CHAPTER

13

PROFIT, LOSS AND DISCOUNT

To understand the concept of profit and loss, students must be aware about the following terms and formulae.

Cost Price (CP) The price at which a person buys an article is called the Cost Price (CP) of the article.

Selling Price (SP) The price at which an article is sold, is called the Selling Price (SP) of the article.

Marked Price (MP) The list price of an article is the price at which the article is sold.

Profit or Gain

Whenever a person sells an article at price greater than the cost price he is said to have made a profit or gain.

(i) Profit or Gain = SP – CP [here, SP > CP]

(ii) $\text{Profit per cent} = \frac{\text{Profit}}{\text{CP}} \times 100$

(iii) $\text{SP} = \text{CP} \times \frac{100 + \text{Profit}\%}{100}$

Loss

When SP of an article is less than, then there is a net loss.

(i) Loss = CP – SP [here, CP > SP]

(ii) $\text{Loss}\% = \frac{\text{Loss}}{\text{CP}} \times 100\%$

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

Example **1.** Find the SP, When CP is ₹80 and loss is 20%.

(1) ₹ 74 (2) ₹ 64
(3) ₹ 80 (4) ₹ 90

Sol. (2) Given, CP = ₹ 80 and loss = 20%

$$\therefore \quad \text{SP} = \left(\frac{100 - \text{Loss}\%}{100}\right) \times \text{CP}$$

$$= \left(\frac{100 - 20}{100}\right) \times 80 = 8 \times 8 = ₹\ 64$$

Example **2.** Find the CP, when SP is ₹40 and gain is 15%.

(1) ₹ 35 (2) ₹ 36.5
(3) ₹ 34.78 (4) ₹ 40.00

Sol. (3) Given, SP = ₹ 40 and gain = 15%

$$\therefore \quad 40 = \text{CP} \times \frac{100 + 15}{100}$$

$$\Rightarrow \quad 40 = \text{CP} \times \frac{115}{100} \Rightarrow 40 = \text{CP} \times \frac{23}{20}$$

$$\Rightarrow \quad \text{CP} = \frac{40 \times 20}{23} = ₹\ 34.78$$

Example **3.** Rajendra sells a radio in ₹ 510 and bears a loss of 15%. At what price should radio be sold to gain a profit of 15%?

(1) ₹ 600 (2) ₹ 660
(3) ₹ 620 (4) ₹ 690

Sol. (4) $\because \text{CP} \times \frac{100 - \text{Loss}\%}{100} = \text{SP}$

$$\text{CP} \times \frac{100 - 15}{100} = 510$$

$$\text{CP} \times \frac{510 \times 100}{85} = ₹\ 600$$

$$\text{Required selling price} = \text{CP} \times \frac{100 + \text{Profit}\%}{100}$$

$$\therefore \quad = 600 \times \frac{100 + 115}{100}$$

$$= 600 \times \frac{115}{100} = ₹\ 690$$

Example **4.** Ranu buys a toy for ₹ 150 and sells it for ₹ 165. Find her profit per cent.

(1) 10 (2) 20
(3) 30 (4) 40

Sol. (1) Cost price = ₹ 150
Selling price = ₹ 165

As, SP > CP so a net profit

Profit amount = 165 – 150 = ₹ 15

$\therefore$ Profit per cent $= \frac{\text{Profit}}{\text{CP}} \times 100$

$= \frac{15}{150} \times 100 = 10\%$

Example **5.** Yash purchased a saree for ₹ 2000 and sells it for ₹ 1500. Find his loss per cent.

(1) 5 (2) 10
(3) 20 (4) 25

Sol. (4) Cost price (CP) = ₹ 2000
Selling price (SP) = ₹ 1500

As, CP > SP

Loss amount = 2000 – 1500 = ₹ 500

$\therefore$ Loss per cent $= \frac{\text{Loss}}{\text{CP}} \times 100$

$= \frac{500}{2000} \times 100$

$= 25\%$

Example 6. A shopkeeper sold a radio in ₹ 810 and bear 10% loss. If he sells the same radio in ₹ 1035, then how much per cent profit he gains?

(1) 20 (2) 18
(3) 25 (4) 15

Sol. (4) Here, SP = ₹ 810, Loss = 10 %

we know that, $\text{SP} \times \frac{100 - \text{Loss }\%}{100} = \text{SP}$

$\Rightarrow \quad \text{CP} \times \frac{100-10}{100} = 810$

$\Rightarrow \quad \text{CP} \times \frac{90}{100} = 810$

$\Rightarrow \quad \text{CP} = 810 \times \frac{100}{90}$

$= ₹\ 900$

Now, SP = 1035

So, profit = SP – CP = 1035–900 = ₹ 135

$\therefore$ Profit per cent $= \frac{\text{Profit}}{\text{CP}} \times 100$

$= \frac{135}{900} \times 100$

$= 15\%$

Discount

It is an offer made by the seller to buyer for reduction in price to be paid.

(i) Discount = MP – SP

(ii) Selling price

$= \text{Marked price} \times \left(\frac{100 - \text{Rate of discount}}{100}\right)$

(iii) $\text{Marked price} = \frac{100 \times \text{Selling price}}{100 - \text{Rate of discount}}$

Example **7.** A dealer offers 20% discount. If the selling price of the article is 216 then what is the marked price of the article?

(1) ₹ 270 (2) ₹ 340
(3) ₹ 280 (4) ₹ 310

Sol. (1) Here, SP = 216

Discount = 20%

we knon that, $\text{MP} \times \frac{100 - \text{Discount}\%}{100} = \text{SP}$

$\Rightarrow \quad \text{MP} \times \frac{100-20}{100} = 216$

$\Rightarrow \quad \text{MP} \times \frac{80}{100} = 216$

$\Rightarrow \quad \text{MP} = \frac{216 \times 100}{80} = ₹\ 270$

Entrance Corner

1. An article is sold for ₹ 500 and hence a loss is incurred. Had the article been sold for ₹ 700, the shopkeeper would have gained three times the former loss. What is the cost price of the article? **[JNV 2019]**

(1) ₹ 525 (2) ₹ 550
(3) ₹ 600 (4) ₹ 650

2. A fruit seller buys lemons at 2 for a rupee and sells them at 5 for three rupees. What is his profit percent? **[JNV 2019]**

(1) 8% (2) 10%
(3) 15% (4) 20%

3. A man buys a TV at ₹ 18,200. He spends ₹ 1,800 on repairing of TV. If he want ₹ 3,000 as profit. What is the selling price of TV? **[JNV 2018]**

(1) ₹ 20430 (2) ₹ 21200
(3) ₹ 23000 (4) ₹ 25200

4. By selling a dozen pencil at the cost of ₹ 30, the shopkeeper gains ₹ 10. His percentage of profit was **[JNV 2009, 2017]**

(1) 20 (2) 35
(3) 50 (4) 66

5. After allowing a discount of 18%, a washing machine is available for ₹ 13489. What is the market price of the washing machine? **[JNV 2009, 2017]**

(1) ₹ 16540 (2) ₹ 15450
(3) ₹ 16450 (4) ₹ 15540

6. A cellphone was bought for ₹ 1500 and then it was sold for ₹ 1650. What is the percent profit? **[JNV 2016]**

(1) 10 (2) 15
(3) 20 (4) 16

7. If a book purchase in ₹ 150 and sell it ₹ 180. Then, the profit percentage is **[JNV 2015]**

(1) 20 (2) 25
(3) 30 (4) 33

8. A radio was sold for ₹ 680 at a loss of ₹120. At what price should it be sold to earn a profit of ₹120. **[JNV 2010]**

(1) ₹ 720 (2) ₹ 800
(3) ₹ 820 (4) ₹ 920

9. A man sold a watch at a profit of 5%. If cost price of the watch was ₹ 200, what was its selling price? **[JNV 2008]**

(1) ₹ 205 (2) ₹ 210
(3) ₹ 250 (4) ₹ 300

10. After bought a ceilling fan on ₹ 750, one sells it with a profit of 18%, then find the selling price. **[JNV 2007]**

(1) ₹ 850 (2) ₹ 885
(3) ₹ 860 (4) ₹ 855

11. A shopkeeper bought 15 tables at the rate of ₹ 500 each and 20 chairs at the rate of ₹ 300 each. He spent ₹ 40 on transportation. He sold the tables and chairs at a flat rate of ₹ 380 each. What is gain or loss? **[JNV 2005]**

(1) ₹ 240, loss (2) ₹ 240, gain
(3) ₹ 250, loss (4) ₹ 250, gain

12. A man buys a radio for ₹ 900 and sells it for ₹ 1200. Find his gain per cent. **[JNV 2003]**

(1) 20 (2) 25
(3) 30 (4) $33\frac{1}{3}$

13. A shopkeeper bought 2 dozen of brushes at the rate of ₹10 per dozen. If he sells them at ₹ 1 per brush, what profit will he earn? **[JNV 2002]**

(1) ₹ 9 (2) ₹ 7 (3) ₹ 6 (4) ₹ 4

14. A person buys 60 oranges at the rate of ₹ 21 per dozen and sells them at the rate of ₹ 24 per dozen. He makes a **[JNV 2001]**

(1) profit of ₹ 3 (2) profit of ₹ 15
(3) loss of ₹ 5 (4) profit of ₹ 180

15. An old table was purchased for ₹ 180 and ₹ 20 were spent on its repairs. If it was sold at a profit of 20%, the selling price of the table was **[JNV 2001]**

(1) ₹ 200 (2) ₹ 216
(3) ₹ 240 (4) ₹ 250

16. 1kg of sugar was bought for ₹ 80 and sold for ₹ 100. Find profit per cent. **[JNV 2000]**

(1) 20 (2) 10
(3) 25 (4) 30

17. Find the loss per cent, if CP = ₹ 300, SP = ₹ 250. **[JNV 2000]**
(1) $16\frac{2}{3}$ (2) 50
(3) 33 (4) $33\frac{1}{3}$

18. Calculate the gain per cent, if a watch bought for ₹ 450 was sold for ₹ 500. **[JNV 1999]**
(1) 5 (2) $11\frac{1}{9}$ (3) $10\frac{2}{3}$ (4) 15

19. By selling the bicycle for ₹ 1200, David gets 20% profit. Find the cost price of the bicycle. **[JNV 1999]**
(1) ₹ 900 (2) ₹ 1000
(3) ₹ 800 (4) ₹ 700

20. A man bought a bicycle for ₹ 550 for how much should be sell the bicycle so as to gain 10%? **[JNV 1998]**
(1) ₹ 605 (2) ₹ 610 (3) ₹ 615 (4) ₹ 620

21. Find the profit per cent, if CP = ₹ 500, SP = ₹ 550. **[JNV 1998]**
(1) 8 (2) 9 (3) 10 (4) 11

22. A man loses 10% by selling an article for ₹ 270. Find the cost price of the article. **[JNV 1998]**
(1) ₹ 400 (2) ₹ 350 (3) ₹ 420 (4) ₹ 300

23. A man loses 10% by selling his watch for ₹ 450. Find the cost price of the watch. **[JNV 1997]**
(1) ₹ 400 (2) ₹ 140
(3) ₹ 500 (4) ₹ 600

24. A article is sold for ₹ 10 which is a 10% profit of CP, find the CP. **[JNV 1997]**
(1) ₹ 9.09 (2) ₹ 10
(3) ₹ 11 (4) ₹ 10.09

25. The selling price of a fountain pen costing ₹ 6.20 sold at a loss of 10% is **[JNV 1997]**
(1) ₹ 6.92 (2) ₹ 5.58
(3) ₹ 6 (4) ₹ 5.92

26. A merchant lost ₹ 51 by selling 17 bags of the rice for ₹ 1020. What was the cost price per bag? **[JNV 1997]**
(1) ₹ 61 (2) ₹ 62
(3) ₹ 63 (4) ₹ 64

27. A person buys a book for ₹ 27 and sell it at a profit of 10% of SP. Find the SP. **[JNV 1996]**
(1) ₹ 29.70 (2) ₹ 30
(3) ₹ 33 (4) ₹ 39

28. An article is bought for ₹ 180 and sold at a gain of 20%. The selling price of the article is **[JNV 1996]**
(1) ₹ 108 (2) ₹ 110
(3) ₹ 112 (4) ₹ 216

29. If an article is sold at loss of 50%, find the cost price in terms of selling price. **[JNV 1995]**
(1) 1/2 (2) 2
(3) 2.5 (4) None of these

30. The selling price of a fountain pen costing ₹ 10 sold at a loss of 10% is **[JNV 1995]**
(1) ₹ 7 (2) ₹ 7.50
(3) ₹ 8 (4) ₹ 9

Answers

1. (2)	**2.** (4)	**3.** (3)	**4.** (3)	**5.** (3)	**6.** (1)	**7.** (1)	**8.** (4)	**9.** (2)	**10.** (2)
11. (1)	**12.** (4)	**13.** (4)	**14.** (2)	**15.** (3)	**16.** (3)	**17.** (1)	**18.** (2)	**19.** (2)	**20.** (1)
21. (3)	**22.** (4)	**23.** (3)	**24.** (1)	**25.** (2)	**26.** (3)	**27.** (1)	**28.** (4)	**29.** (2)	**30.** (4)

Hints and Solutions

1. We know that Loos = CP – SP

= CP – 500 (SP = 500 given)

When, SP = 700 then, Gain = SP – CP

= 700 – CP (SP = 700 given)

According to question, Gain = 3 × Loss

$700 - CP = 3[CP - 500]$

$\Rightarrow \quad 700 - CP = 3 \times CP - 1500$

$\Rightarrow \quad 700 + 1500 = 3 \times CP + CP$

$\Rightarrow \quad 2200 = 4(CP)$

$\Rightarrow \quad CP = \frac{2200}{4} = ₹\,550$

2. Seller buys 2 lemons in = ₹ 1

Cost price of 1 lemon (CP) $= \frac{1}{2}$ ...(i)

Seller sells 5 lemon = ₹ 3

Selling price of 1 lemon (SP) $= \frac{3}{5}$ ...(ii)

But, profit % $= \frac{SP - CP}{CP} \times 100 = \frac{\frac{3}{5} - \frac{1}{2}}{\frac{1}{2}} \times 100$

$= \frac{\frac{6-5}{10}}{\frac{1}{2}} \times 100 = \frac{2}{10} \times 100 = 20\%$

3. Total cost price of TV = ₹ (18200 + 1800)

= ₹ 20000 Profit = ₹ 3000 [given]

We know that,

Selling price = Cost price + Profit

= 20000 + 3000

= ₹ 23000

4. Cost price = 30 – 10 = ₹ 20

Percentage profit $= \frac{\text{Profit} \times 100}{\text{Cost price}}$

$= \frac{10 \times 100}{20} = 50\ \%$

5. Selling price of washing machine = ₹ 13489

Discount allowed = 18%

Let marked price of washing machine be ₹ x.

$\therefore \ x - \frac{18x}{100} = 13489$

$\frac{82x}{100} = 13489$

$\Rightarrow \quad x = \frac{13489 \times 100}{82} = 16450$

∴ Marked price of washing machine is ₹ 16450.

6. The profit on cell phone = SP – CP

= 1650 – 1500 = ₹ 150

Then, required per cent profit $= \frac{\text{Profit} \times 100}{CP}$

$= \frac{150 \times 100}{1500} = 10\%$

7. Cost price of the book = ₹ 150

Selling price of the book = ₹ 180

Profit = 180 – 150 = ₹ 30

∴ Profit percentage $= \frac{30}{150} \times 100 = 20\%$

8. Cost price of radio = 680 + 120 = ₹ 800

∴ Selling price = 800 + 120 = ₹ 920

9. Cost price is ₹ 200.

Profit = 5 %

SP $= 200 + 200 \times \frac{5}{100} = ₹\,210$

10. Let the cost price = 100% = ₹ 750

Then, profit percentage = (100 + 18) = 118%

The selling price $= \frac{118 \times 750}{100} =$ ₹ 885

11. Cost price of 15 tables = 500 × 15 = ₹ 7500

Cost price of 20 chairs = 300 × 20 = ₹ 6000

Expenditure on transportation = ₹ 40

Total cost price = 7500 + 6000 + 40

(Including expenditure on transportation)

= ₹ 13540

Selling price = 380 × 35 = ₹ 13300

Loss = 13540 – 13300 = ₹ 240

12. ∵ CP of radio = ₹ 900, SP of radio = ₹ 1200

∴ Profit = 1200 – 900 = ₹ 300

∴ Profit percentage $= \frac{\text{Profit} \times 100}{CP}$

$= \frac{300 \times 100}{900} = \frac{100}{3} = 33\frac{1}{3}\%$

13. ∵ The CP of 2 dozen brushes = 2 × 10 = ₹ 20

SP of 1 brush = ₹ 1

SP of 2 dozen or 24 brushes = 1 × 24 = ₹ 24

∴ Profit = 24 – 20 = ₹ 4

14. CP of 1 dozen oranges = ₹ 21

CP of 60 oranges or 5 dozen oranges

= 21 × 5 = ₹ 105 [∵ 1 dozen = 12]

SP of 1 dozen oranges = ₹ 24

SP of 5 dozen oranges = 24 × 5 = ₹ 120

∴ Profit = SP – CP = 120 – 105 = ₹ 15

15. Total CP of the table = 180 + 20 = ₹ 200

Profit = 20%

$$\therefore \text{SP of the table} = \frac{\text{CP} \times (100 + \text{Profit per cent})}{100}$$

$$= \frac{200 \times 120}{100} = ₹ 240$$

16. Profit = 100 − 80 = ₹ 20

$$\text{Profit percentage} = \frac{20}{80} \times 100 = 25\%$$

17. Loss = 300 − 250 = ₹ 50

$$\text{Loss percentage} = \frac{50}{300} \times 100 = \frac{50}{3} = 16\frac{2}{3}\%$$

18. Gain = 500 − 450 = ₹ 50

$$\text{Gain percentage} = \frac{50}{450} \times 100 = \frac{100}{9} = 11\frac{1}{9}\%$$

19. Let the cost price of bicycle be ₹ x. Then,

x + 20% of x = 1200

$$\Rightarrow \quad x + \frac{20x}{100} = 1200$$

$$\Rightarrow \quad 120x = 1200 \times 100$$

$$\Rightarrow \quad x = \frac{1200 \times 100}{120} = ₹ 1000$$

20. CP = ₹ 550

Gain = 10%

= 100 + 10 = 110%

∵ When CP is ₹ 100, SP = ₹ 110

∴ When CP is ₹ 1, SP = $₹ \frac{110}{100}$

$$\therefore \text{When CP is ₹ 550, SP} = \frac{110 \times 550}{100} = ₹ 605$$

21. Profit = 550 − 500 = ₹ 50

$$\text{Profit percentage} = \frac{50}{500} \times 100 = 10\%$$

22. Loss = 10%

SP = ₹ 270

Let the cost price is ₹ x.

Then

x − 10% of x = 270

$$\Rightarrow \quad x - \frac{10x}{100} = 270$$

$$\Rightarrow \quad 90x = 270 \times 100$$

$$\Rightarrow \quad x = \frac{270 \times 100}{90} = ₹ 300$$

23. Loss = 10%

SP = ₹ 450

Let be the cost price is ₹ x.

x − 10% of x = 450

$$\Rightarrow \quad x - \frac{10x}{100} = 450$$

$$\Rightarrow \quad 90x = 450 \times 100$$

$$\Rightarrow \quad x = \frac{450 \times 100}{90} = ₹ 500$$

24. SP = ₹ 10 = CP + 10% of CP = 110% of CP

$$\text{CP} = \frac{100 \times 10}{110} = ₹ 9.09$$

25. CP = ₹ 6.20

Loss = 10%

$$\text{SP} = 6.20 \times \frac{90}{100} = ₹ 5.58$$

26. Per bag loss $= \frac{51}{17} = ₹ 3$

SP of per bag price $= \frac{1020}{17} = ₹ 60$

Cost price = 60 + 3 = ₹ 63 per bag

27. Profit = 10%

CP = ₹ 27

$$\text{SP} = 27 \times \frac{110}{100} = 27 \times 1.1 = ₹ 29.70$$

28. SP = 120% of 180 $= \frac{120}{100} \times 180 = ₹ 216$

29. Let CP = 100

Loss = 50%

SP = 100 − 50 = 50%

⇒ SP = 50% of CP

⇒ CP = 200% of SP

⇒ CP = 2 × SP

30. CP = ₹ 10

Loss = 10%

$$\text{SP} = 10 \times \frac{90}{100} = ₹ 9$$

Practice Exercise

1. A person buys 10 dozen pens at the rate of ₹ 24 per dozen and sells them at the rate of ₹ 36 a dozen. What is his profit or loss?
(1) ₹ 100, profit (2) ₹ 100, loss
(3) ₹ 120, loss (4) ₹ 120, profit

2. A man purchased a machine for ₹ 7500 and later sold it at a profit of ₹ 750. How much additional profit he would got if he had sold the machine for ₹ 8500?
(1) ₹ 250 (2) ₹ 500
(3) ₹ 750 (4) ₹ 1000

3. A basket of oranges was purchased for ₹ 250. At what price should it be sold to earn a profit of ₹ 25?
(1) ₹ 225 (2) ₹ 240
(3) ₹ 260 (4) ₹ 275

4. A person buys a book for ₹ 85 and sells it for ₹ 98.60. Find his profit per cent.
(1) 8 (2) 12
(3) 16 (4) 18

5. A farmer buys a tractor for ₹ 65000 and sells it for ₹ 58500. Find his loss per cent.
(1) 10 (2) 10.25
(3) 10.5 (4) 10.75

6. A person buys a radio for ₹ 1030 and he spent ₹ 50 on its repairs. If he sold it for ₹ 1200, find the profit per cent.
(1) $10\frac{1}{3}$ (2) $11\frac{1}{9}$
(3) $12\frac{1}{2}$ (4) None of these

7. By selling an article for ₹ 285 a man loses 5%. For how much should he sell to gain 5%?
(1) ₹ 315 (2) ₹ 308 (3) ₹ 305 (4) ₹ 302

8. By selling an article for ₹ 3375 a person loses 10%. Find his profit for loss per cent, if he sell it for ₹ 4500.
(1) 18 (2) 24
(3) 28 (4) None of these

9. A pen was purchased for ₹ 20. At what price should it be sold to get a profit of 20%?
(1) ₹ 16 (2) ₹ 18
(3) ₹ 24 (4) ₹ 40

10. A table was sold for ₹ 180 at a loss of ₹ 20. What was the cost price of that table?
(1) ₹ 144 (2) ₹ 160
(3) ₹ 200 (4) ₹ 216

11. A person earns 15% profit on the sale of an article. If the sale price of that article is ₹ 23. Then, its cost price is
(1) ₹ 8 (2) ₹ 15
(3) ₹ 20 (4) ₹ 22

12. A man purchases 2 dozen of oranges at the rate of ₹ 24 a dozen sells them at the rate of ₹ 3 per oranges what is profit or loss?
(1) ₹ 12, profit (2) ₹ 12, loss
(3) ₹ 24, profit (4) ₹ 24, loss

13. A person sells 20 books for ₹ 1300 and gets a profit of ₹ 180. What is the cost price of all the books?
(1) ₹ 56 (2) ₹ 180
(3) ₹ 1120 (4) ₹ 1480

14. A man earns 10% profit by selling an article. If the sale price of the article is ₹ 385, then its cost price will be
(1) ₹ 350 (2) ₹ 375
(3) ₹ 395 (4) ₹ 423.50

15. A person purchases 60 oranges at the cost of ₹ 21 each dozen and sells them at the cost of ₹ 24 each dozen. He gets
(1) ₹ 3, profit (2) ₹ 15, profit
(3) ₹ 15, loss (4) ₹ 180, profit

16. By selling a dozen pencil at the cost of ₹ 30, the shopkeeper gains ₹ 10. His percentage of profit was
(1) 20 (2) 35
(3) 50 (4) 66

17. A watch maker purchased an old watch for ₹ 87. He spends ₹ 10 on its repairing and again he sold the watch for ₹ 105. The profit or loss is
(1) ₹ 8, profit (2) ₹ 8, loss
(3) ₹ 13, profit (4) ₹ 13, loss

18. A shopkeeper bought 2 dozen of brushes at the rate of ₹ 10 per dozen. If he sells them at ₹1 per brush, what profit he will earn?
(1) ₹ 9 (2) ₹ 7 (3) ₹ 6 (4) ₹ 4

19. There is a loss on selling an item in ₹ 500. If this item was sold in ₹ 800, then the shopkeeper would get three times the profit from the loss earlier. What is the price of this item?
(1) ₹ 650 (2) ₹ 550 (3) ₹ 750 (4) ₹ 725

20. If 11 pencils are bought for ₹ 10 and are sold at the rate of 10 pencils for ₹ 11, then profit per cent is
(1) 11 (2) 17
(3) 21 (4) 24

Answers

1. (4)	**2.** (1)	**3.** (4)	**4.** (3)	**5.** (1)	**6.** (2)	**7.** (1)	**8.** (4)	**9.** (3)	**10.** (3)
11. (3)	**12.** (3)	**13.** (3)	**14.** (1)	**15.** (2)	**16.** (3)	**17.** (1)	**18.** (4)	**19.** (4)	**20.** (3)

Hints and Solutions

1. Cost price $= 24 \times 10 = ₹\,240$
Sale price $= 36 \times 10 = ₹\,360$
Profit $= 360 - 240 = ₹\,120$

2. Sale price of the machine $= 7500 + 750 = ₹\,8250$
$\therefore$ The additional profit if he had sold the machine for ₹ 8500 $= 8500 - 8250 = ₹\,250$

3. Cost price of oranges $= ₹\,250$
Profit $= ₹\,25$
Sale price = Cost price + Profit
$= 250 + 25 = ₹\,275$

4. Profit per cent $= \left(\frac{\text{Profit}}{\text{CP}} \times 100\right)$
$= \left(\frac{98.60 - 85}{85} \times 100\right) = 16\%$

5. CP $= ₹\,65000$, SP $= ₹\,58500$
Loss $=$ CP $-$ SP $= 65000 - 58500 = ₹\,6500$
$\therefore$ Loss per cent
$= \frac{\text{Loss}}{\text{CP}} \times 100 = \frac{6500}{65000} \times 100 = 10\%$

6. Total cost $= 1030 + 50 = ₹\,1080$
SP $= ₹\,1200$
$\therefore$ Profit per cent $= \frac{1200 - 1080}{1080} \times 100$
$= \frac{120}{1080} \times 100 = 11\frac{1}{9}\%$

7. Given, SP $= ₹\,285$ and loss $= 5\%$, let CP $= ₹\,x$
$\Rightarrow 285 = \frac{95x}{100} \Rightarrow x = \left(\frac{285 \times 100}{95}\right) = ₹\,300$
Now, CP $= ₹\,300$ and profit $= 5\%$
SP $= \left(\frac{105}{100} \times 300\right) = ₹\,315$

8. SP $= ₹\,3375$, loss $= 10\%$
Then, $3375 = \frac{90}{100} \times \text{CP}$
$\Rightarrow$ CP $= \left(\frac{3375 \times 100}{90}\right) = ₹\,3750$
Now, CP $= ₹\,3750$, SP $= ₹\,4500$
Profit $=$ SP $-$ CP
$4500 - 3750 = ₹\,750$
Profit per cent $= \left(\frac{\text{Profit}}{\text{CP}} \times 100\right)$
$= \frac{750}{3750} \times 100 = 20\%$

9. CP of the pen $= ₹\,20$
Profit $= 20\%$
SP of the pen $= \frac{(100 + 20)}{100} \times 20$
$= \frac{120}{100} \times \frac{20}{1}$
$= ₹\,24$

10. SP of the table $= ₹\,180$, Loss $= ₹\,20$
CP of the table $=$ SP + Loss
$= 180 + 20 = ₹\,200$

11. SP of the article $= ₹\,23$, Profit $= 15\%$
Cost price $= \frac{\text{SP} \times 100}{100 + \text{Profit per cent}}$
$= \frac{23 \times 100}{(100 + 15)}$
$= \frac{23 \times 100}{115} = ₹\,20$

12. CP of 2 dozen or 24 oranges $= 24 \times 2 = ₹\,48$
SP of 24 oranges at the rate of ₹ 3 per orange
$= 24 \times 3 = ₹\,72$
$\therefore$ Profit $= 72 - 48 = ₹\,24$

13. Sale price $= ₹\,1300$

Profit = ₹ 180

∴ Cost price = 1300 − 180 = ₹ 1120

14. SP of the article = ₹ 385

Profit = 10%

$$\Rightarrow \text{CP} = \frac{\text{SP} \times 100}{100 + \text{Profit per cent}}$$

$$= \frac{385 \times 100}{(100 + 10)} = \frac{385 \times 100}{110} = ₹\,350$$

15. 60 oranges $= \frac{60}{12} = 5$ dozen oranges

∵ Cost price of 1 dozen orange = ₹ 21

∴ Cost price of 5 dozen oranges = 21 × 5 = ₹ 105

and the sale price of 5 dozen oranges

= 24 × 5 = ₹ 120

∴ Profit = 120 − 105 = ₹ 15

16. Cost price = (30 − 10) = ₹ 20

$$\text{Profit percent} = \frac{\text{Profit} \times 100}{\text{CP}}$$

$$= \frac{10 \times 100}{20} = 50\%$$

17. Cost price of watch = ₹ 87

Expense on repairing = ₹ 10

Total CP = 87 + 10 = ₹ 97

The sale price = ₹ 105

∵ SP > CP

∴ Profit = Sale price – Cost price

= 105 − 97 = ₹ 8

18. Cost price of 2 dozen brushes at the rate of ₹ 10 per dozen = 2 × 10 = ₹ 20

As, 24 brushes cost price = ₹ 20

1 brush sale price = ₹ 1

∴ 24 brushes sale price = 1 × 24 = ₹ 24

∴ Profit = 24 − 20 = ₹ 4

19. Let the cost price be ₹ x. Then,

loss = CP − SP = x − 500

Again,

∵ Profit = SP − CP = 800 − x

According to the question,

3 × Profit = Loss

$3 \times (800 - x) = x - 500$

$\Rightarrow \quad 2400 - 3x = x - 500$

$\Rightarrow 2400 + 500 = 4x$

$$\Rightarrow \quad x = \frac{2900}{4} = ₹\,725$$

20. Cost price of 1 pencil = ₹ $\frac{10}{11}$

and selling price of 1 pencil = ₹ $\frac{11}{10}$

$$\therefore \text{ Profit on 1 pencil} = \frac{11}{10} - \frac{10}{11} = \frac{21}{110}$$

$$\therefore \text{ Percentage of profit} = \frac{21/110}{10/11} \times 100$$

$$= \frac{21}{110} \times \frac{11}{10} \times 100 = 21\%$$

Self Practice

1. The cost price of a machine is ₹ 180. It was sold at the loss of 10%. It sale price is
(1) ₹ 162 (2) ₹ 168 (3) ₹ 170 (4) ₹ 156

2. A person purchased 10 eggs for ₹ 4 and sold 8 eggs for ₹ 4. The profit or loss in the bargain will be
(1) 25%, profit (2) 25%, loss (3) 20% ,loss (4) 10%, profit

3. A pen was bought for ₹ 20. At what price it must be sold to get the profit of 20%?
(1) ₹ 16 (2) ₹ 18 (3) ₹ 24 (4) ₹ 40

4. A fruitseller purchased 60 oranges at the rate of 12 for ₹ 10. He sold them at the rate of 10 for ₹ 12. What is his profit or loss?
(1) ₹ 22.00, profit (2) ₹ 22.00, loss (3) ₹ 2.00, profit (4) ₹ 2.00, loss

5. A shopkeeper bought a watch for ₹ 280 and sold it for ₹ 315. What is his percentage of profit?
(1) 15 (2) $10\frac{1}{2}$ (3) $12\frac{1}{2}$ (4) 20

6. A man bought 75 m of cloth at ₹ 20 per m. At what rate per metre should he sell the cloth so as to gain ₹ 200?
(1) ₹ 85 (2) ₹ 75 (3) ₹ 65 (4) None of these

7. Ajay purchased an old scooter for ₹ 10000. He paid ₹ 150 for road tax and ₹ 100 as licence fee. What price must he sell it to gain 20%?
(1) ₹ 12300 (2) ₹ 10300 (3) ₹ 12000 (4) ₹ 13000

8. 4 dozen of bananas were bought at the rate of ₹ 15 per dozen and sold at the rate of ₹ 2 per banana. Profit or loss is
(1) ₹ 60, loss (2) ₹ 96, profit (3) ₹ 156, loss (4) ₹ 36, profit

9. A man bought a radio of ₹ 195 and got it repaired at a cost of ₹ 45. For how much should he sell it in order to gain ₹ 50?
(1) ₹ 290 (2) ₹ 200 (3) ₹ 100 (4) ₹ 240

10. A chair was sold for ₹ 60 at a profit of 20%. What was the cost price of the chair?
(1) ₹ 72 (2) ₹ 50 (3) ₹ 48 (4) ₹ 40

11. A shopkeeper bought 60 eggs for ₹ 90, 10 eggs were found to be broken. He sold the remaining eggs at the rate of ₹ 2 per egg. What is profit per cent?
(1) 10 (2) 9 (3) $11\frac{1}{9}$ (4) 11

12. A table was sold at 15% loss for ₹ 1700. CP is
(1) ₹ 1,685 (2) ₹ 1,715 (3) ₹ 2,000 (4) ₹ 2,100

13. 25 pens were bought for ₹ 300 and sold at 25% profit. The selling price of a pen is
(1) ₹ 15 (2) ₹ 375 (3) ₹ 315 (4) ₹ 20

Answers

1. (1)	**2.** (1)	**3.** (3)	**4.** (1)	**5.** (3)	**6.** (4)	**7.** (1)	**8.** (4)	**9.** (1)	**10.** (2)
11. (3)	**12.** (3)	**13.** (1)							