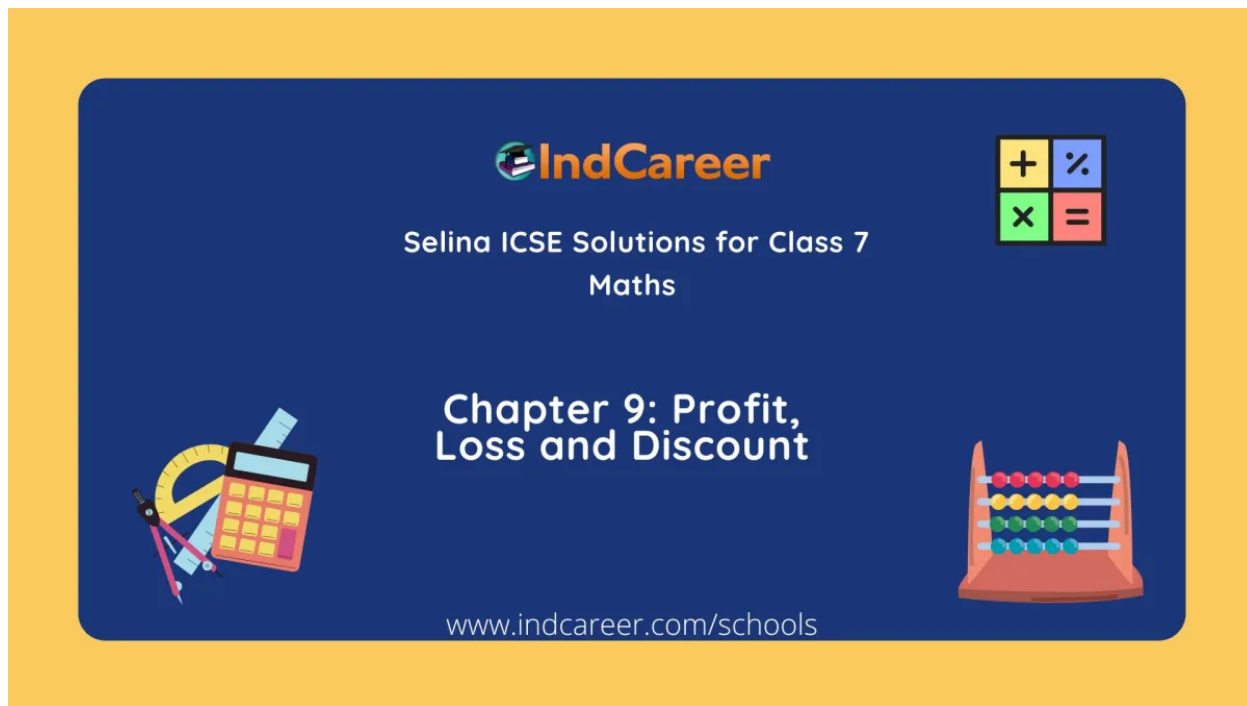


Selina Class 7 ICSE Solutions Mathematics : Chapter 9- Profit, Loss and Discount



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Chapter 9- Profit, Loss and Discount

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Selina Class 7 ICSE Solutions Mathematics : Chapter 9- Profit, Loss and Discount

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Exercise 9A page: 104

1. Find the gain or loss percent, if:

(i) C.P. = ₹ 200 and S.P. = ₹ 224

(ii) C.P. = ₹ 450 and S.P. = ₹ 400

(iii) C.P. = ₹ 550 and gain = ₹ 22

(iv) C.P. = ₹ 216 and loss = ₹ 72

(v) S.P. = ₹ 500 and loss = ₹ 100

Solution:

(i) C.P. = ₹ 200 and S.P. = ₹ 224

We know that

Gain = S.P. – C.P.

So we get

= 224 – 200

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$$= ₹ 24$$

So we get

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P.}$$

Substituting the values

$$= (24 \times 100) / 200$$

$$= 12\%$$

$$\text{(ii) C.P.} = ₹ 450 \text{ and S.P.} = ₹ 400$$

We know that

$$\text{Loss} = \text{C.P.} - \text{S.P.}$$

So we get

$$= 450 - 400$$

$$= ₹ 50$$

So we get

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P.}$$

Substituting the values

$$= (50 \times 100) / 450$$

$$= 100/9$$

$$= 11 \frac{1}{9}\%$$

$$\text{(iii) C.P.} = ₹ 550 \text{ and gain} = ₹ 22$$

We know that

$$\text{S.P.} = \text{C.P.} + \text{gain}$$

So we get

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$$= 550 + 22$$

$$= ₹ 572$$

So we get

$$\text{Gain percent} = (\text{gain} \times 200) / \text{C.P.}$$

Substituting the values

$$= (22 \times 100) / 550$$

$$= 4\%$$

$$\text{(iv) C.P.} = ₹ 216 \text{ and loss} = ₹ 72$$

We know that

$$\text{S.P.} = \text{C.P.} - \text{loss}$$

So we get

$$= 216 - 72$$

$$= ₹ 144$$

So we get

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P.}$$

Substituting the values

$$= (72 \times 100) / 216$$

$$= 100/3$$

$$= 33 \frac{1}{3}\%$$

$$\text{(v) S.P.} = ₹ 500 \text{ and loss} = ₹ 100$$

We know that

$$\text{C.P.} = \text{S.P.} + \text{loss}$$

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So we get

$$= 500 + 100$$

$$= ₹ 600$$

So we get

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P.}$$

Substituting the values

$$= (100 \times 100) / 600$$

$$= 50/3$$

$$= 16 \frac{2}{3} \%$$

2. Find the selling price, if:

(i) C.P = ₹ 500 and gain = 25%

(ii) C.P. = ₹ 60 and loss = $12 \frac{1}{2} \%$

Solution:

(i) C.P = ₹ 500 and gain = 25%

We know that

$$\text{S.P.} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

Substituting the values

$$= [500 (100 + 25)] / 100$$

We get

$$= (500 \times 125) / 100$$

$$= ₹ 625$$

(ii) C.P. = ₹ 60 and loss = $12 \frac{1}{2} \%$

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We know that

$$\text{Loss} = 12 \frac{1}{2} \% = 25/2\%$$

Here

$$\text{S.P.} = [\text{C.P.} (100 - \text{Loss percent})] / 100$$

Substituting the values

$$= [60 (100 - 25/2)] / 100$$

So we get

$$= [60 (200 - 25/2)] / 100$$

We can write it as

$$= (60 \times 175) / (2 \times 100)$$

$$= ₹ 105/2$$

$$= ₹ 52.50$$

3. Rohit bought a tape-recorder for ₹ 1,500 and sold it for ₹ 1,800. Calculate his profit or loss percent.

Solution:

It is given that

$$\text{C.P of tape-recorder} = ₹ 1,500$$

$$\text{S.P of tape-recorder} = ₹ 1,800$$

We know that

$$\text{Gain} = \text{S.P} - \text{C. P}$$

$$= 1800 - 1500$$

$$= ₹ 300$$

$$\text{Gain percent} = (\text{Gain} \times 100) / \text{C.P}$$

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Substituting the values

$$= (300 \times 100) / 1500$$

$$= 20\%$$

4. An article bought for ₹ 350 is sold at a profit of 20%. Find its selling price.

Solution:

It is given that

C.P of an article = ₹ 350

Profit = 20%

We know that

$$S.P = [C.P (100 + \text{profit percent})] / 100$$

Substituting the values

$$= [350 (100 + 20)] / 100$$

So we get

$$= (350 \times 120) / 100$$

$$= ₹ 420$$

5. An old machine is bought for ₹ 1,400 and is sold at a loss of 15%. Find its selling price.

Solution:

It is given that

C.P. of the old machine = ₹ 1,400

Loss percent = 15%

We know that

$$S.P = [C.P (100 - \text{loss percent})] / 100$$

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Substituting the values

$$= [1400 (100 - 15)] / 100$$

By further calculation

$$= (1400 \times 85) / 100$$

$$= ₹ 1190$$

6. Oranges are bought at 5 for ₹ 10 and sold at 6 for ₹ 15. Find profit or loss as percent.

Solution:

We know that

$$\text{LCM of 5 and 6} = 30$$

Consider that 30 oranges are bought

$$\text{So the C.P of 30 oranges} = (30 \times 10) / 5 = ₹ 60$$

$$\text{S.P of 30 oranges} = (30 \times 15) / 6 = ₹ 75$$

$$\text{Gain} = \text{S.P} - \text{C.P}$$

Substituting the values

$$= 75 - 60$$

$$= ₹ 15$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= (15 \times 100) / 60$$

$$= 25\%$$

7. A certain number of articles are bought at 3 for ₹ 150 and all of them are sold at 4 for ₹ 180. Find the loss or gain as percent.

Solution:

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We know that

$$\text{LCM of 3 and 4} = 12$$

Consider that 12 articles are bought

$$\text{So the C.P of 12 articles} = (150 \times 12) / 3 = ₹ 600$$

$$\text{S.P of 12 articles} = (180 \times 12) / 4 = ₹ 540$$

$$\text{Loss} = \text{C.P} - \text{S.P}$$

Substituting the values

$$= 600 - 540$$

$$= ₹ 60$$

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P}$$

Substituting the values

$$= (60 \times 100) / 600$$

$$= 10\%$$

8. A vendor bought 120 sweets at 20 p each. In his house, 18 were consumed and he sold the remaining at 30p each. Find his profit or loss as percent.

Solution:

$$\text{No. of sweets bought} = 120$$

$$\text{C.P of 120 sweets} = (120 \times 20) / 100 = ₹ 24$$

$$\text{No. of sweets consumed} = 18$$

$$\text{So the balance sweets} = 120 - 18 = 102$$

$$\text{S.P of 102 sweets} = (102 \times 30) / 100 = ₹ 30.60$$

$$\text{Gain} = \text{S.P} - \text{C.P}$$

Substituting the values

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$$= 30.60 - 24$$

$$= ₹ 6.60$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= (6.60 \times 100) / 24$$

Multiplying both numerator and denominator by 100

$$= (660 \times 100) / (100 \times 24)$$

$$= 55/2$$

$$= 27.5\%$$

9. The cost price of an article is ₹ 1,200 and selling price is $5/4$ times of its cost price.

Find:

(i) Selling price of the article,

(ii) Profit or loss as percent.

Solution:

It is given that

$$\text{C.P of an article} = ₹ 1,200$$

We know that

$$\text{S.P} = 5/4 \text{ of C.P}$$

Substituting the values

$$\text{S.P} = 5/4 \times 1200 = ₹ 1,500$$

$$\text{Gain} = \text{S.P} - \text{C.P}$$

Substituting the values

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$$= 1500 - 1200$$

$$= ₹ 300$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= (300 \times 100) / 1200$$

$$= 25\%$$

10. The selling price of an article is ₹ 1,200 and cost price is $\frac{5}{4}$ times of its selling price.

Find:

(i) cost price of the article,

(ii) profit or loss as percent.

Solution:

$$(i) \text{ S.P of an article} = ₹ 1,200$$

We know that

$$\text{C.P} = \frac{5}{4} \text{ of S.P}$$

Substituting the values

$$= \frac{5}{4} \times 1200$$

$$= ₹ 1,500$$

$$(ii) \text{ Loss} = \text{C.P} - \text{S.P}$$

Substituting the values

$$= 1500 - 1200$$

$$= ₹ 300$$

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P}$$

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Substituting the values

$$= (300 \times 100) / 1500$$

So we get

$$= 100/5$$

$$= 20\%$$

Exercise 9B page: 107

1. Find the cost price, if:

(i) S.P. = ₹ 21 and gain = 5%

(ii) S.P. = ₹ 22 and loss = 12%

(iii) S.P. = ₹ 340 and gain = ₹ 20

(iv) S.P. = ₹ 200 and loss = ₹ 50

(v) S.P. = ₹ 1 and loss = 5 p

Solution:

(i) S.P. = ₹ 21 and gain = 5%

We know that

$$C.P. = (S.P. \times 100) / (100 + \text{gain percent})$$

Substituting the values

$$= (21 \times 100) / (100 + 5)$$

$$= (21 \times 100) / 105$$

So we get

$$= ₹ 20$$

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(ii) S.P. = ₹ 22 and loss = 12%

We know that

$$\text{C.P.} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (22 \times 100) / (100 - 12)$$

$$= (22 \times 100) / 88$$

So we get

$$= ₹ 25$$

(iii) S.P. = ₹ 340 and gain = ₹ 20

We know that

$$\text{C.P.} = \text{S.P.} - \text{Gain}$$

Substituting the values

$$= 340 - 20$$

$$= ₹ 320$$

(iv) S.P. = ₹ 200 and loss = ₹ 50

We know that

$$\text{C.P.} = \text{S.P.} + \text{loss}$$

Substituting the values

$$= 200 + 50$$

$$= ₹ 250$$

(v) S.P. = ₹ 1 and loss = 5 p

We know that

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$$\text{C.P.} = \text{S.P.} + \text{Loss}$$

Substituting the values

$$= ₹ 1 + 5 p$$

$$= ₹ 1.05$$

2. By selling an article for ₹ 810, a loss of percent is suffered. Find its cost price.

Solution:

It is given that

$$\text{S.P of an article} = ₹ 810$$

$$\text{Loss percent} = 10 \%$$

We know that

$$\text{C.P.} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (810 \times 100) / (100 - 10)$$

So we get

$$= (810 \times 100) / 90$$

$$= ₹ 900$$

3. By selling a scooter for ₹ 9,200, a main gains 15%. Find the cost price of the scooter.

Solution:

It is given that

$$\text{S.P. of the scooter} = ₹ 9,200$$

$$\text{Gain percent} = 15\%$$

We know that

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$$\text{C.P.} = (\text{S.P.} \times 100) / (100 + \text{gain percent})$$

Substituting the values

$$= (9200 \times 100) / (100 + 15)$$

$$= (9200 \times 100) / 115$$

So we get

$$= ₹ 8000$$

4. On selling an article for ₹ 2,640, a profit of 10 percent is made.

Find:

(i) cost price of the article.

(ii) new selling price of it, in order to gain 15%.

Solution:

It is given that

$$\text{S.P. of an article} = ₹ 2,640$$

$$\text{Gain percent} = 10\%$$

$$(i) \text{ C.P.} = (\text{S.P.} \times 100) / (100 + \text{gain percent})$$

Substituting the values

$$= (2640 \times 100) / (100 + 10)$$

$$= (2640 \times 100) / 110$$

So we get

$$= ₹ 2400$$

$$(ii) \text{ Gain percent} = 15\%$$

$$\text{S.P.} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

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Substituting the values

$$= [2400 (100 + 15)] / 100$$

So we get

$$= (2400 \times 115) / 100$$

$$= ₹ 2760$$

5. A T.V. set is sold for ₹ 6,800 at a loss of 15%.

Find:

(i) cost price of the T.V. set.

(ii) new selling price of it, in order to gain 12%.

Solution:

It is given that

$$\text{S.P. of the T.V. set} = ₹ 6,800$$

$$\text{Loss percent} = 15\%$$

$$(i) \text{ C.P.} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (6800 \times 100) / (100 - 15)$$

So we get

$$= (6800 \times 100) / 85$$

$$= ₹ 8000$$

$$(ii) \text{ Gain percent} = 12\%$$

We know that

$$\text{S.P.} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

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Substituting the values

$$= [8000 (100 + 12)] / 100$$

So we get

$$= (8000 \times 112) / 100$$

$$= ₹ 8960$$

6. A fruit seller bought mangoes at ₹ 90 per dozen and sold them at a loss of 8 percent. How much will a customer pay for:

(i) one mango

(ii) 40 mangoes

Solution:

It is given that

C.P. of 1 dozen mangoes = ₹ 90

Loss percent = 8%

Here the S.P of 1 dozen mangoes = $[C.P. (100 - \text{loss percent})] / 100$

Substituting the values

$$= [900 (100 - 8)] / 100$$

So we get

$$= (90 \times 92) / 100$$

$$= ₹ 82.80$$

$$(i) \text{ S.P. of one mango} = 82.80 / 12 = ₹ 6.90$$

$$(ii) \text{ S.P. of 40 mangoes} = 6.90 \times 40 = ₹ 276$$

7. By selling two transistors for ₹ 600 each, a shopkeeper gains 20 percent on one transistor and loses 20 percent on the other.

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Find:

- (i) C.P. of each transistor.**
- (ii) total C.P. and total S.P. of both the transistors.**
- (iii) profit or loss percent on the whole.**

Solution:

It is given that

S.P of first transistor = ₹ 600

Gain percent = 20%

$$(i) \text{ C.P} = (\text{S.P.} \times 100) / (100 + \text{gain percent})$$

Substituting the values

$$= (600 \times 100) / (100 + 20)$$

$$= (600 \times 100) / 120$$

So we get

$$= ₹ 500$$

S.P of the second transistor = ₹ 600

Loss percent = 20%

$$\text{So the C.P of the other transistor} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (600 \times 100) / (100 - 20)$$

So we get

$$= (600 \times 100) / 80$$

$$= ₹ 750$$

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Hence, C.P of the two transistors are ₹ 500 and ₹ 750.

(ii) Total C.P of both the transistors = $500 + 750 = ₹ 1250$

Total S.P of both the transistors = $600 + 600 = ₹ 1200$

(iii) We know that

Total loss = C.P – S.P

Substituting the values

$$= 1250 - 1200$$

$$= ₹ 50$$

So the loss percent = $(\text{loss} \times 100) / \text{C.P}$

Substituting the values

$$= (50 \times 100) / 1250$$

$$= 4\%$$

8. Mangoes are bought at 20 for ₹ 60. If they are sold at a profit of $33 \frac{1}{3}$ percent, find:

(i) selling price of each mango.

(ii) S.P. of 8 mangoes.

Solution:

It is given that

C.P of 20 mangoes = ₹ 60

Gain percent = $33 \frac{1}{3} \% = 100/3 \%$

S.P of 20 mangoes = $[\text{C.P.} (100 + \text{gain percent})] / 100$

Substituting the values

$$= [60 (100 + 100/3)] / 100$$

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So we get

$$= (60 \times 400) / (100 \times 3)$$

$$= ₹ 80$$

$$(i) \text{ S.P of one mango} = 80/20 = ₹ 4$$

$$(ii) \text{ S.P of 8 mangoes} = 4 \times 8 = ₹ 32$$

9. Find the cost price of an article, which is sold for ₹ 4,050 at a loss of 10%. Also, find the new selling price of the article which must give a profit of 8%.

Solution:

It is given that

$$\text{S.P of an article} = ₹ 4,050$$

$$\text{Loss percent} = 10\%$$

$$(i) \text{ C.P of the article} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (4050 \times 100) / (100 - 10)$$

So we get

$$= (4050 \times 100) / 90$$

$$= ₹ 4500$$

$$(ii) \text{ Gain percent} = 8\%$$

$$\text{S.P of the article} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

Substituting the values

$$= [4500 (100 + 8)] / 100$$

So we get

$$= (4500 \times 108) / 100$$

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$$= ₹ 4860$$

10. By selling an article for ₹ 825, a man losses an amount equal to $\frac{1}{3}$ of its selling price. Find:

(i) the cost price of the article.

(ii) the profit percent or the loss percent made, if the same article is sold for ₹ 1,265.

Solution:

It is given that

$$\text{S.P of an article} = ₹ 825$$

$$\text{Loss} = \frac{1}{3} \text{ of S.P} = \frac{1}{3} \times 825 = ₹ 275$$

$$(i) \text{ C.P} = \text{S.P} + \text{Loss}$$

Substituting the values

$$= 825 + 275$$

$$= ₹ 1100$$

$$(ii) \text{ S.P} = ₹ 1265$$

We know that

$$\text{Gain} = \text{S.P} - \text{C.P}$$

Substituting the values

$$= 1265 - 1100$$

$$= ₹ 165$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= (165 \times 100) / 1100$$

$$= 15\%$$

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11. Find the loss or gain as percent, if the C.P. of articles, all of the same kind, is equal to S.P. of 8 articles.

Solution:

Consider C.P of 10 articles = S.P of 8 articles = ₹ 80

So the C.P of 1 article = $80/10 = ₹ 8$

S.P of 1 article = $80/8 = ₹ 10$

We know that

Gain = S.P – C.P

Substituting the values

= $10 - 8$

= ₹ 2

Gain percent = $(\text{gain} \times 100) / \text{C.P}$

Substituting the values

= $(2 \times 100) / 8$

= 25%

12. Find the loss or gain as percent, if the C.P. of 8 articles, all of the same kind, is equal to S.P. of 10 articles.

Solution:

Consider C.P of 8 articles = S.P of 10 articles = ₹ 80

So the C.P of 1 article = $80/8 = ₹ 10$

S.P of 1 article = $80/10 = ₹ 8$

We know that

Loss = C.P – S.P

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Substituting the values

$$= 10 - 8$$

$$= ₹ 2$$

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P}$$

Substituting the values

$$= (2 \times 100) / 10$$

$$= 20\%$$

13. The cost price of an article is 96% of its selling price. Find the loss or the gain as percent on the whole.

Solution:

Consider S.P = ₹ 100

We know that

$$\text{C.P} = 96\% \text{ of S.P}$$

So we get

$$= 96/100 \times 100$$

$$= ₹ 96$$

$$\text{Gain} = 100 - 96 = ₹ 4$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= 4/96 \times 100\%$$

$$= 25/6 \text{ or } 4 \frac{1}{6}\%$$

14. The selling price of an article is 96% of its cost price. Find the loss or the gain as percent on the whole.

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Solution:

Consider C.P = ₹ 100

S.P = 96% of C.P

So we get

$$= 96/100 \times 100$$

$$= ₹ 96$$

$$\text{Loss} = 100 - 96 = ₹ 4$$

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P}$$

Substituting the values

$$= 4/100 \times 100\%$$

$$= 4 \%$$

15. Hundred oranges are bought for ₹ 350 and all of them are sold at the rate of ₹ 48 per dozen. Find the profit percent or loss percent made.

Solution:

It is given that

$$\text{C.P of one orange} = 350/100 = ₹ 3.50$$

$$\text{S.P of one orange} = 48/12 = ₹ 4$$

$$\text{Gain} = 4 - 3.50 = ₹ 0.50$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= 0.50/3.50 \times 100\%$$

$$= 14 \frac{2}{7} \%$$

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Exercise 9C page: 109

1. A machine is marked at ₹ 5,000 and is sold at a discount of 10%. Find the selling price of the machine.

Solution:

It is given that

M.P of the machine = ₹ 5, 000

Rate of discount = 10%

So the amount of discount = $5000 \times 10/100 = ₹ 500$

S.P = M.P – discount

Substituting the values

= $5000 - 500$

= ₹ 4500

2. A shopkeeper marked a dinner set for ₹ 1,000. He sold it at ₹ 900. What percent discount did he give?

Solution:

It is given that

M.P of a dinner set = ₹ 1000

S.P of a dinner set = ₹ 900

So the amount of discount = $1000 - 900 = ₹ 100$

Discount percent = $(\text{Discount} \times 100) / \text{M.P}$

Substituting the values

= $(100 \times 100) / 1000$

= 10%

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3. A pair of shoes, marked at ₹ 320, are sold at a discount of 15 percent.

Find:

(i) the discount,

(ii) the selling price of the shoes.

Solution:

It is given that

M.P of shoes = ₹ 320

Rate of discount = 15%

(i) Amount of discount = $(320 \times 15) / 100 = ₹ 48$

(ii) S.P = M.P – Discount

Substituting the values

= $320 - 48$

= ₹ 272

4. The list price of an article is ₹ 450 and it is sold for ₹ 360.

Find:

(i) the discount,

(ii) the discount percent.

Solution:

It is given that

M.P of an article = ₹ 450

S.P of an article = ₹ 360

(i) Amount of discount = M.P – S.P

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Substituting the values

$$= 450 - 360$$

$$= ₹ 90$$

$$(ii) \text{ Discount percent} = (\text{discount} \times 100) / \text{M.P}$$

Substituting the values

$$= (90 \times 100) / 450$$

$$= 20\%$$

5. A shopkeeper buys an article for ₹ 300. He increases its price by 20% and then gives 10% discount on the new price.

Find:

(i) the new price (marked price) of the article.

(ii) the discount given by the shopkeeper.

(iii) the selling price.

(iv) the profit percent made by the shopkeeper.

Solution:

It is given that

$$\text{C.P of an article} = ₹ 300$$

$$\text{Increase in price} = 20\%$$

$$(i) \text{ M.P} = [\text{C.P} (100 + \text{increase percent})] / 100$$

Substituting the values

$$= [300 (100 + 20)] / 100$$

So we get

$$= (300 \times 120) / 100$$

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$$= ₹ 360$$

(ii) Rate of discount = 10%

$$\text{Amount of discount} = (360 \times 10) / 100 = ₹ 36$$

(iii) S.P = M.P – discount

Substituting the values

$$= 360 - 36$$

$$= ₹ 324$$

(iv) Net profit made by the shopkeeper = S.P – C.P

Substituting the values

$$= 324 - 300$$

$$= ₹ 24$$

We know that

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= (24 \times 100) / 300$$

$$= 8\%$$

6. A car is marked at ₹ 50,000. The dealer gives 5% discount on first ₹ 20,000 and 2% discount on the remaining ₹ 30,000. Find:

(i) the total discount.

(ii) the price charged by the dealer.

Solution:

It is given that

$$\text{M.P of a car} = ₹ 50,000$$

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Discount at the rate of 5% on first ₹ 20,000 = $(20,000 \times 5) / 100 = ₹ 1000$

Discount at the rate of 2% on remaining ₹ 30,000 = $(30,000 \times 2) / 100 = ₹ 600$

(i) Total discount = $1000 + 600 = ₹ 1600$

(ii) Price charged by the dealer = $50000 - 1600 = ₹ 48400$

7. A dealer buys a T.V. set for ₹ 2,500. He marks it at ₹ 3,200 and then gives a discount of 10% on it. Find:

(i) the selling price of the T.V. set

(ii) the profit percent made by the dealer.

Solution:

It is given that

C.P of a T.V. set = ₹ 2,500

M.P of a T.V. set = ₹ 3,200

Rate of discount = 10%

So the total discount = $3200 \times 10/100 = ₹ 320$

(i) S.P of the TV set = $3200 - 320 = ₹ 2880$

(ii) Gain = S.P – C.P

Substituting the values

= $2880 - 2500$

= ₹ 380

Gain percent = $(\text{gain} \times 100) / \text{C.P}$

Substituting the values

= $(380 \times 100) / 2500$

= 76/5

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= $15 \frac{1}{5} \%$ or 15.2%

8. A sells his goods at 15% discount. Find the price of an article which is sold for ₹ 680.

Solution:

It is given that

S.P of an article = ₹ 680

Rate of discount = 15%

Consider M.P of the article = ₹ 100

$S.P = 100 - 15 = ₹ 85$

If S.P of the article is ₹ 85 then M.P = ₹ 100

If S.P of the article is ₹ 680 then $M.P = (100 \times 680) / 85 = ₹ 800$

9. A shopkeeper allows 20% discount on the marked price of his articles. Find the marked price of an article for which he charges ₹ 560.

Solution:

Consider M.P of articles = ₹ 100

Discount on the M.P = 20%

$S.P \text{ of articles} = 100 - 20 = ₹ 80$

If S.P of articles is ₹ 80 then M.P = ₹ 100

If S.P of articles is ₹ 560 then $M.P = (100 \times 560) / 80 = ₹ 700$

10. An article is bought for ₹ 1,200 and ₹ 100 is spent on its transportation, etc. Find:

(i) the total C.P. of the article.

(ii) the selling price of it in order to gain 20% on the whole.

Solution:

It is given that

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C.P of an article = ₹ 1200

Amount spent on transportation = ₹ 100

(i) Total C.P of the article = $1200 + 100 = ₹ 1300$

(ii) Gain = 20%

S.P = $[C.P (100 + \text{gain percent})] / 100$

Substituting the values

$= [1300 (100 + 20)] / 100$

So we get

$= (1300 \times 120) / 100$

$= ₹ 1560$

11. 40 pens are bought at 4 for ₹ 50 and all of them are sold at 5 for ₹ 80. Find:

(i) C.P. of one pen.

(ii) S.P. of one pen.

(iii) Profit made by selling one pen.

(iv) Profit percent made by selling one pen.

(v) C.P. of 40 pens.

(vi) S.P. of 40 pens.

(vii) Profit made by selling 40 pens.

(viii) Profit percent made by selling 40 pens.

Are the results of parts (iv) and (viii) same?

What conclusion do you draw from the above result?

Solution:

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(i) C.P of 4 pens = ₹ 50

C.P of 40 pens = $(50 \times 40) / 4 = ₹ 500$

So the C.P of 1 pen = $500/40 = 25/2 = ₹ 12.50$

(ii) S.P of pens = ₹ 80

So the S.P of one pen = $80/5 = ₹ 16$

(iii) Profit made by selling one pen = S.P – C.P

Substituting the values

$$= 16 - 12.50$$

$$= ₹ 3.50$$

(iv) Profit percent made by selling one pen = $(\text{profit} \times 100) / \text{C.P}$

Substituting the values

$$= (3.50 \times 100) / 12.50$$

Multiplying both numerator and denominator by 100

$$= (350 \times 100) / 1250$$

$$= 28\%$$

(v) C.P of 40 pens = $40 \times 12.50 = ₹ 500$

(vi) S.P of 40 pens = $40 \times 16 = ₹ 640$

(vii) Profit made by selling 40 pens = S.P – C.P

Substituting the values

$$= 640 - 500$$

$$= ₹ 140$$

(viii) Profit percent made by selling 40 pens = $(\text{profit} \times 100) / \text{C.P}$

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Substituting the values

$$= (140 \times 100) / 500$$

$$= 28\%$$

Yes, the results of (iv) and (viii) are same.

Here we get to know that the profit of equal number of articles remains the same.

12. The C.P. of 5 identical articles is equal to S.P. of 4 articles. Calculate the profit percent or loss percent made if all the articles bought have been sold.

Solution:

It is given that

$$\text{C.P of 5 articles} = \text{S.P of 4 articles}$$

$$\text{Consider the C.P of 5 articles} = \text{S.P of 4 articles} = ₹ 100$$

$$\text{C.P of 1 article} = 100/5 = ₹ 20$$

$$\text{S.P of 1 article} = 100/4 = ₹ 25$$

$$\text{Profit} = \text{S.P} - \text{C.P}$$

Substituting the values

$$= 25 - 20$$

$$= ₹ 5$$

$$\text{Profit percent} = (\text{profit} \times 100) / \text{C.P}$$

Substituting the values

$$= (5 \times 100) / 20$$

$$= 25\%$$

13. The C.P. of 8 pens is same as S.P. of 10 pens. Calculate the profit or loss percent made, if all the pens bought are considered to be sold.

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Solution:

Consider C.P of 8 pens = S.P of 10 pens = ₹ 100

C.P of 1 pen = $100/8 = ₹ 12.50$

S.P of 1 pen = $100/10 = ₹ 10$

Loss = C.P – S.P

Substituting the values

= $12.50 - 10$

= ₹ 2.50

Loss percent = $(\text{loss} \times 100) / \text{C.P}$

Substituting the values

= $(2.50 \times 100) / 12.50$

Multiplying both numerator and denominator by 100×100

= $(250 \times 100 \times 100) / (1250 \times 100)$

= 20%

14. A certain number of articles are bought at ₹ 450 per dozen and all of them are sold at a profit of 20%. Find the S.P. of:

(i) one article

(ii) seven articles.

Solution:

It is given that

C.P of 1 dozen articles = ₹ 450

Profit = 20%

S.P = $[\text{C.P} (100 + \text{profit})] / 100$

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Substituting the values

$$= [450 (100 + 20)] / 100$$

So we get

$$= (450 \times 120) / 100$$

$$= ₹ 540$$

$$(i) \text{ S.P of one article} = 540 / 12 = ₹ 45$$

$$(ii) \text{ S.P of seven articles} = 45 \times 7 = ₹ 315$$

15. An article is marked 60% above the cost price and sold at 20% discount. Find the profit percent made.

Solution:

Consider the C.P of an article = ₹ 100

M.P of an article = $100 + 60 = ₹ 160$

Rate of discount = 20%

$$\text{S.P} = [\text{M.P} (100 - \text{Discount percent})] / 100$$

Substituting the values

$$= [160 (100 - 20)] / 100$$

So we get

$$= (160 \times 80) / 100$$

$$= ₹ 128$$

$$\text{Profit} = \text{S.P} - \text{C.P}$$

Substituting the values

$$= 128 - 100$$

$$= ₹ 28$$

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Profit percent = (profit × 100)/ C.P

Substituting the values

$$= (28 \times 100) / 100$$

$$= 28\%$$

Exercise 9B

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1. Find the cost price, if:

(i) S.P. = ₹ 21 and gain = 5%

(ii) S.P. = ₹ 22 and loss = 12%

(iii) S.P. = ₹ 340 and gain = ₹ 20

(iv) S.P. = ₹ 200 and loss = ₹ 50

(v) S.P. = ₹ 1 and loss = 5 p

Solution:

(i) S.P. = ₹ 21 and gain = 5%

We know that

$$\text{C.P.} = (\text{S.P.} \times 100) / (100 + \text{gain percent})$$

Substituting the values

$$= (21 \times 100) / (100 + 5)$$

$$= (21 \times 100) / 105$$

So we get

$$= ₹ 20$$

(ii) S.P. = ₹ 22 and loss = 12%

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We know that

$$\text{C.P.} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (22 \times 100) / (100 - 12)$$

$$= (22 \times 100) / 88$$

So we get

$$= ₹ 25$$

(iii) S.P. = ₹ 340 and gain = ₹ 20

We know that

$$\text{C.P.} = \text{S.P.} - \text{Gain}$$

Substituting the values

$$= 340 - 20$$

$$= ₹ 320$$

(iv) S.P. = ₹ 200 and loss = ₹ 50

We know that

$$\text{C.P.} = \text{S.P.} + \text{loss}$$

Substituting the values

$$= 200 + 50$$

$$= ₹ 250$$

(v) S.P. = ₹ 1 and loss = 5 p

We know that

$$\text{C.P.} = \text{S.P.} + \text{Loss}$$

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Substituting the values

$$= ₹ 1 + 5 p$$

$$= ₹ 1.05$$

2. By selling an article for ₹ 810, a loss of percent is suffered. Find its cost price.

Solution:

It is given that

$$\text{S.P of an article} = ₹ 810$$

$$\text{Loss percent} = 10 \%$$

We know that

$$\text{C.P.} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (810 \times 100) / (100 - 10)$$

So we get

$$= (810 \times 100) / 90$$

$$= ₹ 900$$

3. By selling a scooter for ₹ 9,200, a main gains 15%. Find the cost price of the scooter.

Solution:

It is given that

$$\text{S.P. of the scooter} = ₹ 9,200$$

$$\text{Gain percent} = 15\%$$

We know that

$$\text{C.P.} = (\text{S.P.} \times 100) / (100 + \text{gain percent})$$

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Substituting the values

$$= (9200 \times 100) / (100 + 15)$$

$$= (9200 \times 100) / 115$$

So we get

$$= ₹ 8000$$

4. On selling an article for ₹ 2,640, a profit of 10 percent is made.

Find:

(i) cost price of the article.

(ii) new selling price of it, in order to gain 15%.

Solution:

It is given that

$$\text{S.P. of an article} = ₹ 2,640$$

$$\text{Gain percent} = 10\%$$

$$(i) \text{ C.P.} = (\text{S.P.} \times 100) / (100 + \text{gain percent})$$

Substituting the values

$$= (2640 \times 100) / (100 + 10)$$

$$= (2640 \times 100) / 110$$

So we get

$$= ₹ 2400$$

$$(ii) \text{ Gain percent} = 15\%$$

$$\text{S.P.} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

Substituting the values

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$$= [2400 (100 + 15)] / 100$$

So we get

$$= (2400 \times 115) / 100$$

$$= ₹ 2760$$

5. A T.V. set is sold for ₹ 6,800 at a loss of 15%.

Find:

(i) cost price of the T.V. set.

(ii) new selling price of it, in order to gain 12%.

Solution:

It is given that

$$\text{S.P. of the T.V. set} = ₹ 6,800$$

$$\text{Loss percent} = 15\%$$

$$(i) \text{ C.P.} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (6800 \times 100) / (100 - 15)$$

So we get

$$= (6800 \times 100) / 85$$

$$= ₹ 8000$$

$$(ii) \text{ Gain percent} = 12\%$$

We know that

$$\text{S.P.} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

Substituting the values

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$$= [8000 (100 + 12)] / 100$$

So we get

$$= (8000 \times 112) / 100$$

$$= ₹ 8960$$

6. A fruit seller bought mangoes at ₹ 90 per dozen and sold them at a loss of 8 percent. How much will a customer pay for:

(i) one mango

(ii) 40 mangoes

Solution:

It is given that

C.P. of 1 dozen mangoes = ₹ 90

Loss percent = 8%

Here the S.P of 1 dozen mangoes = $[C.P. (100 - \text{loss percent})] / 100$

Substituting the values

$$= [900 (100 - 8)] / 100$$

So we get

$$= (90 \times 92) / 100$$

$$= ₹ 82.80$$

(i) S.P. of one mango = $82.80 / 12 = ₹ 6.90$

(ii) S.P. of 40 mangoes = $6.90 \times 40 = ₹ 276$

7. By selling two transistors for ₹ 600 each, a shopkeeper gains 20 percent on one transistor and loses 20 percent on the other.

Find:

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- (i) C.P. of each transistor.
- (ii) total C.P. and total S.P. of both the transistors.
- (iii) profit or loss percent on the whole.

Solution:

It is given that

S.P of first transistor = ₹ 600

Gain percent = 20%

(i) $C.P = (S.P. \times 100) / (100 + \text{gain percent})$

Substituting the values

$$= (600 \times 100) / (100 + 20)$$

$$= (600 \times 100) / 120$$

So we get

$$= ₹ 500$$

S.P of the second transistor = ₹ 600

Loss percent = 20%

So the C.P of the other transistor = $(S.P. \times 100) / (100 - \text{loss percent})$

Substituting the values

$$= (600 \times 100) / (100 - 20)$$

So we get

$$= (600 \times 100) / 80$$

$$= ₹ 750$$

Hence, C.P of the two transistors are ₹ 500 and ₹ 750.

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(ii) Total C.P of both the transistors = $500 + 750 = ₹ 1250$

Total S.P of both the transistors = $600 + 600 = ₹ 1200$

(iii) We know that

Total loss = C.P – S.P

Substituting the values

$$= 1250 - 1200$$

$$= ₹ 50$$

So the loss percent = $(\text{loss} \times 100) / \text{C.P}$

Substituting the values

$$= (50 \times 100) / 1250$$

$$= 4\%$$

8. Mangoes are bought at 20 for ₹ 60. If they are sold at a profit of $33 \frac{1}{3}$ percent, find:

(i) selling price of each mango.

(ii) S.P. of 8 mangoes.

Solution:

It is given that

C.P of 20 mangoes = ₹ 60

Gain percent = $33 \frac{1}{3} \% = 100/3 \%$

S.P of 20 mangoes = $[\text{C.P.} (100 + \text{gain percent})] / 100$

Substituting the values

$$= [60 (100 + 100/3)] / 100$$

So we get

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$$= (60 \times 400) / (100 \times 3)$$

$$= ₹ 80$$

$$(i) \text{ S.P of one mango} = 80/20 = ₹ 4$$

$$(ii) \text{ S.P of 8 mangoes} = 4 \times 8 = ₹ 32$$

9. Find the cost price of an article, which is sold for ₹ 4,050 at a loss of 10%. Also, find the new selling price of the article which must give a profit of 8%.

Solution:

It is given that

$$\text{S.P of an article} = ₹ 4,050$$

$$\text{Loss percent} = 10\%$$

$$(i) \text{ C.P of the article} = (\text{S.P.} \times 100) / (100 - \text{loss percent})$$

Substituting the values

$$= (4050 \times 100) / (100 - 10)$$

So we get

$$= (4050 \times 100) / 90$$

$$= ₹ 4500$$

$$(ii) \text{ Gain percent} = 8\%$$

$$\text{S.P of the article} = [\text{C.P.} (100 + \text{gain percent})] / 100$$

Substituting the values

$$= [4500 (100 + 8)] / 100$$

So we get

$$= (4500 \times 108) / 100$$

$$= ₹ 4860$$

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10. By selling an article for ₹ 825, a man losses an amount equal to $\frac{1}{3}$ of its selling price. Find:

(i) the cost price of the article.

(ii) the profit percent or the loss percent made, if the same article is sold for ₹ 1,265.

Solution:

It is given that

S.P of an article = ₹ 825

Loss = $\frac{1}{3}$ of S.P = $\frac{1}{3} \times 825 = ₹ 275$

(i) C.P = S.P + Loss

Substituting the values

= 825 + 275

= ₹ 1100

(ii) S.P = ₹ 1265

We know that

Gain = S.P – C.P

Substituting the values

= 1265 – 1100

= ₹ 165

Gain percent = $(\text{gain} \times 100) / \text{C.P}$

Substituting the values

= $(165 \times 100) / 1100$

= 15%

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11. Find the loss or gain as percent, if the C.P. of articles, all of the same kind, is equal to S.P. of 8 articles.

Solution:

Consider C.P of 10 articles = S.P of 8 articles = ₹ 80

So the C.P of 1 article = $80/10 = ₹ 8$

S.P of 1 article = $80/8 = ₹ 10$

We know that

Gain = S.P – C.P

Substituting the values

= $10 - 8$

= ₹ 2

Gain percent = $(\text{gain} \times 100) / \text{C.P}$

Substituting the values

= $(2 \times 100) / 8$

= 25%

12. Find the loss or gain as percent, if the C.P. of 8 articles, all of the same kind, is equal to S.P. of 10 articles.

Solution:

Consider C.P of 8 articles = S.P of 10 articles = ₹ 80

So the C.P of 1 article = $80/8 = ₹ 10$

S.P of 1 article = $80/10 = ₹ 8$

We know that

Loss = C.P – S.P

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Substituting the values

$$= 10 - 8$$

$$= ₹ 2$$

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P}$$

Substituting the values

$$= (2 \times 100) / 10$$

$$= 20\%$$

13. The cost price of an article is 96% of its selling price. Find the loss or the gain as percent on the whole.

Solution:

Consider S.P = ₹ 100

We know that

$$\text{C.P} = 96\% \text{ of S.P}$$

So we get

$$= 96/100 \times 100$$

$$= ₹ 96$$

$$\text{Gain} = 100 - 96 = ₹ 4$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= 4/96 \times 100\%$$

$$= 25/6 \text{ or } 4 \frac{1}{6}\%$$

14. The selling price of an article is 96% of its cost price. Find the loss or the gain as percent on the whole.

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Solution:

Consider C.P = ₹ 100

S.P = 96% of C.P

So we get

$$= 96/100 \times 100$$

$$= ₹ 96$$

$$\text{Loss} = 100 - 96 = ₹ 4$$

$$\text{Loss percent} = (\text{loss} \times 100) / \text{C.P}$$

Substituting the values

$$= 4/100 \times 100\%$$

$$= 4 \%$$

15. Hundred oranges are bought for ₹ 350 and all of them are sold at the rate of ₹ 48 per dozen. Find the profit percent or loss percent made.

Solution:

It is given that

$$\text{C.P of one orange} = 350/100 = ₹ 3.50$$

$$\text{S.P of one orange} = 48/12 = ₹ 4$$

$$\text{Gain} = 4 - 3.50 = ₹ 0.50$$

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= 0.50/3.50 \times 100\%$$

$$= 14 \frac{2}{7} \%$$

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Exercise 9C

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1. A machine is marked at ₹ 5,000 and is sold at a discount of 10%. Find the selling price of the machine.

Solution:

It is given that

M.P of the machine = ₹ 5, 000

Rate of discount = 10%

So the amount of discount = $5000 \times 10/100 = ₹ 500$

S.P = M.P – discount

Substituting the values

= $5000 - 500$

= ₹ 4500

2. A shopkeeper marked a dinner set for ₹ 1,000. He sold it at ₹ 900. What percent discount did he give?

Solution:

It is given that

M.P of a dinner set = ₹ 1000

S.P of a dinner set = ₹ 900

So the amount of discount = $1000 - 900 = ₹ 100$

Discount percent = $(\text{Discount} \times 100) / \text{M.P}$

Substituting the values

= $(100 \times 100) / 1000$

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= 10%

3. A pair of shoes, marked at ₹ 320, are sold at a discount of 15 percent.

Find:

(i) the discount,

(ii) the selling price of the shoes.

Solution:

It is given that

M.P of shoes = ₹ 320

Rate of discount = 15%

(i) Amount of discount = $(320 \times 15) / 100 = ₹ 48$

(ii) S.P = M.P – Discount

Substituting the values

= 320 – 48

= ₹ 272

4. The list price of an article is ₹ 450 and it is sold for ₹ 360.

Find:

(i) the discount,

(ii) the discount percent.

Solution:

It is given that

M.P of an article = ₹ 450

S.P of an article = ₹ 360

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(i) Amount of discount = M.P – S.P

Substituting the values

$$= 450 - 360$$

$$= ₹ 90$$

(ii) Discount percent = (discount × 100)/ M.P

Substituting the values

$$= (90 \times 100) / 450$$

$$= 20\%$$

5. A shopkeeper buys an article for ₹ 300. He increases its price by 20% and then gives 10% discount on the new price.

Find:

(i) the new price (marked price) of the article.

(ii) the discount given by the shopkeeper.

(iii) the selling price.

(iv) the profit percent made by the shopkeeper.

Solution:

It is given that

$$\text{C.P of an article} = ₹ 300$$

$$\text{Increase in price} = 20\%$$

$$(i) \text{ M.P} = [\text{C.P} (100 + \text{increase percent})] / 100$$

Substituting the values

$$= [300 (100 + 20)] / 100$$

So we get

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$$= (300 \times 120) / 100$$

$$= ₹ 360$$

(ii) Rate of discount = 10%

$$\text{Amount of discount} = (360 \times 10) / 100 = ₹ 36$$

(iii) S.P = M.P – discount

Substituting the values

$$= 360 - 36$$

$$= ₹ 324$$

(iv) Net profit made by the shopkeeper = S.P – C.P

Substituting the values

$$= 324 - 300$$

$$= ₹ 24$$

We know that

$$\text{Gain percent} = (\text{gain} \times 100) / \text{C.P}$$

Substituting the values

$$= (24 \times 100) / 300$$

$$= 8\%$$

6. A car is marked at ₹ 50,000. The dealer gives 5% discount on first ₹ 20,000 and 2% discount on the remaining ₹ 30,000. Find:

(i) the total discount.

(ii) the price charged by the dealer.

Solution:

It is given that

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M.P of a car = ₹ 50,000

Discount at the rate of 5% on first ₹ 20,000 = $(20,000 \times 5) / 100 = ₹ 1000$

Discount at the rate of 2% on remaining ₹ 30,000 = $(30,000 \times 2) / 100 = ₹ 600$

(i) Total discount = $1000 + 600 = ₹ 1600$

(ii) Price charged by the dealer = $50000 - 1600 = ₹ 48400$

7. A dealer buys a T.V. set for ₹ 2,500. He marks it at ₹ 3,200 and then gives a discount of 10% on it. Find:

(i) the selling price of the T.V. set

(ii) the profit percent made by the dealer.

Solution:

It is given that

C.P of a T.V. set = ₹ 2,500

M.P of a T.V. set = ₹ 3,200

Rate of discount = 10%

So the total discount = $3200 \times 10/100 = ₹ 320$

(i) S.P of the TV set = $3200 - 320 = ₹ 2880$

(ii) Gain = S.P – C.P

Substituting the values

= $2880 - 2500$

= ₹ 380

Gain percent = $(\text{gain} \times 100) / \text{C.P}$

Substituting the values

= $(380 \times 100) / 2500$

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$$= 76/5$$

$$= 15 \frac{1}{5} \% \text{ or } 15.2\%$$

8. A sells his goods at 15% discount. Find the price of an article which is sold for ₹ 680.

Solution:

It is given that

S.P of an article = ₹ 680

Rate of discount = 15%

Consider M.P of the article = ₹ 100

$$\text{S.P} = 100 - 15 = ₹ 85$$

If S.P of the article is ₹ 85 then M.P = ₹ 100

$$\text{If S.P of the article is ₹ 680 then M.P} = (100 \times 680) / 85 = ₹ 800$$

9. A shopkeeper allows 20% discount on the marked price of his articles. Find the marked price of an article for which he charges ₹ 560.

Solution:

Consider M.P of articles = ₹ 100

Discount on the M.P = 20%

$$\text{S.P of articles} = 100 - 20 = ₹ 80$$

If S.P of articles is ₹ 80 then M.P = ₹ 100

$$\text{If S.P of articles is ₹ 560 then M.P} = (100 \times 560) / 80 = ₹ 700$$

10. An article is bought for ₹ 1,200 and ₹ 100 is spent on its transportation, etc. Find:

(i) the total C.P. of the article.

(ii) the selling price of it in order to gain 20% on the whole.

Solution:

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It is given that

C.P of an article = ₹ 1200

Amount spent on transportation = ₹ 100

(i) Total C.P of the article = $1200 + 100 = ₹ 1300$

(ii) Gain = 20%

S.P = $[C.P (100 + \text{gain percent})] / 100$

Substituting the values

$= [1300 (100 + 20)] / 100$

So we get

$= (1300 \times 120) / 100$

$= ₹ 1560$

11. 40 pens are bought at 4 for ₹ 50 and all of them are sold at 5 for ₹ 80. Find:

(i) C.P. of one pen.

(ii) S.P. of one pen.

(iii) Profit made by selling one pen.

(iv) Profit percent made by selling one pen.

(v) C.P. of 40 pens.

(vi) S.P. of 40 pens.

(vii) Profit made by selling 40 pens.

(viii) Profit percent made by selling 40 pens.

Are the results of parts (iv) and (viii) same?

What conclusion do you draw from the above result?

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Solution:

(i) C.P of 4 pens = ₹ 50

$$\text{C.P of 40 pens} = (50 \times 40) / 4 = ₹ 500$$

$$\text{So the C.P of 1 pen} = 500/40 = 25/2 = ₹ 12.50$$

(ii) S.P of pens = ₹ 80

$$\text{So the S.P of one pen} = 80/5 = ₹ 16$$

(iii) Profit made by selling one pen = S.P – C.P

Substituting the values

$$= 16 - 12.50$$

$$= ₹ 3.50$$

(iv) Profit percent made by selling one pen = (profit × 100)/ C.P

Substituting the values

$$= (3.50 \times 100) / 12.50$$

Multiplying both numerator and denominator by 100

$$= (350 \times 100) / 1250$$

$$= 28\%$$

(v) C.P of 40 pens = $40 \times 12.50 = ₹ 500$

(vi) S.P of 40 pens = $40 \times 16 = ₹ 640$

(vii) Profit made by selling 40 pens = S.P – C.P

Substituting the values

$$= 640 - 500$$

$$= ₹ 140$$

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(viii) Profit percent made by selling 40 pens = $(\text{profit} \times 100) / \text{C.P}$

Substituting the values

$$= (140 \times 100) / 500$$

$$= 28\%$$

Yes, the results of (iv) and (viii) are same.

Here we get to know that the profit of equal number of articles remains the same.

12. The C.P. of 5 identical articles is equal to S.P. of 4 articles. Calculate the profit percent or loss percent made if all the articles bought have been sold.

Solution:

It is given that

C.P of 5 articles = S.P of 4 articles

Consider the C.P of 5 articles = S.P of 4 articles = ₹ 100

$$\text{C.P of 1 article} = 100/5 = ₹ 20$$

$$\text{S.P of 1 article} = 100/4 = ₹ 25$$

$$\text{Profit} = \text{S.P} - \text{C.P}$$

Substituting the values

$$= 25 - 20$$

$$= ₹ 5$$

$$\text{Profit percent} = (\text{profit} \times 100) / \text{C.P}$$

Substituting the values

$$= (5 \times 100) / 20$$

$$= 25\%$$

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13. The C.P. of 8 pens is same as S.P. of 10 pens. Calculate the profit or loss percent made, if all the pens bought are considered to be sold.

Solution:

Consider C.P of 8 pens = S.P of 10 pens = ₹ 100

C.P of 1 pen = $100/8 = ₹ 12.50$

S.P of 1 pen = $100/10 = ₹ 10$

Loss = C.P – S.P

Substituting the values

= $12.50 - 10$

= ₹ 2.50

Loss percent = $(\text{loss} \times 100) / \text{C.P}$

Substituting the values

= $(2.50 \times 100) / 12.50$

Multiplying both numerator and denominator by 100×100

= $(250 \times 100 \times 100) / (1250 \times 100)$

= 20%

14. A certain number of articles are bought at ₹ 450 per dozen and all of them are sold at a profit of 20%. Find the S.P. of:

(i) one article

(ii) seven articles.

Solution:

It is given that

C.P of 1 dozen articles = ₹ 450

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Profit = 20%

$$S.P = [C.P (100 + \text{profit})] / 100$$

Substituting the values

$$= [450 (100 + 20)] / 100$$

So we get

$$= (450 \times 120) / 100$$

$$= ₹ 540$$

$$(i) S.P \text{ of one article} = 540/12 = ₹ 45$$

$$(ii) S.P \text{ of seven articles} = 45 \times 7 = ₹ 315$$

15. An article is marked 60% above the cost price and sold at 20% discount. Find the profit percent made.

Solution:

Consider the C.P of an article = ₹ 100

M.P of an article = $100 + 60 = ₹ 160$

Rate of discount = 20%

$$S.P = [M.P (100 - \text{Discount percent})] / 100$$

Substituting the values

$$= [160 (100 - 20)] / 100$$

So we get

$$= (160 \times 80) / 100$$

$$= ₹ 128$$

$$\text{Profit} = S.P - C.P$$

Substituting the values

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$$= 128 - 100$$

$$= ₹ 28$$

$$\text{Profit percent} = (\text{profit} \times 100) / \text{C.P}$$

Substituting the values

$$= (28 \times 100) / 100$$

$$= 28\%$$



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