mixture at the rate of Rs. 18 per kg. What was his total gain by doing so?

- 1) Rs. 50 2) Rs. 70
3) Rs. 40 4) Rs. 80

11. Ravi buys a radio three-fourth of its value and sells it for 20% more than its value. What will be the profit percent?

- 1) 50% 2) 40%
3) 60% 4) 70%

12. A man buys pencils at 10 for Rs. 3 and sells at 8 for Rs. 3. His gain percent is

- 1) 20 2) 25 3) 30 4) 27

13. A fruit seller buys lemons at 2 for a rupee and sells them at 5 for three rupees. His gain percent is

- 1) 10% 2) 15%
3) 20% 4) 12%

14. Toffee are bought at a rate of 8 for one rupee. To gain 60% they must be sold at

- 1) 6 for Re. 1 2) 5 for Re. 1
3) 9 for Re. 2 4) 24 for Re. 5

15. By selling sugar at Rs. 5.58 per kg. a man loses 7%. To gain 7% it must be sold at the rate of Rs.

- 1) 5.62 per kg 2) 6.42 per kg
3) 7.32 per kg 4) 6.62 per kg

16. A tradesman's prices are 20% above C.P. He allows his customers some discount on his bill and makes a profit of 8%. The rate of discount is :

- 1) 10% 2) 12%
3) 14% 4) 16%

17. An article was sold at a loss of 5%. If it were sold for Rs. 30 more, the gain would have been 1.25%. The cost price of the article is

- 1) Rs. 488 2) Rs. 480
3) Rs. 460 4) Rs. 420

18. Anitha sold a painting at a profit of 11%. Had she sold it for Rs.175 more, she would have gained 18%. The C.P of the painting is

- 1) Rs. 2250 2) Rs. 2350
3) Rs. 2500 4) Rs. 2550

19. Pradeep bought a toy with 20% discount on its labelled price. He sold it for Rs. 468 at 4% profit on the labelled price. At what price did he buy the toy ?

- 1) Rs. 450 2) Rs. 360
3) Rs. 390 4) Rs. 380

20. Arun purchased a bag with 25% discount on the labelled price. At what percentage profit on the price he bought should he sell it to make 20% profit on the labelled price?

- 1) 60% 2) 40%
3) 45% 4) 50%

21. Nimesh bought a cycle for Rs. 1,850. He spent Rs.380 for buying different accessories. Approximately, at what price should he sell the cycle to make 20% profit in the transaction?

- 1) Rs. 2900 2) Rs. 2676
3) Rs. 3000 4) Rs. 3125

22. A man buys an article and sells it at a profit of 20%. If he bought at 20% less and sold it for Rs. 75 less, he would have gained 25%. What is the cost price ?

- 1) Rs. 375 2) Rs. 425
3) Rs. 350 4) Data inadequate

23. A man sells a car to his friend at 10% loss. If the friend sells it for Rs. 54,000 and gains 20%, the C.P. of the car was:

- 1) Rs. 25,000 2) Rs. 37,500
3) Rs. 50,000 4) Rs. 60,000

24. Listed price of an article is Rs. 65. A customer pays Rs. 56.16 for it. He was given two successive discounts. If the first discount is 10% find the second .

- 1) 8% 2) 6% 3) 5% 4) 4%

25. A single discount equivalent to a discount series of 20%, 10% and 25% is

- 1) 55% 2) 54%
3) 46% 4) 42%

26. A trader allows two successive discounts of 20% and 10%. If he sells an article for Rs. 108, then the market price of the article is

- 1) Rs. 140 2) Rs. 142
3) Rs. 148 4) Rs. 150

27. A person bought 20 litres of milk at the rate of Rs. 8 per litre. He got it churned after spending Rs. 10 and got 5 kg. of cream and 20 litres of toned milk. If he sold the cream at Rs. 30 per kg. and toned milk at Rs. 4 per litre, his profit in the transaction is

- 1) 25% 2) 35.3%
3) 37.5% 4) 42%

28. A dishonest dealer sells his goods at the cost price but still earns a profit of 25%. by underweighing. What weight does he use for a kg ?

- 1) 750gm. 2) 800gm.
3) 825gm. 4) 825gm.

29. On selling a certain commodity for Rs 425, there is as much gain as loss on selling it for Rs 355. the C.P of the commodity

- 1) Rs. 370 2) Rs. 385
3) Rs. 390 4) Rs. 400

30. A person bought some oranges @ Rs. 10 per dozen and bought the same number of oranges @ Rs. 8 per dozen. He sold these oranges @ Rs. 11 per dozen and gained Rs 120. The total number of oranges bought by him was

- 1) 30 dozen 2) 40 dozen
3) 50 dozen 4) 60 dozen

31. The marked price of a table is Rs 3000 and is available at successive discounts of 20% and 10% respectively. If there is an additional discount of 5% on cash payment, then what is the cash price of the table?

- 1) Rs. 2400 2) Rs. 2052
3) Rs. 2100 4) Rs.1640

32. Ramesh bought 12kg . of sugar at the rate of Rs 9.50 per kg. and 18 kg of sugar at the rate of Rs. 12.50 per kg. He mixed the two varieties and sold the mixture at the rate of Rs.12.00 per kg. Approximately what was his percentage gain in this transaction?

- 1) 6 2) 8
3) 4 4) Data inadequate

33. A shop keeper bought 16 dozen toys at the rate of Rs. 703.20 per dozen. He sold them with 20% profit on the price he bought. Approximately , at what price did he sell each toy?

- 1) Rs.70 2) Rs.75
3) Rs. 65 4) Rs.80

34. Prashanth buys mangoes at 3 per kg.for Rs 21 and sells them at 5 kg. for Rs.50. To earn Rs. 102 as profit ,he must sell

- 1) 34 kg. 2) 52 kg.
3) 26 kg. 4) 32 kg.

35. A man loses Rs. 50 by selling toys at the rate of Rs 3 per toy but gains Rs .75. If he sells them at Rs 3.25 per toy. The number of toys sold by him is

- 1) 500 2) 600
3) 750 4) 1000

36. A radio is sold at a gain of 16%. If it had been bought at 10% less and sold for Rs. 14 less; there would have been a gain of 25%. The cost price of the radio is

- 1) Rs. 500 2) Rs. 375
3) Rs. 400 3) Rs. 500

37. Price of food grains have risen by 10% and of other items of consumption by 15%. If the ratio of an employee's expenditure on food grains and other items is 2:5, by how much should his salary be increased so that he may maintain the same level of consumption as before, assuming that his present salary is Rs. 3500?

- 1) Rs. 300 2) Rs. 350
3) Rs. 375 4) Rs. 475

ANSWERS TO PRACTICE

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|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (3) | 2. (4) | 3. (2) | 4. (1) | 5. (1) | 6. (2) | 7. (4) | 8.(1) |
| 9. (3) | 10. (2) | 11. (3) | 12. (2) | 13. (3) | 14. (2) | 15. (2) | 16.(1) |
| 17. (2) | 18. (3) | 19. (2) | 20. (1) | 21.(2) | 22. (1) | 23. (3) | 24. (4) |
| 25. (3) | 26. (4) | 27. (2) | 28.(2) | 29.(3) | 30. (4) | 31. (2) | 32.(1) |
| 33. (1) | 34. (1) | 35. (1) | 36.(3) | 37.(4) | | | |