SOLUTIONS FOR S.4 MATH WORKSHEET SEVEN

Percentages, Discounts, Commissions, Interest, Profit and Loss

PART II

EXERCISE

1. Peter makes Shs. 700,000 a month plus some money by commission rates. He gets 6% of everything he sells. If Peter sold Shs. 5,500,000 worth of items this month, what is his salary for the month?

$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$
$$\text{Commision} = \frac{6}{100} \times 5,500,000$$

$$\text{Commision} = \text{shs. } 330,000$$
$$\text{His salary} = 700,000 + 330,000$$
$$\text{His salary} = \text{shs. } 1,030,000$$

2. Mr. Moya selling second hand shirts earns a commission of 9% of the total sales. Each shirt costs shs. 7,500. Find the number of shirts sold if Mr. Moya earned a commission of shs. 297,000.

let n be the number of shirts sold
$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$
$$297,000 = \frac{9}{100} \times 7,500n$$

$$297,000 = 675n$$
$$n = \frac{297,000}{675}$$
$$n = 440$$

3. James makes a base monthly salary of Shs. 150,000. As a vendor, he must sell Shs. 2,000,000 worth of items per month. He also makes a 4% commission on all sales beyond the monthly quota. If Paul sold Shs. 2,600,000 worth of items this month, what is his total income for the month?

$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$
$$\text{Commision} = \frac{4}{100} \times (2,600,000 - 2,000,000)$$

$$\text{Commision} = \text{shs. } 24,000$$
$$\text{James' total income} = 150,000 + 24,000$$
$$\text{James' total income} = \text{shs. } 174,000$$

4. Jose makes a base monthly salary of Shs. 270,000. As a vendor, he must sell Shs. 3,000,000 worth of items per month. He also makes a 10% commission on all sales beyond the monthly quota. There is also an additional 10% bonus on top of the normal commission rate for any sales beyond Shs. 3,900,000. If Jose sold Shs. 4,200,000 worth of items this month, what is his total income for the month?

Amount past quota sold = Amount eligible for normal commission rate = Amount sold - Monthly quota = 4,200,000 – 3,000,0000
$$= \text{shs. } 1,200,000$$

Amount made from normal commission:
$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$
$$\text{Commision} = \frac{10}{100} \times 1,200,000$$
$$\text{Commision} = \text{shs. } 120,000$$

Amount past required quota for bonus commission rate = Amount eligible for extra bonus commission rate = Amount sold - required quota for bonus commission rate

$$= 4,200,000 - 3,900,000$$
$$= \text{shs. } 300,000$$

Amount made from bonus commission:
$$\text{Commision} = \frac{\text{Bonus Commision rate}}{100} \times \text{Income}$$
$$\text{Commision} = \frac{10}{100} \times 300,000$$
$$\text{Commision} = \text{shs. } 30,000$$

Total amount made = monthly base salary + Amount made from normal commission + Amount made from bonus commission
$$= 270,000 + 120,000 + 30,000$$
$$= \text{shs. } 420,000$$

5. Steven makes a base monthly salary of Shs. 270000. As a vendor, he must sell Shs. 1,700,000 worth of items per month. He also makes a 10% commission on all sales beyond the monthly quota. There is also **an additional 5% bonus on top of the normal commission rate** for any sales beyond Shs. 2,500,000. If Steven made Shs. 480,000 this month, how much did he sell.

Salary made from commission
$$= \text{Total salary} - \text{monthly base salary}$$
$$= 480,000 - 270,000$$
$$= \text{shs. } 210,000$$

Commision (salary)$=$
$$\frac{\text{Commision rate}}{100} \times \text{Income(amount)}$$
$$210,000 = \frac{10}{100} \times \text{Income (amount)}$$
$$\text{Income (amount)} = \text{shs. } 2,100,000$$
Amount eligible for commission rate $=$ shs. 2,100,000

So presuming no bonus commission is made, Steven would have to sell
$$1,700,000 + 2,100,000 = \text{shs. } 3,800,000$$

Since the guessed amount sold is more than the required quota for obtaining bonus commission, our guess was wrong and we know that Steven sold at least the required quota for obtaining bonus commission which is shs. 2,500,000.

Amount made from commission for sales above the monthly but below 2,500,000
$=$ Amount below 2,500,000 eligible for normal commission $\times$ normal commission rate is obtained from;

Commision (salary)$=$
$$\frac{\text{Commision rate}}{100} \times \text{Income(amount)}$$

Commision $= \frac{10}{100} \times (2,500,000 - 1,700,000)$

Commision (salary)$= \frac{10}{100} \times 800,000$
Commision (salary) $= \text{shs. } 80,000$

Amount left to make from bonus commission
$=$ Total salary - monthly base salary - amount made from normal commission for sales below 2,500,000
$= 480,000 - 270,000 - 80,000$
$= 130,000$

Total commission percentage rate for sales over 2,500,000
$=$ normal commission percentage rate $+$ bonus commission percentage rate $= 10\% + 5\%$
$$= 15\%$$
Again for the money made from bonus commission;
$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income(amount)}$$
$$130,000 = \frac{15}{100} \times \text{income (amount)}$$
$$\text{Income (amount)} = \text{shs. } 866,667$$

Total amount sold $=$ monthly quota $+$ amount sold at only normal commission $+$ amount sold at bonus commission $= 1,700,000 + 800,000 + 866,667 = \text{shs. } 3,366,667$

6. A saleswoman earns a basic salary of shs. 120,000 and a commission of 8% of the month's total sales. If the month's total sales were shs. 1,350,000, find her income for the month.

$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$
$$\text{Commision} = \frac{8}{100} \times 1,350,000$$

$$\text{Commision} = \text{shs. } 108,000$$
$$\text{His salary} = 120,000 + 108,000$$
$$\text{His salary} = \text{shs. } 228,000$$

7. A hawker sells handkerchiefs at shs. 500 each. He sold 50 handkerchiefs in the first week. In the second week he sold 20% more than in the first week. In the third week he sold 10% more than in the second week. **Each week he receives a commission of 8% on the price of the first 20 handkerchiefs sold** and 12% for any handkerchiefs sold in excess of 20.

(a) Express the number of handkerchiefs sold in the third week as a percentage of the number sold in the first week.

Weeks	Number of handkerchiefs sold
1st week	50
2nd week	$\frac{120}{100} \times 50 = 60$
3rd week	$\frac{110}{100} \times 60 = 66$

$$= \frac{66}{50} \times 100 = 132\%$$

(b) Calculate the commission he received in the third week.

$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$

commission he received in the third week. = commision on the 1st 20 handkerchiefs sold + commision on the rest

$$= 20 \times 500 \times \frac{8}{100} + (66 - 20) \times 500 \times \frac{12}{100}$$
$$= 20 \times 5 \times 8 + 46 \times 5 \times 12$$
$$= 800 + 2760$$
$$= \text{shs. } 3,560$$

(c) If in the fourth week the hawker received a commission of shs. 2,000. Calculate the number of handkerchiefs he sold in that week.

Let x be total number of handkerchiefs sold in 4th week

Commision on the 1st 20 handkerchiefs
$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$
$$= 20 \times 500 \times \frac{8}{100}$$
$$= 20 \times 5 \times 8$$
$$= \text{shs. } 800$$

Commission on rest, $(x - 20)$
$$\text{Commision} = \frac{\text{Commision rate}}{100} \times \text{Income}$$

$$= (x - 20) \times 500 \times \frac{12}{100}$$
$$= 60(x - 20)$$

This implies;
$$800 + 60(x - 20) = 2,000$$
$$800 + 60x - 1200 = 2,000$$
$$60x - 400 = 2,000$$
$$60x = 2,000 + 400$$
$$60x = 2,400$$
$$x = \frac{2,400}{60}$$
$$x = 40$$

∴ The number of handkerchiefs sold in 4th week is 40

Step-by-step Mathematics