

Profit and Loss

(Note: Before you read this lesson Please read percentages lesson to understand this lesson better [Click here](#))

Profit loss and Discount is an application of percentages.

Cost Price: The rate at which a merchant buys goods. This is his investment

Selling Price: The rate at which a merchant sells his goods.

Marked Price: The rate at which a merchant rises his price above the cost price (may be anticipating some hagglers)

Profit Case:



Loss Case:



Key Formulas:

Profit or Gain = Selling Price - Cost Price = SP - CP

Profit = CP × (Profit%)

Loss = Cost price - Selling price = CP - SP

Loss = CP × (Loss%)

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

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

Important: Profit or Loss always calculated on Cost price Only.

Discount = Marked price - Selling Price = MP - SP

$$\text{Discount \%} = \frac{\text{MP} - \text{SP}}{\text{MP}} \times 100 = \frac{\text{Discount}}{\text{MP}} \times 100$$

Calculating Selling price from Cost price:

In the profit case selling price is greater than cost price, and in this case we gain some profit. That is we are increasing the cost price by some percentage to get the selling price. This can be done in several ways

In profit case

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

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

In loss case

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

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

Calculating Selling Price from Marked Price:

$$\text{MP} - \text{MP} \times \text{discount}\% = \text{SP}$$

$$\text{MP} \times (100 - \text{discount}\%) = \text{SP}$$

Calculating Cost price from Selling Price:

This is the reverse operation of the above

$$\text{In profit case: } \frac{\text{SP}}{(100 + \text{Profit}\%)} = \text{CP}$$

$$\text{In loss Case: } \frac{\text{SP}}{(100 - \text{Loss}\%)} = \text{CP}$$

Practice Problems

1. A boy buys eggs at 10 for Rs. 1.80 and sells them at 11 for Rs. 2. What is his gain or loss per cent?

To avoid fractions, let the number of eggs purchased be, LCM of 10 and 11 = 110

$$\text{CP of 110 eggs} = \frac{110 \times 1.80}{10} = \text{Rs. 19.80}$$

$$\text{SP of 110 eggs} = \frac{110 \times 2.00}{11} = \text{Rs. 20.00}$$

$$\text{Profit per cent} = \frac{0.20 \times 100}{19.80} = 1.01\%$$

2. A woman buys apples at 15 for a rupee and the same number at 20 a rupee. She mixes and sells them at 35 for 2 rupees. What is her gain per cent or loss per cent?

Suppose the woman buys (LCM of 15, 20 and 35) = 420 apples

Cost at the rate of 15 per rupee = $420/15 = 28$

Cost at the rate of 20 per rupee = $420/20 = 21$

Total cost for 840 apples = Rs. 49

SP for 840 apples = $\frac{840 \times 2}{35} = 48$

Loss per cent = $\frac{1 \times 100}{49} = 2.04\%$.

3. Goods are purchased for Rs. 450 and one-third is sold at a loss of 10%. At what profit per cent should the remainder be sold so as to gain 20% on the whole transaction?

Assume Total cost price of goods = Rs. 450

Our target SP of total goods = $\frac{120}{100} \times 450 = \text{Rs. } 540$

One-third of the goods costs = $450/3 = \text{Rs. } 150$

SP of one-third goods = $\frac{90}{100} \times 150 = \text{Rs. } 135$.

SP of the remaining goods = $540 - 135 = \text{Rs. } 405$

CP of remaining (two-thirds) goods = Rs. 300

Hence, profit per cent = $\frac{105}{300} \times 100 = 35\%$

Alternate method:

Applying weighted average, one-third of quantity there is a loss of 10% (or a profit of -10%) and balance two-thirds gives a profit of x%.

Hence, overall profit is given by $\frac{1}{3}(-10\%) + \frac{2}{3}(x\%) = 20\%$ thus $x = 35\%$.

4. A reduction of 10% in the price of sugar enables a man to buy 25 kg more for Rs. 225. What is the original price of sugar (per kilogram)?

Let the original price be x. Then Original quantity = $\frac{225}{x}$

New price = 90%(x) (if a number reduced by 10% it becomes 90% of the original number)

$$\text{New quantity} = \frac{225}{0.9x}$$

$$\begin{aligned} \text{Equating } \frac{225}{0.9x} - \frac{225}{x} &= 25 \\ \Rightarrow x &= \text{Rs. } 1 \end{aligned}$$

Alternate method:

Price x Quantity = Expenditure		
↓	↓	↓
K%	No change	K%

If we keep quantity constant, and price got changed by K%, expenditure also got changed by K%

When the price of the sugar got reduced by 10%, Now we could pay 10% less than the actual expenditure. But used the savings to take extra 25 kgs of sugar so

$$\text{CP of 25 kg} = \frac{10}{100} \times 225 = \text{Rs. } 22.5;$$

$$\text{Reduced CP of 1 kg} = \frac{22.5}{25} = \text{Re. } 0.90$$

We got this reduced price after we reduced the original cost price by 10%. To calculate the original cost price we need to divide = Original price of sugar (per kg) can be $= \frac{0.90}{90} \times 100 = \text{Re. } 1$.

Since the price is reduced by 10% (i.e. $\frac{1}{10}$), the new price has become $\frac{9}{10}$ the original. So, the consumption becomes the $\frac{10}{9}$, i.e. an increase of $\frac{1}{9}$

Therefore by unitary method

$\frac{1}{9}$	→	25 kg
1	→	? = 225 kg

Now, 225 kg is worth Rs. 225. So original price of 1 kg is Re. 1.

5. A man sells an article at a profit of 25%. If he had bought it at 20% less and sold it for Rs. 10.50 less, he would have gained 30%. Find the CP of the article.

Let the cost price = x ; Selling Price = 125%(x)

New Cost Price = 80%(x) ; New SP = 125%(x) – 10.50

But new SP = 130% of new CP = 130%(80%x)

Therefore, $130\%(80\%x) = 125\%(x) - 10.50 \Rightarrow 104\%(x) = 125\%(x) - 10.50$

$$\Rightarrow 21\%(x) = 10.50 \Rightarrow x = 10.50 \times \frac{100}{21} \Rightarrow \text{Rs. } 50$$

Alternate Method:

Let the CP be Rs. 100. So, SP is Rs. 125.

The new CP is Rs. 80. So the new SP = $130\%(80) = \text{Rs. } 104$

So the difference of SP's = Rs. 21.

Now, if the difference is 21, CP is 100

So, when the difference is 10.5, the CP is $\Rightarrow \frac{10.5}{21} \times 100 \Rightarrow \text{Rs. } 50$.

6. Sumit buys 9 books for Rs. 100 but sells 8 for Rs. 100. What is the net per cent profit?

SP of 8 books = Rs. 100

$$\text{SP of 1 book} = \frac{100}{8} = \text{Rs. } 12.50$$

SP of 9 books = $12.50 \times 9 = \text{Rs. } 112.50$

Profit per cent = 12.5%

Alternative method:

CP of 9 books = SP of 8 books

CP of 8 books + CP of 1 book = SP of 8 books

CP of 1 book = SP of 8 books – CP of 8 books

Profit = CP of 1 book.

$$\text{Profit per cent} = \frac{1}{8} \times 100 = 12.5$$

7. A grain dealer cheats to the extent of 10% while buying as well as selling by using false weights. His total gain is

$$\text{Gain per cent} = \frac{(100 + \text{common gain}\%)^2}{100} - 100$$

$$\text{Gain per cent} = \left[\frac{(100 + 10)^2}{100} \right] - 100 = \left(\frac{12100 - 10000}{100} \right) = 21$$

8. A retailer buys goods at 10% discount on its marked price and sells them at 20% higher than the marked price.

What is his profit per cent?

Let, marked price of the article = Rs. 100, Then, its cost price = Rs. 100 - Rs. 10 = Rs. 90, And selling price = Rs.

$100 + \text{Rs. } 20 = \text{Rs. } 120$

Therefore, Profit = Rs. 30 on Rs. 90 i.e. $\frac{1}{3} = 33.33\%$

9. A dishonest merchant professes to sell his goods at cost price, but uses a weight of 900 grams for one kg. weight. What is his profit per cent?

Assume 1gm costs 1 rupee. The merchant gives 900 grams charging the price of 1000 grams.

His gain is 100 grams on every 900 grams. i.e., for Rs.900 investment his gain is Rs.100.

Therefore, Profit percent = $\frac{100}{900} \times 100 = 11\frac{1}{9}\%$

10. A merchant professes to sell goods at 20% profit but uses weight of 900 grams in place of a kilogram. What is his actual profit per cent?

Assume 1gm costs 1 rupee. The merchant gives 900 grams charging the price of 1200 grams.

Therefore, His gain is 300 grams on every 900 grams or on investment of Rs.900 his gain is Rs.300.

Therefore, Profit per cent = $\frac{300}{900} \times 100 = 33.33\%$

11. A shopkeeper buys some pens. If he sells them at Rs. 13 per pen, his total loss is Rs. 150 but on selling them at Rs. 15 per pen, his total gain is Rs. 100. How many pens did he sell?

Difference in sales amount due to change in selling price = Rs. 150 + Rs. 100 = Rs. 250

Difference in selling price per pen = Rs. 15 - Rs. 13 = Rs. 2

Therefore, On selling 1 pen, sales amount is increased by Rs. 2 in second case.

Therefore, Total pens sold = $\frac{250}{2} = 125$ pens

12. A man sold an article at 10% profit. Had it been sold for Rs. 50 more, he would have gained 15%. Cost Price of the article is:

Let us assume cost price of the article is Rs.100x. then selling price = 110x. But if he sold the product for Rs.50 more his profit is 15%. In this case his selling price is 115x. But the difference in the selling prices were gives as Rs.50. So $115x - 110x = 50$, therefore $x = 10$. Substituting in cost price, CP = Rs.1000

Alternate method:

Difference in two selling prices = $15\% - 10\% = 5\%$ of cost price

Actual difference in two selling price = Rs. 50 (i.e. 10 times of 5)

Therefore, Cost Price = $10 \times \text{Rs. } 100 = \text{Rs. } 1000$

13. A machine is sold at a loss of 10%. Had it been sold at a profit of 15%, it would have fetched Rs. 50 more. The cost price of the machine is:

Let us assume cost price of the article is Rs.100x. then selling price = 90x. But if he sold the product for Rs.50 more his profit is 15%. In this case his selling price is 115x. But the difference in the selling prices were gives as Rs.50.

So $115x - 90x = 50$, therefore $x = 2$. Substituting in cost price, CP = Rs.200

Alternate method:

Difference in two selling prices = $10\% - (-15\%) = 10\% + 15\% = 25\%$ of cost price

Actual difference in two selling price = Rs. 50 (i.e. 2 times of 25)

Therefore, Cost Price = $2 \times \text{Rs. } 100 = \text{Rs. } 200$

14. A bicycle is sold at 10% profit. Had it been sold for Rs. 10 less, the profit would have been 5% only. What is the

cost price of the bicycle?

Difference in two selling prices = $10\% - 5\% = 5\%$ of cost price

Actual difference in two selling price = Rs. 10 (i.e. 2 times of 5)

Therefore, Cost Price = $2 \times \text{Rs. } 100 = \text{Rs. } 200$

15. A shopkeeper purchases goods at $\frac{19}{20}$ of its marked price and sells them at 14% more than its marked price. Find his profit per cent.

Let marked price of the goods = Rs. 100. Then cost price = $\text{Rs. } 100 \times \frac{19}{20} = \text{Rs. } 95$

Selling price = $\text{Rs. } 100 + 14\% \text{ of Rs. } 100 = \text{Rs. } 114$

Therefore, Profit = $\text{Rs. } 114 - 95 = \text{Rs. } 19$ on Rs. 95

Therefore, Profit = $\frac{19}{95} = \frac{1}{5} = 20\%$

16. Some quantity of coffee is sold at Rs. 22 per kg, making 10% profit. If total gain is Rs. 88, what is the quantity of coffee sold?

Profit = 10% of Cost price = $\frac{1}{10}$ of Cost Price

= $\frac{1}{11}$ of selling Price = $\frac{1}{11} \times \text{Rs. } 22 = \text{Rs. } 2$ per kg.

But, total gain = Rs. 88

Therefore, Quantity sold = $\frac{88}{2} = 44$ kg.

17. A merchant fixed selling price of his articles at Rs. 700 after adding 40% profit to the cost price. As the sale was very low at this price level, he decided to fix the selling price at 10% profit. Find the new selling price.

New Selling price = $\text{Rs. } 700 \times \frac{100 + 10}{100 + 40} = \text{Rs. } 700 \times \frac{110}{140} = \text{Rs. } 550$

18. A shopkeeper bought some apples at the rate of Rs. 16 per dozen. Due to harsh climate 20% of the apples bought were rotten during the transportation. At what rate of per dozen should he sell the remaining apples so as to gain 30% on the total cost price?

Since, 20% of the quantity is spoiled, selling the apples at cost price will result in 20% loss.

Therefore, We are to find the selling price which gives him 30% profit instead of a loss of 20%.

Therefore, Selling Price = $\text{Rs. } 16 \times \frac{130}{80} = \text{Rs. } 26$ per dozen.

19. A trader buys oranges at 7 for a rupee and sells them at 40% profit. How many oranges does he sell for a rupee?

Cost price of 1 apple = $\frac{1}{7}$

Selling price of 1 apple at 40% profit is equal to 140% of its cost price.

Therefore, Selling price of 1 apple = $\frac{1}{7} \times \frac{140}{100} = \frac{1}{5}$

Therefore, 5 oranges are sold are 1 rupee.

20. On selling mangoes at 36 for a rupee, a shopkeeper loses 10%. How many mangoes should he sell for a rupee

in order to gain 8%?

Selling price of 1 apple = Re. $\frac{1}{36}$

Therefore, New selling price = $\frac{1}{36} \times \frac{108}{90} = \frac{1}{30}$

Therefore, For one rupee, he should sell 30 mangoes.

21. A manufacturer sells a scooter at 10% profit to wholesaler who in turn sells it to a retailer at 20% profit. If the price paid by the retailer is Rs. 13200, how much the scooter costs to the manufacturer?

Let us calculate the cost to the manufacturer = $13200 \times \frac{100}{120} \times \frac{100}{110} = \text{Rs. } 10000$

22. A Watch is sold at 10% discount on its marked price of Rs. 480. If the retailer makes 20% profit on the cost price, find the cost price of the watch.

If marked price is Rs. 100, selling price = $100 - 10 = \text{Rs. } 90$

If cost price is Rs. 100, selling price = $100 + 20 = \text{Rs. } 120$

Therefore, Cost price = $480 \times \frac{90}{100} \times \frac{100}{120} = \text{Rs. } 360$

23. A shopkeeper allows 25% discount on the marked price of his articles and hence gains 25% of the Cost Price. What is the marked price of the article on selling which he gains Rs. 120?

Marked price of the article = $\text{Rs. } 120 \times \frac{125}{25} \times \frac{100}{75} = \text{Rs. } 800$

Hint: If profit is Rs. 25, then Selling price = $\text{Rs. } 100 + \text{Rs. } 25 = \text{Rs. } 125$.

If marked price is Rs. 100, then Selling price = $\text{Rs. } 100 - \text{Rs. } 25 = \text{Rs. } 75$.

24. A man purchased two articles for Rs. 10000 each. On selling first, he gains 20% and on the other, he loses 20%. What is profit/loss in the transaction?

Here, the cost price of both the articles are same. Therefore, Profit made on one item is exactly equal to loss suffered on the other.

Therefore, No profit, no loss.

25. A man sold two articles for Rs. 10000 each. On selling first, he gains 10% and on the other, he loses 10%. What is profit/loss in the transaction.

$$\text{Loss \%} = \frac{(\text{Common Gain and Loss})^2}{100} = \frac{10^2}{100} = 1\%$$

26. Two tables are purchased for the total cost of Rs. 5000. First table is sold at 40% profit and second at 40% loss. If selling price is same for both the tables, what is the cost price of the table that was sold at profit?

140% of cost price of first table = 60% of cost price of second table.

Therefore, Cost price of first table : Cost price of second table

$$= 60 : 140 = 3 : 7$$

Therefore, Cost price of first table = $\frac{3}{10} \times 5000 = \text{Rs. } 1500$

27. A man bought some oranges at the rate of 3 oranges for one rupee and equal number of oranges at the rate of 2 oranges for one rupee. What is his profit, if he sells 2 oranges for one rupee.

Let us take LCM of quantities purchased and sold i.e. LCM of 3, 2 and 2 is 6.

Now, cost price of 6 oranges @ 3 oranges for a rupee = $\frac{1}{3} \times 6 = \text{Rs. } 2$

And, cost price of 6 oranges @ 2 oranges for a rupee = $\frac{1}{2} \times 6 = \text{Rs. } 3$

Therefore, Cost price of 12 (i.e. 6 + 6) oranges = Rs. 2 + Rs. 3 = Rs. 5

Selling price of 12 oranges = $\frac{1}{2} \times 12 = \text{Rs. } 6$

Profit = Rs. 6 - Rs. 5 = Re. 1 on Rs. 5

Therefore, Profit percent = $\frac{1}{5} = 20\%$

28. If the cost price of 11 oranges is equal to selling price of 10 oranges. Find profit per cent.

Profit on selling 10 oranges

= Cost Price of 11 oranges - Cost Price of 10 oranges

= Cost price of 1 orange

Therefore, Profit % = $\frac{1}{10} = 10\%$

29. On selling 10 articles, a merchant loses equal to cost price of 2 articles. Find his loss per cent.

Loss % = $\frac{2}{10} = \frac{1}{5} = 20\%$

MCQ's

1. A dealer marks his goods 20% above cost price. He then allows some discount on it and makes a profit of 8%.

The rate of discount is :

- a. 12%
- b. 10%
- c. 6%
- d. 4%

Correct Option : B

Explanation:

Let C.P.=Rs.100

Marked price = Rs.120, S.P. = Rs.108

Discount = $\left[\frac{12}{120} \times 100 \right] \% = 10\%$

2. A cloth merchant has announced 50% rebate in prices. If one needs to have a rebate of Rs.40, then how many shirts, cash costing Rs.32, he should purchase ?

- a. 6
- b. 5
- c. 10
- d. 7

Correct Option : B

Explanation:

Suppose the number of shirts = x.

Then, rebate = $\left[\frac{25}{100} \times 32x \right] = 8x$

$8x=40$ or $x = 5$.

3. The price of an article was increased by $p\%$. Later the new price was decreased by $p\%$. If the latest price was Rs.1, the original price was :

a. Rs. 1

b. $\left[\frac{1-p^2}{100} \right]$

c. $\left[\frac{10000}{10000-p^2} \right]$

d. $\left[\sqrt{\frac{1-p^2}{100}} \right]$

Correct Option : C

Explanation:

Let the original price = Rs.x

Price after $P\%$ increase = $(100+P)\%$ of x

$$= \frac{(100+P)x}{100}$$

New price after $P\%$ decrease

$$= (100-P)\% \text{ of } \left[\frac{(100+P)x}{100} \right]$$

$$= \frac{(100-P)}{100} \times \frac{(100+P)}{100} \times x$$

$$= \frac{(100-P)(100+P)}{100 \times 100} \times x = 1$$

$$\text{or } x = \frac{100 \times 100}{(100-P)(100+P)} = \frac{10000}{10000-P^2}$$

4. The difference between a discount of 40% on Rs.500 and two successive discount of 36% and 4% on the same amount is :

a. 0

b. Rs.2

c. Rs.1.93

d. Rs.7.20

Correct Option : D

Explanation:

Sale after 40% discount = 60% of Rs.500

=Rs.300. Price after 36% discount = 64% of Rs.500=Rs.320.

Price after next 4% discount = 96% of Rs.320 = Rs.307.20

Difference in two prices = Rs.7.20

5. Tarun bought a T.V with 20% discount on the labelled price. Had he bought it with 50% discount, he would have saved Rs.500. At what price did he buy the T.V ?

a. Rs.5000

b. Rs.10,000

c. Rs.12000

d. Rs.6000

Correct Option : B

Explanation:

Let the labelled price be Rs.100, S.P in 1st case = Rs.80, S.P in 2nd case = Rs.75. If saving is Rs.5, labelled price

$$= \text{Rs.} \left[\frac{(100}{5} \times 500] \right]$$

$$= \text{Rs.} 10000$$

6. A man purchases an electric heater whose printed price is Rs.160. If he received two successive discounts of 20% and 10%; he paid :

a. Rs.112

b. Rs.129.60

c. Rs.119.60

d. Rs.115.60

Correct Option : D

Explanation:

Price after 1st discount = 100% of Rs.160 = Rs. 128

Price after 2nd discount = 90% of Rs.128 = Rs.115.20

7. The marked price is 10% higher than the cost price. A discount of 10% is given on the marked price. In this kind of sale, the seller

a. bears no loss, no gain

b. gains

c. losses

d. None of these

Correct Option : C

Explanation:

Let C.P = Rs.100

Marked price = Rs.110

S.P = 90 % of Rs.110 = Rs.99

Loss = 1%

8. A trader lists his articles 20% above C.P and allows a discount of 10% on cash payment. His gain percent is :

a. 10%

b. 8%

c. 6%

d. 5%

Correct Option : B

Explanation:

Let C.P = Rs.100

Then, marked price = Rs.120

S.P = 90% of Rs.120= Rs.108

Gain = 8%

9. While selling a watch, a shop-keeper gives a discount of 5%. If he gives a discount of 7%, he earns Rs.15 less as profit. The marked price of the watch is :

a. Rs.697.50

b. Rs.712.50

c. Rs.787.50

d. None of these

Correct Option : D

Explanation:

Let the marked price be Rs. x

Then (7% of x) - 15 = 5% of x

$$\text{or } \frac{7x}{100} - \frac{5x}{100} = 15 \quad \text{or } x = 750$$

10. A shop-keeper earns a profit of 12% on selling a book at 10% discount on the printed price. The ratio of the cost price and the printed price of the book is :

a. 45 : 56

b. 50 : 61

c. 99 : 125

d. None of these

Correct Option : A

Explanation:

Let the printed price of the book be Rs.100. After a discount of 10% S.P= Rs.90 Profit earned = 12%

C.P. of the book =

$$\text{Rs. } \left[\frac{100}{112} \times 90 \right] = \text{Rs. } \frac{1125}{14}$$

$$\text{Hence, (C.P) : (printed price)} = \frac{1125}{14} : 100$$

or 45:56

11. A retailer buys a sewing machine at a discount of 15% and sells it for Rs.1955. Thus he makes a profit of 15%.

The discount is :

a. Rs.270

b. Rs.290

c. Rs.300

d. None of these

Correct Option : C

Explanation:

$$\text{Cost price for the retailer} = \frac{100}{(100 + 15)} \times 1955 = 1700$$

But this price is what retailer got after having got a discount of 15%.

Let the marked price be Rs.x . Purchase price by the retailer = (100-15)% of Rs.x.

$$\text{So } \frac{85}{100} \times x = 1700 \Rightarrow x = 2000$$

Discount received by retailer

$$= (15\% \text{ of Rs.}2000) = \text{Rs.}300$$

12. An umbrella marked at Rs.80 is sold for Rs.68. The rate of discount is :

a. 15%

b. 12%

c. $17\frac{11}{17}\%$

d. 20%

Correct Option : A

Explanation :

$$\text{Discount} = \left[\frac{12}{80} \times 100 \right] \% = 15\%$$

13. Kabir buys an article with 50% discount on its marked price. He makes a profit of 10% by selling it at Rs.660.

The marked price is :

- a. Rs.600
c. Rs.800

- b. Rs.700
d. 685

Correct Option : C

Explanation:

$$\text{Cost price for Kabir} = \frac{100}{100+10} \times 660 = 600$$

But this price is what he got after having a discount of 50%. Let the marked price be x.

$$\text{Then } (100 - 25)\% \text{ of } x = 600 \Rightarrow x = \text{Rs.800}$$

Alternatively:

Let the original price be Rs.x

$$\text{C.P} = (x - 50\% \text{ of } x) = \frac{3x}{4}$$

$$\text{S.P} = \left[\frac{3x}{4} + 10\% \text{ of } \frac{3x}{4} \right] = \frac{33x}{40}$$

$$\frac{33x}{40} = 660 \Rightarrow x = 800$$

14. The ratio of the prices of three different types of cars is 4:5:7. If the difference between the costliest and the cheapest cars is Rs.60000, the price of the car of modest price is :

- a. Rs.80000
c. Rs.140000

- b. Rs.100000
d. Rs.120000

Correct Option : B

Explanation:

Let the price be 4x, 5x and 7x rupees.

$$\text{Then, } 7x - 4x = 60000 \Rightarrow x = 20000.$$

$$\text{Required price} = 5x = \text{Rs.100000}.$$

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

- a. 50%
c. 60%

- b. 56.8%
d. 70.28%

Correct Option : B

Explanation:

Let original price = Rs.100. Price after first discount = Rs.90. Price after second discount

$$= \text{Rs.} \left[\frac{80}{100} \times 90 \right] = \text{Rs.72}$$

$$\text{Price after third discount} = \text{Rs.} \left[\frac{60}{100} \times 72 \right]$$

$$= \text{Rs.43.20}$$

$$\text{Single discount} = (100 - 43.20) = 56.8\%$$

16. Subhash purchased a tape recorder at $\frac{9}{10}$ th of its selling price and sold it at 8% more than its S.P. His gain is :

- a. 8%
c. 18%

- b. 10%
d. 20%

Correct Option : D

Explanation:

Let the S.P be Rs.x

Then, C.P paid by Subhash = Rs. $\frac{9x}{10}$

S.P. received by Subhash = (108% of Rs.x)

= Rs. $\frac{27x}{25}$

Gain = Rs.

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