SESSION 3: FINANCIAL MATHS

Key Concepts

In this session we will focus on summarising what you need to know about:
- Income, expenses and profit
- Cost and selling price
- Percentage profit
- Profit margin

X-planation

1.   INTRODUCTION

In order for a business to do well, they need to be in control of their income and their expenses. Income – Expenses = Profit. The goal of every business is to make the maximum profit.
- If the income is more than the expenses, the business makes a profit.
- If the income is less than the expenses, the business makes a loss.
- If the income is exactly the same as the expenses, the business breaks even.

2.   PERCENTAGE PROFIT

When a business sells things, it needs to determine the cost at which it will sell each item. This cost may be determined by a specific profit the business wants to make or by market related prices, i.e. they should not be too cheap or too expensive.

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- To calculate the Rand value:
  Selling price – Cost price = R …

- To calculate the profit as a percentage:
  $\frac{\text{Profit}}{\text{Cost Price}} \times 100 = … \%$

Example:
A second hand shop buys a set of suitcases for R120. They resell the set for R200.

The profit will be: R200 – R120 = R80

The Percentage profit will be: $\frac{\text{R80}}{\text{R120}} \times 100 = 67\%$

3.   PROFIT MARGIN

In a business you have income and expenses. Once you have used your income to pay all your expenses, the money you are left with is the profit. Within a business it is important to know how much of your total income is actual profit. This amount can be expressed as a percentage and is then called the profit margin. So if a business has a profit margin of 40%, it means that 40% of their income is pure profit.

- To calculate the profit margin:

$$\frac{\text{Profit}}{\text{Income}} \times 100 = \dots \%$$

Example:

Joe's business generates an income of R165 000, while his expenses are R98 570. Calculate his profit margin.

$$\frac{R165000 - R98570}{R165000} \times 100 = 40\%$$

### X-ample Questions

Question 1

Cindy makes jewellery on order, paid in advance. It costs her R45,00 to make a necklace and she sells it for R125,00. She needs R5 000,00 to buy the equipment she needs to start the project. She applies for a R10 000,00 overdraft.

> An ***overdraft account*** of R10 000,00 means that the account holder may withdraw only the amount needed up to a maximum of R10 000,00, and pay back an instalment as agreed with the bank.

a)   What percentage profit does Cindy make on each necklace?   (2)
b)   VAT, which is 14%, is included in the selling price of the necklace. How
      much is the VAT on each necklace?   (3)
c)   Complete the table below.   (12)

Number of necklaces made	0	10	20	30	50	70	100
Expenses in Rand	R 5 000	R 5 450	R 5 900				
Income in Rand	R 0.00	R 1 250	R 2 500				
Balance in account	-R 5 000	-R 4 200	-R 3 400				

d) The graph below represents the information in the table above. Study it and answer the questions that follow.
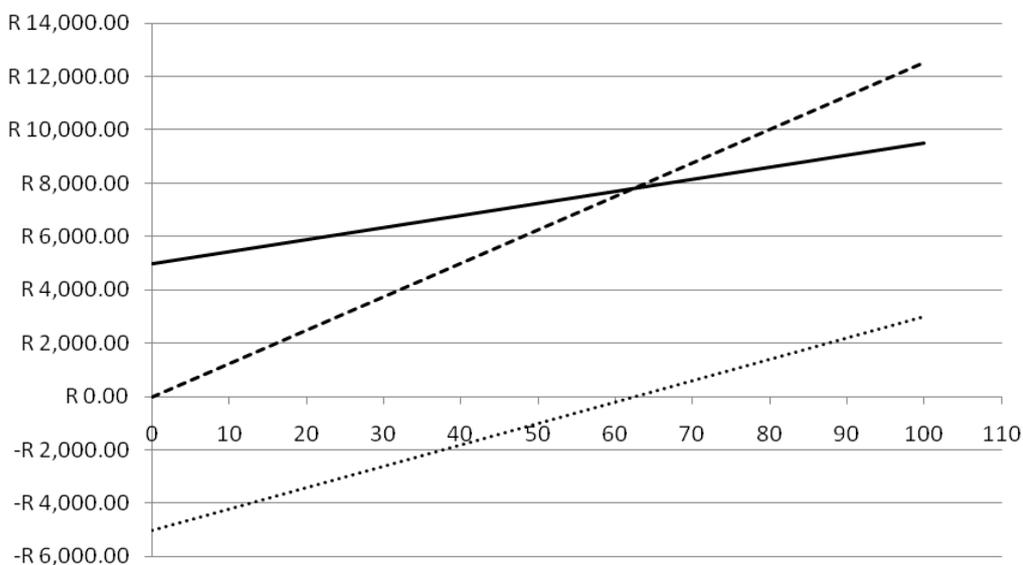
i)   Complete the graph by filling in the missing labels and naming the graphs.   (6)
ii) How many necklaces does Cindy have to make before she starts making a profit? Use the letter P to indicate on your graph where you take your reading.   (2)
iii) What profit does Cindy make if she produces 210 necklaces?   (4)

Question 2

The table below is an extract from Vodacom tariff tables for the 4U and TopUp 135 packages. Use the information in the table to answer the questions that follow:

Packages	4U	TopUp 135
Domestic Calls		
Vodacom to MTN/Cell C (Off Peak)	1,30	1,05
Vodacom to MTN/Cell C (Peak)	2,99	2,75
Vodacom to Telkom (Peak)	2,85	2,20
Vodacom to Vodacom (Peak)	2,85	1,80
Vodacom to Vodacom/Telkom (Off Peak)	1,12	0,97

http://www.vodacom.co.za/

a)   What is the charge for a Vodacom to Telkom call during Off Peak time if you have a Vodacom 4U package?   (1)

b)   Simpiwe has a TopUp 135 package. He makes a call to his friend's MTN cell phone during Peak time. If the call lasts 3 minutes, how much does it

cost? (2)

c) A Vodacom TopUp 135 customer is shocked to find that a single call has cost her R24,40. The call was made during Peak time to a Telkom number. How long was this call? (2)

d) How much would the customer in question c) have saved by making the same call during Off Peak time? (3)

X-ercises

The Department of Health advertised for companies to tender to supply sterile disposable rubber gloves to a local clinic. Rubber gloves come in different sizes and are generally sold in boxes containing 50 pairs of the same size. The clinic required 100 boxes of each of the following sizes of gloves: 6½, 7, 7½ and 8.

High Five Co-operative which is 100% black-owned, decided to submit a tender to the Department of Health.
It costs High Five R98,00 per box (excluding VAT) to manufacture the gloves, regardless of the size of the gloves. High Five first adds a profit of 25% on the price of each box, then charges a further 20% for the transport and administration costs.

a) The table below shows High Five's format for calculating the selling price of their gloves. Use the table to determine the values of items A, B, C, D, E, F and G. Show all your calculations. (12)

	Item	Cost in rand
Cost of manufacturing the required number of boxes of gloves	A	
Profit of 25% on the cost price	B	
Subtotal	C = A + B	
20% for transport and administration costs	D	
Subtotal	E = C + D	
14% VAT	F	
TOTAL SELLING PRICE OF THE GLOVES (also called Pt, the value of the tender consideration)	G = E + F	

b) The Department of Health uses the following formula to make decisions about which company will be granted the tender:

$$Ps = 80 \left(1 - \frac{Pt - Pmin}{Pmin}\right) + 2{,}5^*$$

Where:

Ps = point scored for the tender
Pt = value of the tender under consideration (in Rand)
Pmin = lowest acceptable tender value (in Rand)
∗ 2,5 is only added in the case of a 100% black owned business

The lowest acceptable tender value (Pmin) for rubber gloves is R56 000.
Use the total selling price (Pt) calculated in the above table to calculate Ps, the number of points scored by High Five Co-operative. (3)

c) The total selling price tendered (Pt) by another company, L&R Enterprises, which is 100% white-owned was R66 000. The Department of Health announced that the tender that scored the highest number of points will be awarded the contract. Show, with the aid of the formula given in QUESTION b), whether High Five or L&R Enterprises will be awarded the tender. (5)