Exercise 8.2

1. A man got a 10% increase in his salary. If his new salary is ₹1,54,000, find his original salary.
   Solution:

   Let the original salary be \( x \).
   Given that, the new salary is ₹1,54,000.
   Original salary + Increment = New salary
   Given that the increment is 10% of the original salary.
   \[
   \therefore x + \left(\frac{10}{100} \times x\right) = 154000
   \]
   \[
   x + \frac{10x}{11} = 154000
   \]
   \[
   \frac{11x + 10x}{11} = 154000
   \]
   \[
   21x = 154000 \times 11
   \]
   \[
   x = 140000
   \]
   \[
   \therefore \text{the original salary was ₹1,40,000.}
   \]

2. On Sunday 845 people went to the Zoo. On Monday only 169 people went. What is the per cent decrease in the people visiting the zoo on Monday?
   Solution:

   Given that on Sunday, 845 people went to the zoo and on Monday, 169 people went.
   Decrease in the number of people = \( 845 - 169 = 676 \)
   Percentage decrease = \( \left(\frac{\text{Decrease in the number of people} \times 100}{\text{Number of people who went to zoo on sunday}}\right) \% \)
   = \( \left(\frac{676 \times 100}{845}\right) \% \)
   = 80%

3. A shopkeeper buys 80 articles for ₹2,400 and sells them for a profit of 16%. Find the selling price of one article.
   Solution:

   Given that the shopkeeper buys 80 articles for ₹2,400.
   Cost of one article = \( \frac{2400}{80} = ₹30 \)
   Profit percent = 16
   Profit percent = \( \frac{\text{Profit}}{\text{C.P.}} \times 100 \)
   \[
   16 = \frac{\text{Profit}}{30} \times 100
   \]
   \[
   \text{Profit} = \frac{16 \times 30}{100}
   \]
   = 4.8
   \[
   \therefore \text{Selling price of one article} = \text{C.P.} + \text{Profit}
   \]
   = ₹ (30 + 4.80)
   = ₹34.80
4. The cost of an article was ₹15,500. ₹450 were spent on its repairs. If it is sold for a profit of 15%, find the selling price of the article.

Solution:

Total cost of an article = Cost + Overhead expenses
= ₹15500 + ₹450
= ₹15950

Profit percent = 15

\[
\text{Profit percent} = \frac{\text{Profit}}{\text{C.P}} \times 100
\]

\[
15 = \frac{\text{Profit}}{₹15950} \times 100
\]

\[
\text{Profit} = \frac{15 \times ₹15950}{100} = 2392.50
\]

∴, Selling price of the article = C.P. + Profit
= ₹ (15950 + 2392.50)
= ₹18342.50

5. A VCR and TV were bought for ₹8,000 each. The shopkeeper made a loss of 4% on the VCR and a profit of 8% on the TV. Find the gain or loss percent on the whole transaction.

Solution:

C.P. of a VCR = ₹8000
The shopkeeper made a loss of 4% on VCR.
This means if C.P. is ₹100, then S.P. is ₹96.
When C.P. is ₹8000,

\[
\text{S.P.} = \left( \frac{96}{100} \times 8000 \right) = ₹7680
\]

C.P. of a TV = ₹8000
The shopkeeper made a profit of 8% on TV.
This means that if C.P. is ₹100, then S.P. is ₹108.
When C.P. is ₹8000,

\[
\text{S.P.} = \left( \frac{108}{100} \times 8000 \right) = ₹8640
\]

Total S.P. = ₹7680 + ₹8640 = ₹16320
Total C.P. = ₹8000 + ₹8000 = ₹16000

Since, total S.P. > total C.P.⇒ profit.
Profit = ₹16320 − ₹16000 = ₹320
Profit % on the whole transaction = Profit/ Total CP × 100 = 320/16000 × 100 = 2%
∴, the shopkeeper had a gain of 2% on the whole transaction.

6. During a sale, a shop offered a discount of 10% on the marked prices of all the items. What would a customer have to pay for a pair of jeans marked at ₹1450 and two shirts marked at ₹850 each?

Solution:

Total marked price = ₹ (1450 + 2 × 850)
= ₹ (1450 + 1700)
= ₹3,150
Given that, discount percentage = 10%
Discount = ₹ \left( \frac{10}{100} \times 3150 \right) = ₹ 315
Also, Discount = Marked price − Sale price
₹ 315 = ₹ 3150 − Sale price
∴ Sale price = ₹ (3150 − 315)
= ₹ 2835
∴ the customer will have to pay ₹ 2,835.

7. A milkman sold two of his buffaloes for ₹ 20,000 each. On one he made a gain of 5% and on the other a loss of 10%. Find his overall gain or loss.
(Hint: Find CP of each)
Solution:
S.P. of each buffalo = ₹ 20000
The milkman made a gain of 5% while selling one buffalo.
This means if C.P. is ₹ 100, then S.P. is ₹ 105.
C.P. of one buffalo = \frac{100}{105} \times 20000
= ₹ 19,047.62
Also, the second buffalo was sold at a loss of 10%.
This means if C.P. is ₹ 100, then S.P. is ₹ 90.
∴ C.P. of other buffalo = \frac{100}{90} \times 20000
= ₹ 22222.22
Total C.P. = ₹ 19047.62 + ₹ 22222.22 = ₹ 41269.84
Total S.P. = ₹ 20000 + ₹ 20000 = ₹ 40000
Loss = ₹ 41269.84 − ₹ 40000 = ₹ 1269.84
∴, the overall loss of milkman was ₹ 1,269.84.

8. The price of a TV is ₹ 13,000. The sales tax charged on it is at the rate of 12%. Find the amount that Vinod will have to pay if he buys it,
Solution:
On ₹ 100, the tax to be paid = ₹ 12
Here, on ₹ 13000, the tax to be paid will be \frac{12}{100} \times 13000
= ₹ 1560
Required amount = Cost + Sales Tax
= ₹ 13000 + ₹ 1560
= ₹ 14560
∴, Vinod will have to pay ₹ 14,560 for the T.V.

9. Arun bought a pair of skates at a sale where the discount given was 20%. If the amount he pays is ₹ 1,600, find the marked price.
Solution:
Let the marked price be x.
Discount percent = \( \frac{\text{Discount}}{\text{Marked Price}} \times 100 \)

\[
20 = \frac{x}{100} \times 100
\]

\[
\text{Discount} = \frac{20}{100} \times x = \frac{1}{5}x
\]

Also,

\[
\text{Discount} = \text{Marked price} - \text{Sale price}
\]

\[
\frac{1}{5}x = x - ₹1600
\]

\[
x - \frac{1}{5}x = ₹1600
\]

\[
\frac{4}{5}x = ₹1600
\]

\[
x = ₹1600 \times \frac{5}{4} = 2000
\]

\[
\therefore \text{the marked price was ₹2000.}
\]

10. I purchased a hair-dryer for ₹5,400 including 8% VAT. Find the price before VAT was added.

Solution:

The price includes VAT.

\[
\therefore 8\% \text{ VAT means that if the price without VAT is ₹100, then price including VAT will be ₹108.}
\]

When price including VAT is ₹108, original price = ₹100

When price including VAT is ₹5400, original price = ₹ \( \left( \frac{100}{100} \times 5400 \right) = ₹5000 \)

\[
\therefore \text{the price of the hair-dryer before the addition of VAT was ₹5,000.}
\]