

CHAPTER FIVE

BUSINESS MATHEMATICS

Commission:

- This is a mode in which a worker can be paid.
- In its first form, a worker may be given a percentage of the goods or items sold as his or her commission or payment for work done.
- In its second form, a worker will be given a salary, in addition to a percentage of the amount had, as a result of the sales of goods.

Q1. A storekeeper is given a commission of 10% with reference to the goods sold. For the month of June, the amount of goods he sold was ₦2000. What was his commission for that month?

Soln.

Amount of goods sold = ₦2000

$$\text{Commission} = 10\% \text{ of goods sold} \Rightarrow \text{Commission} = \frac{10}{100} \times 2000 = 200$$

=>his commission was ₦200.

Q2. A revenue collector is given a commission of 5% of the amount that he collects. If the amount collected was ₦800, find his commission.

Soln.

Amount collected = ₦800.

Commission = 5% of the amount collected.

$$\text{Commission} = \frac{5}{100} \times 800 = ₦40.$$

Q3. As his commission, a barman received three quarters of the amount of drinks that he sold. If the amount of drinks sold was ₦12000, find his commission.

Soln.

Amount of drinks sold = ₦12000

Since commission = $\frac{3}{4}$ of the amount of drinks sold,

$$\Rightarrow \text{commission} = \frac{3}{4} \times 12000 = \text{₦}9000.$$

Q4. A lotto agent is given a commission of four fifth of the amount had, as a result of the sales of tickets. If she was able to sell ₦5000 worth of tickets, determine her commission.

Soln.

Amount of tickets sold = ₦5000.

$$\text{Commission} = \frac{4}{5} \times 5000 = \text{₦}4000.$$

Q5. A storekeeper is given a commission of $10\frac{1}{2}\%$ of the amount of goods sold. If the amount of goods sold was ₦2000, find his commission.

Soln.

$$\text{Commission} = 10\frac{1}{2}\% \text{ of goods sold} = 10\frac{1}{2}\% \text{ of } \text{₦}2000 = \frac{21}{2 \times 100} \times 2000 = \text{₦}210.$$

Q6. A storekeeper is given a commission of $20\frac{1}{2}\%$ of the amount of goods he sells. For a certain month, he was able to sell six pens at a price of ₦1000 per pen. Determine

- his commission.
- the total amount he took home if he was on a monthly pay of ₦300.

Soln.

Cost of each pen sold = ₦1000.

Number of pens sold = 6.

Amount had from the sale of these pens = 6×1000 ₦6000.

Since commission = 20½% of amount of goods sold, => *commission* =
 $20\frac{1}{2}\% \text{ of } 6000 = \frac{41}{2 \times 100} \times 6000 = 123.$

a. His commission = ₦123.

b. His take home pay = his pay + his commission = ₦300 + ₦123 = ₦423.

Q7. A trader sold three pens, each at ₦200 and 10 pencils, each at ₦60. If he is to be given a commission of 20% of the total sales made, find his commission.

Soln.

Since the cost of each pen = ₦200,

=> *the cost* of the 3 pens = 3 x 200 = ₦600.

Since the cost of each pencil = ₦60,

=> *the cost of* 10 pencils = 10 x 60 = ₦600.

Total sales made = ₦600 + ₦600 = ₦1200.

Commission = 20% of sales made = $\frac{20}{100} \times 1200 = ₦240.$

Q8. A storekeeper is on a monthly salary of ₦500, and receives a commission of 20% of the amount of goods sold for the month. Last month, he was able to sell five pens at ₦1000 each. Find

i. his commission.

ii. the amount of money he received at the end of that month.

Soln

Cost of each pen = ₦1000.

Number of pens sold = 5.

Amount had from the sale of these pens = 5 x 1000 = ₦5000.

Commission = $\frac{20}{100} \times 5000 = ₦1000.$

- i. Commission = ₦1000.
- ii. Amount received at the end of the month = monthly salary + commission = ₦500 + ₦1000 = ₦1500.

Q9. A sales girl is on a yearly salary of ₦24000 and received a commission of $3\frac{1}{2}\%$ of the amount of sales made. Last February, she was able to sell 2 fans for ₦400 and 6 gas cookers at ₦100 each. What amount did she receive as salary at the end of the month?

Soln.

Yearly salary = ₦24000 \Rightarrow *monthly salary* = $\frac{24000}{12}$ = ₦2000.

Amount had by selling the 2 fans = ₦400.

Amount had by selling the 6 gas cookers = 6×100 = ₦600. Total sales made for the month of February = ₦400 + ₦600 = ₦1000.

Since commission = $3\frac{1}{2}\%$ of sales made \Rightarrow commission = $3\frac{1}{2}\%$ of ₦1000 = $\frac{7}{2 \times 100} \times 1000$ = ₦35.

Amount received at the end of the month = monthly salary + the commission = $2000 + 35$ = ₦2035.

Q10. A barman who is given a commission of 20% of the amount of goods sold, received ₦1600 as commission. Determine the amount of goods that he sold.

N/B: The amount of goods sold is represented by 100% or is equal to 100%.

Soln.

Since a commission of 20% amounted to ₦1600 \Rightarrow $20\% = 1600$.

If $20\% = 1600$, then $100\% = \frac{100}{20} \times 1600 = 8000$.

The amount of goods sold = ₦8000.

Q11. A sales agent receives a commission of 12% of the amount of goods he sells. If he is given a commission of ₦576, find the amount of goods he sold.

Soln.

$$12\% = 576$$

$$\therefore 100\% = \frac{100}{12} \times 576 = 4800, \Rightarrow \text{amount of goods sold} = \text{₦}4800.$$

Q12. For his monthly salary, a store keeper is given ₦70,000 in addition to a commission of 30% of the amount of goods sold. If his take home pay for a particular month was ₦72,700, determine the value of goods sold.

Soln.

Take home pay for that month = ₦72700 and monthly pay = ₦70,000,

Commission = take home pay for that particular month – monthly pay =
₦72700 – ₦70,000 = ₦2700.

But since commission given to the storekeeper = 30%, $\Rightarrow 30\% = \text{₦}2700$.

But the value of goods sold = 100%.

$$\text{Now if } 30\% = \text{₦}2700 \text{ then } 100\% = \frac{100}{30} \times 2700 = 9000, \Rightarrow$$

amount of goods sold = ₦9000.

Q13. A lotto agent is given a monthly salary of ₦90,000 in addition to 4% of the amount of tickets sold. For a particular month, he took home an amount of ₦90640. Determine the value of the amount of tickets that he sold.

Soln.

Take home pay for that particular month = ₦90640.

Monthly pay = ₦9000.

Commission = take home pay for that particular month – monthly pay =
₦90640 – ₦9000 = ₦640.

But since this commission = 4% \Rightarrow 4% = 640,

$\therefore 100\% = \frac{100}{4} \times 640 = 16000, \Rightarrow$ the amount of ticket sold = ₦16000.