

RD SHARMA
Solutions
Class 8 Maths
Chapter 13
Ex 13.1

Question 1: A student buys a pen for Rs 90 and sells it for Rs 100. Find his gain and gain percent.

Solution:

$$\text{C.P of pen} = \text{Rs. } 90$$

$$\text{S.P of pen} = \text{Rs. } 100$$

$$\text{Gain} = \text{SP-CP}$$

$$= 100-90 = 10$$

$$\text{Gain \%} = \frac{\text{gain}}{\text{C.P}} \times 100$$

$$\text{C.P} = 10(10090)$$

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

Question 2: Rekha bought a saree for Rs.1240 and sold it for Rs. 1147. Find her loss and loss percent.

Solution

$$\text{C.P of saree} = \text{Rs. } 1240$$

$$\text{S.P of saree} = \text{Rs. } 1147$$

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

$$= \text{Rs } (1240-1147)$$

$$= \text{Rs. } 93$$

$$\text{Loss\%} = \frac{93}{1240} \times 100$$

$$= 7.5 \%$$

Question 3: A boy buys 9 apples for Rs. 9.60 and sells them at 11 for Rs.12. find his gain or loss percent.

Solution

$$\text{C.P of 9 apples} = \text{Rs. } 9.60$$

$$\text{CP of 1 apple} = \frac{9.60}{9} = 1.06$$

$$\text{S.P of 11 apple} = \text{Rs. } 12$$

$$\text{SP of 1 apple} = \frac{12}{11} = 1.09$$

Clearly,

$$\text{SP of 1 apple} > \text{CP of 1 apple}$$

$$\text{We get profit on selling apples} = \text{SP-CP}$$

$$= 0.022$$

$$\text{Gain\%} = \frac{0.022}{1.06} \times 100$$

$$= 2.27 \%$$

Question 4: The cost price of 10 articles is equal to the selling price of 9 articles. Find the profit percentage.

Solution

Let the cost price of 1 article be Rs. C

Let the selling price of 1 article be Rs. S

$$\text{Therefore, } 10C = 9S$$

$$1 C = \frac{9}{10}S$$

So the cost price is less than the selling price.

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

$$= 9S - \frac{9}{10}S$$

$$= \frac{81}{10}S$$

$$= 8.1 S$$

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

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

Question 5: A retailer buys a radio for Rs.225. his overhead expense are Rs15. if he sells the radio for Rs.300, determine the profit percentage.

Solution

$$\text{Radio cost} = \text{Rs } 225$$

$$\text{Overhead expenses} = \text{Rs } 15$$

$$\text{Total expenses} = \text{Rs.}(225+15) = \text{Rs.}240$$

$$\text{S.P} = \text{Rs.}300$$

$$\text{Profit} = \text{SP} - \text{CP} = \text{Rs } (300-240) = \text{Rs.}60$$

$$\text{Profit}\% = \frac{60}{240} \times 100$$

$$= 25\%$$

Question 6: A retailer buys a cooler for Rs.1200 and overhead expenses are on it are Rs.40. if he sells the cooler for Rs.1550, Determine the profit percentage.

Solution

$$\text{Cooler cost} = \text{Rs.}1200$$

$$\text{Overhead cost} = \text{Rs.}40$$

$$\text{Total cost} = \text{Rs.}(1200+40) = \text{Rs.}1240$$

$$\text{S.P of the cooler} = 1550$$

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

$$= \text{Rs.}(1550-1240)$$

$$= \text{Rs.} 310$$

$$\text{Profit}\% = \frac{310}{1240} \times 100$$

$$= 25\%$$

Question 7: A dealer buys a wrist watch for Rs. 225 and spends Rs.15 on its repairs. If he sells the same for Rs.300, find his profit percentage.

Solution

$$\text{A dealer buys a wrist watch for Rs.}225$$

$$\text{Money spent on repairing the watch} = \text{Rs.}15$$

$$\text{Total expenses} = \text{Rs.}(225+15) = \text{Rs.}240$$

$$\text{S.P} = \text{Rs.}300$$

$$\text{Profit} = \text{SP} - \text{CP} = \text{Rs } (300-240) = \text{Rs.}60$$

$$\text{Profit}\% = \frac{60}{240} \times 100$$

$$= 25\%$$

Question 8

Ramesh bought two boxes for Rs.1300. he sold one box at a profit of 20% and the other at a loss of 12%. If the selling price of both boxes

Solution

Let the cost price of the first box be Rs. x

Therefore, the cost of the second box will be Rs.(1300-x)

Profit on the first box = 20%

Loss on the second box = 12%

$$\text{S.P of the first box} = \frac{120x}{100}$$

$$= \frac{6x}{5}$$

$$\text{S.P of the second box} = \text{Rs. } 28600 - \frac{88x}{100}$$

$$= \text{Rs. } 28600 - \frac{22x}{25}$$

Selling prices of both of the boxes are equal. So,

$$= \frac{6x}{5} = \text{Rs. } 28600 - \frac{22x}{25}$$

$$= x = 14300 - \frac{110x}{260}$$

$$= x = 550$$

The cost price of first box is Rs. 550

Cost price of the second box = Rs.(1300-550)

= Rs. 750

The cost prices of the 2 boxes are Rs.550 and Rs.750 respectively.

Question 9

If the selling price of 10 pens is equal to cost price of 14 pens, find the gain percent?

Solution

Let the cost price of one pen be Rs. C

The selling price be Rs. S

Therefore, $10S = 14C$

$$C = \frac{10}{14}S$$

However, the cost price is less than the selling price.

$$\text{Profit} = 140 - 100$$

$$\text{Profit \%} = 40\%$$

The required profit percentage is 40%.

Question 10

If the cost price of 18 chairs be equal to selling price of 16 chairs, find the gain or loss percent

Solution

Let the cost price of one chair be Rs. C

Selling price be Rs. S

Therefore, $18C = 16S$

However, the cost price of the chair is more than that of selling price.

$$\text{Profit\%} = \frac{1800 - 1600}{18}$$

$$= \frac{200}{16}$$

$$= 12.5\%$$

The required profit percent is 12.5%.

Question 11

If the selling price of 18 oranges is equal to the cost price of 16 oranges , find the gain or loss percentage

Solution

S Let the cost price of one chair be Rs. C

Selling price be Rs. S

Therefore, $18C = 16S$

However, the cost price of the chair is more than that of selling price.

$$\text{Profit}\% = \frac{1800-1600}{18}$$

$$= \frac{200}{18}$$

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

The profit % is $11\frac{1}{9}\%$.

Question 12

Ravish sold his motorcycle to Vineet at a loss of 28%. Vineet spent Rs.1680 on it's repairs and sold the motorcycle to Rahul for Rs.35910, thereby making profit of 12.5%, find the cost price of the motorcycle for Ravish.

Solution

Let the cost price of the motor cycle for Ravish be Rs. x

Loss % = 28%

$$\text{S.P} = \frac{72x}{100}$$

Selling price of the motorcycle for ravish = cost price of the motorcycle for vineet

Money spent on repairs = Rs.1680

Therefore, total cost price of the motorcycle for vineet =

$$\text{Rs}(\frac{72x}{100} + 1680(12.5) + 100(100))$$

$$= (35910)(100)(100) = \frac{72x}{100}$$

$$= 35910000 = 8100x + 18900000$$

$$= x = 42000$$

Ravish bought the motorcycle for Rs.42000

Question 13

By selling a book for Rs.258, a bookseller gains 20%. Find how much should he sell to gain 30%?

Solution

Selling price of the book = Rs. 258

Gain = 20%

$$\text{S.P} = \frac{120}{100} \times 258$$

$$= \text{Rs. } 215$$

$$\text{C.P} = \frac{130}{100} \times 215$$

$$= \text{Rs. } 279.50$$

Therefore, the book seller must sell the book at Rs. 279.50 to make 30% profit.

Question 14

A defective briefcase costing Rs.800 is being sold at a loss of 8%. If the price is further reduced by 5%, find its selling price?

Solution

C.P of the briefcase = Rs. 800

Loss = 8%

$$\text{S.P} = \frac{92}{100} \times 800$$

$$= \text{Rs. } 736$$

The price is decreased further by 5 %

$$S.P = \frac{95}{100} \times 736$$

$$= \text{Rs. } 699.20$$

The selling price of the briefcase is Rs. 699.20

Question 15

By selling 90 ball pens for Rs160 a person loses 20%. How many ball pens should be sold at Rs.96 so as to have a profit of 20%?

Solution

$$S.P \text{ of } 90 \text{ ball pens} = \text{Rs } 160$$

$$\text{Loss} = 20\%$$

$$C.P = \frac{100}{20} \times 160$$

$$= \text{Rs. } 200$$

Now,

$$S.P \text{ of } 90 \text{ ball pens} = \text{Rs. } 96$$

$$\text{Profit} = 20\%$$

$$C.P = \frac{100}{120} \times 96$$

$$= \text{Rs. } 80$$

Rs .200 is the cost price of 90 ball pens.

Therefore, Rs.80 is the C.P of $= 90 \left(\frac{80}{200}\right) = 36$ ball pens

Thus, 36 ball pens should be sold at Rs. 96 to earn a profit of 20%

Question 16

A man sells an article at a profit of 25%. If he had bought it at a 20% less and sold it for Rs.36.75 less, he would have gained 30%. Find the cost price of the article

Solution

Let the C.P be the article be Rs. x

$$\text{Profit} = 25\%$$

$$\text{Original S.P} = x + \frac{25}{100}x$$

$$= \text{Rs. } \frac{5x}{4}$$

If he purchased it at 20% less,

$$C.P = x - \frac{20}{100}x$$

$$= \text{Rs. } \frac{4x}{5}$$

He sold the article at Rs. 36.75

$$\text{So, the selling price} = \text{Rs. } \frac{5x}{4} - 36.75$$

Given, that he would have gained 30% selling at that price.

$$\text{Therefore, gain\%} = S.P - C.P$$

$$= \frac{5x}{4} - 36.75 - \frac{4x}{5}$$

$$= \frac{25x - 16x}{20} - 36.75$$

$$\text{So, gain \%} = \frac{9x}{20} - 36.75 - \frac{4x}{5} (100)$$

$$= 18375x = 18375105$$

$$= x = 175$$

The cost price of the article is Rs. 175.

Question 17

A dishonest shopkeeper professes to sell pulses at his cost price but uses a false weight of 950 gm for each kilogram. Find his gain percentage.

Solution

He sells 950 gm pulses and gets a grain of 50 gm.

If he sells 10 gm of pulses, he will gain:

$$\frac{50}{950} \times 100$$

His gain percentage is $55\frac{1}{9}\%$

Question 18

A dealer bought two tables for Rs.3120. he sold one of them at a loss of 15% and the other at a gain of 36%. . Then, he found that each table was sold for the same price. Find the cost price of each table.

Solution

Given that the selling price is same for both the tables.

Let the C.P of 1 table be x

Then the C.P of the other table be = Rs.3120-x

Loss on the first table = 15%

$$\text{Therefore, S.P} = \frac{85x}{10}$$

$$= 0.85x$$

Gain on the second table = 36%

$$136(3120-x)$$

Since both the tables have the same S.P

$$2.21x = 4243.20$$

$$= x = 1920$$

The cost price of the table is Rs.1920

The cost price of the other table is Rs.(3120-1920) = Rs.1200

Question 19

Mariam bought two fans Rs.3605. she sold one of them at a profit of 15% and the other one at a loss of 9%. If Mariam obtained the same amount for each fan, find the cost price of the each of the fans.

Solution

It is given that the S.P is same for both of the fans.

Let the C.P of the first fan be Rs. x

Therefore, C.P of the second fan be Rs. (3605-x)

Profit on the first fan = 15%

Loss on the second fan = 6%

$$\text{For the first fan, S.P} = \frac{115x}{100}$$

$$= \frac{23x}{20}$$

$$\text{For the second fan, S.P} = \frac{91x}{100}$$

Since, S.P of both the fans is the same

$$= \frac{23x}{20} = 3605 - \frac{91x}{100}$$

$$= x = 1592$$

C.P of the first fan = Rs. 1592

C.P of the second fan = Rs.(3605-1592)

$$= \text{Rs. } 2012.50$$

The cost prices of the both of the fans are Rs.1592 and Rs. 2012.50 respectively.

Question 20

Some toffees are bought at a rate of 11 for Rs.10 and the same number at the rate of 9 for Rs.10. if the whole lot is sold at one per toffee, find the gain or loss percent on the whole transaction.

Solution

Let the total number of toffees bought be Rs. x

Let x_2 at the rate of 11 are bought for Rs.10,

$$\text{Total money spent on toffees} = \frac{200x}{198}$$

$$= \frac{100x}{99}$$

It is given that x toffees are sold at Re. 1 per toffee.

Therefore, the selling price of x toffees = Rs. x(1)

As C.P is more than S.P, it will be the loss.

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

$$= \frac{100x}{99} - x$$

$$= \frac{x}{99}$$

$$\text{Loss}\% = 1\%$$

The total loss on the whole transaction would be 1%

Question 21

A tricycle is sold at a gain of 16%. Had it been sold for Rs.100 more, the gain would have been 20%. Find the C.P of the tricycle.

Solution

Let the S.P of the tricycle be Rs. x

Let the C.P of the tricycle be Rs. y

$$\text{Gain \%} = 16\%$$

Then we have,

$$= x = y + \frac{16y}{100}$$

$$= x = y + 0.16y$$

When S.P increases by Rs.100, we get

$$= x + 100 = y + \frac{20y}{100}$$

Putting $x = 1.16y$

$$= 1.16y + 100 = y + 0.2y$$

$$= 1.16y + 100 = 1.2y$$

$$= y = 2500$$

The C.P of the cycle is 2500

Thus, C.P of the tricycle is Rs. 2500.

Question 22

Shabana bought 16 dozens ball pens and sold them at a loss of to S.P of 8 ball pens. Find:

(i) Her loss percent

(ii) P of 1 dozen ball pens, if she purchased these 16 dozens ball pens for Rs.576

Solution

(i) Number of pens bought = $16(12) = 192$

Let S.P of one pen be Rs. x

Therefore, S.P of 192 pens = $192x$

C.P of 8 pens = Rs. $8x$

It is given that S.P of 8 pens is equal to the loss on selling 192 pens.

Therefore, loss = Rs. $8x$

C.P of 192 pens = Rs 576

Loss = C.P – S.P

$$= 8x = 576 - \frac{192x}{200}$$

$$= 576x = 576200$$

$$= x = 2.88$$

Therefore, loss = RS.23.04

Loss% = 4%

(ii) P of 1 pen = Rs.2.88

Therefore, S.P of 1 dozen pens = $12x = 12(2.88)$

$$= \text{Rs.}34.56$$

Question 23

The difference between two selling pieces of a shirt at a profit of 4 % and 5% is Rs.6. find:

(i) P of the shirt

(ii) The two selling prices of the shirt

Solution

Let the C.P of both the shirt be RS. X

For 1 shirt profit = 4%

Profit% = Rs. $0.04x$

S.P = Rs. $1.04x$

For 2 shirt profit = 5%

Profit% = Rs. $0.05x$

S.P = Rs. $1.05x$

It is given that the difference between their profits is Rs.6

$$\text{So, } 1.05x - 1.04x = 6$$

$$= x = \text{Rs.}600$$

Thus, C.P = Rs.600

S.P of 1 shirt 1 = Rs. $1.04x = \text{Rs. } 1.04(600) = \text{Rs. } 624$

S.P of 1 shirt 2 = Rs. $1.05x = \text{Rs. } 1.05(600) = \text{Rs. } 630$

Question 24

Toshiba bought 100 hens for Rs.8000 and sold 20 of these at a gain of 5%. At what gain percent she must sell the remaining hens so as to gain 20% on the whole?

Solution

C.P of 100 hens = RS. 8000

$$\text{Cost of one hen} = \frac{8000}{100}$$

Rs. 80 C.P of 20 hens = Rs $(80 \times 20) = \text{Rs. } 1600$

Gain = 5%

$$\text{S.P} = \frac{105}{100} \times 1600$$

$$= \text{Rs. } 1680$$

C.P of 80hens = Rs. $(80 \times 80) = \text{Rs. } 6400$

Gain on 80 hens – C.P 80 hens

Gain on 100 hens = gain on 80 hens + gain on 20 hens

$$= 80 + \text{S.P of 80 hens} - 6400$$

$$\text{S.P of 80 hens} = \text{Rs } (1600 + 6400 - 80)$$

$$\text{S.P of 80 hens} = \text{Rs. } 7920$$

Gain on 80 hens = S.P of 80 hens - C.P of 80 hens

$$= \text{Rs. } (792 - 6400) = \text{Rs. } 1520$$

$$\text{Gain \% 80 hens} = \frac{1520}{6400} \times 100$$

$$= 23.75\%$$

Therefore, Toshiba gained 23.75% on 80 hens.