



HILLCREST HIGH SCHOOL

Mathematical Literacy

Examination

Gr 11 Paper 1

November 2021

Examiner: Mr C Lees

Moderator: Mrs D. Headley

MARKS: 100

TIME: 2 hours

<u>NAME :</u>				
<u>TEACHER:</u>				
<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>TOTAL</u>

INSTRUCTIONS AND INFORMATION:

Read the following instructions carefully before answering the questions.

1. This question paper consists of 4 questions and 18 pages, including Annexures A to F and Answer sheet 1 & 2. Check that you have everything. Answer ALL the questions in the spaces provided.
2. Clearly show ALL calculations, diagrams, graphs, etc which you have used to determine your answers.
3. Answers only will NOT necessarily be awarded full marks.
4. An approved scientific calculator (non-programmable) may be used, unless otherwise stated.
5. If necessary, answers should be rounded off to TWO decimal places, unless otherwise stated, or appropriately within the given context.
6. Number the answers EXACTLY as the questions are numbered.
7. Diagrams are not necessarily drawn to scale.
8. It is in your own interest to write legibly and to present your work neatly.

Yoseph runs a small coaching business called Kickstart Coaching. The business offers private coaching lessons for various sport and fitness techniques. The questions that follow will relate to different aspects of the running the business.



QUESTION ONE:

1.1.1 What does the acronym VAT mean? (2)

1.1.2 What does the acronym UIF mean? (2)

1.1.3 Use the terms, “Total Income” and “Total Cost” to define the term “Breakeven”. (2)

1.1.4 Define the term Inflation. (2)

1.1.5 Explain the difference between Simple and Compound interest. (4)

1.2.1 Name a measure of spread that is used in analysing data. (2)

1.2.2 Name the type of graph represented on **Annexure E**. (2)

1.2.3 Identify the independent variable on **Annexure E**. (2)

1.3 The table on **Annexure D** represents the private coaching lessons that Kickstart offered this year. What is the probability of randomly selecting a female who took tennis lessons? (2)



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QUESTION TWO:

2.1 Use the Income & Expenditure statement for Kickstart Coaching on **Annexure A** to answer the questions that follow.

2.1.1 How much profit did Kickstart Coaching make during the month of March? (2)

2.1.2 Calculate the total profit made by for the 1st quarter of the year. (2)

2.1.3 Name one fixed expense (2)

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2.1.4 Use the actual Advertising Expense to calculate the average predicted Advertising Expense for the month of April. (3)

2.1.5 Name Kickstart Coaching's largest variable expense for the month of March, and suggest a possible way to lower this amount for April. (3)

2.2 Ezra is a part time student who has offered to do some contract work for KickStart Coaching. Because Kickstart Coaching does not offer Netball skills training yet, Ezra will pick up the lessons for the month of April.

Ezra has the following expenses:

- Netball court rental: **R1000 per month** (to use 2 afternoons per week with a maximum of 3 hours per day)
- Average variable expenses: **R500 per week** (incl. phone, petrol, etc)

Ezra charges Kickstart **R250 per hour**



The table on the next page shows a breakdown of Ezra's expenses and income for April. Use the table below to answer the questions that follow questions.

Number of hours	0	3	6	9	12	15	C	21	24
Total Expenses	1000	1250	B	1750	2000	2250	2500	2750	3000
Total Income	A	750	1500	2250	3000	3750	4500	5250	6000

2.2.1 Ezra can only coach on 2 days per week. Calculate his average variable expense per day. (2)

2.2.2 State the value of **A**? (2)

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2.2.3 What is the total number of hours that Ezra can coach for in a month that has 4 weeks? (2)

2.2.4 Calculate the values for **B** (3)

2.2.5 Calculate the values for **C** (2)

2.2.6 The total income graph for Ezra has been drawn on the **Answer Sheet** at the back **pg 16**. Use the table to complete the graph for his total Expenses. (3)

2.2.7 Yoseph says that he only has enough work for Ezra to do 1, 5 hours of lessons per day, twice a week for the 4 weeks.

Calculate what Ezra's profit will be for the month and give your opinion why Ezra should or shouldn't accept the offer. You may use the following equation:

Profit = Income – Expenses (5)

2.3 Instead of using Ezra, Yoseph will hire another employee to run the Netball division of Kickstart Coaching. An example of the new employee's payslip can be seen on **Annexure B**.



Calculate the value of **A** that represents his UIF contribution. (2)

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QUESTION THREE:

3.1 Kickstart needs to take out a new cell phone contract for the company. Yoseph is considering the following two options from a local service provider:

SMART DATA 10GB TOPUP

10GB Anytime Data
10GB Nite Data
2GB Free Anytime Data x 24 months

R149 per month
cancel anytime

PINNACLE 5GB TOPUP

Data		Minutes	
3GB	Anytime	180	Any-net
2GB	Nite	360	On-net
2GB Free Anytime Data x 24 months			

R399 per month
cancel anytime

3.1.1 Calculate the total “Free Anytime data” that can be gained from either of the two contract options. (2)

3.1.2 How many free minutes does the Pinnacle 5GB TopUp offer for calls made on the same network? (2)

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3.1.3 If the Pinnacle 5GB TopUp charges 35c per minutes for calls made on any other network after the allotted 180 minutes, calculate the total contract charge for the month if Kickstarts makes a total of 450minutes to other networks. (3)


3.2 Another option that Yoseph is considering is to purchase a cell phone and purchase airtime as the company needs it. He is interested in the following phone

SAMSUNG GALAXY S21 PHANTOM GREY 256GB

R19999

cash purchase
or get this on credit via fibicred

Get this device

An advertisement for the Samsung Galaxy S21 5G Phantom Grey 256GB. The ad features the phone's name at the top, the price R19999 in large bold text, and a note that it's available for cash purchase or credit via fibicred. A prominent orange button says 'Get this device'. To the right is a vertical image of the phone's front and back.

3.2.1 The cash price of R19 999 includes VAT. Calculate the price of the cell phone before VAT was added. (2)

3.2.2 Capital1 Bank is willing to offer Kickstart a loan for R20 000 at 5% compound interest p.a. Calculate the total interest that Yoseph will need to pay after two years. Show all working. (5)

3.3 On **Annexure C**, Yoseph can see the Capital1 Bank tariff charges, which he can use to calculate how much he will be charged for various payments he makes.



Calculate how much Yoseph will be charged for withdrawing money and buying
airtime at another bank's ATM. (3)

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QUESTION FOUR

4.1 Use **Annexure D** and **Annexure E** to answer the following questions.

4.1.1 If Kickstart took on 6 female students for netball, what would the probability be
of randomly selecting a female who plays netball out of all the females?
Write your answer as a percentage. (3)

4.1.2 Name the measure of central tendency used to determine the most popular
sport type that Kickstart Coaching offers. (2)

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4.1.3 Calculate the mean average number of male students per sport. (3)

4.1.4 Why do you think the mean average will be skewed in your calculation for question 4.1.3? (3)

4.2 **Annexure F** shows the total percentage of students per sport type that Kickstart Coaching offers. Use the pie chart to answer the following questions.

4.2.1 Verify that the 37% for Athletics was calculated using the total number of students as found in the table on **Annexure D**. (3)

4.2.2 Calculate the missing percentage for Cricket. (2)

4.3 In order to calculate the Body Mass Index (BMI) status of their students, Kickstart Coaching conducted a survey to collect data from the students. The table below represents the data to about the height and weight of each of their golf students.

STUDENT:	A	B	C	D	E	F	G	H	I	J	K	L	M	N
WEIGHT (kg)	45	46	49	43	62,5	46	59	50	46	85	53	50	50	54,5
HEIGHT (m)	1,57	1,65	1,67	1,60	1,80	1,62	1,75	1,70	1,60	1,70	1,67	1,65	1,62	1,75

4.3.1 Use the table and the Scatter plot on **Answer sheet 2** to determine which student represents the outlier. (2)

4.3.2 On the **Answer sheet 2**, plot the point for the student represented by the letter **H**. Plot the point and write the letter **H** next to it. (2)



4.3.3 Calculate the BMI of a student represented by the letter **J**, Use the following formula: $BMI = \frac{weight}{height^2}$ (2)

4.3.4 Use the BMI formula to calculate the height of a student who weigh 43kg and has a BMI of 16,8. (3)

4.3.5 Use the Scatter plot on **Answer sheet 2** to draw in the “line of best fit”. (2)

4.3.6 Yoseph states that the data represented on the scatter plot found on **Answer sheet 2** has a positive correlation. By considering the “line of best fit”, verify why his statement is true. (3)

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Annexure A:

**1st quarter Income & Expenditure statement
(Jan 2021-Mar 2021) for Kickstart coaching**

SUMMARY	JANUARY			FEBRUARY			MARCH		
	Actual	Predicted	Difference	Actual	Predicted	Difference	Actual	Predicted	Difference
Total Income	195,000	180,000	15,000	155,000	150,000	5,000	172,000	170,000	2,000
Total Expense	150,000	160,000	10,000	140,000	130,000	-10,000	140,000	150,000	10,000
PROFIT/LOSS	45000			15,000			32,000		
(Income - Expense)									
Income Breakup									
Sales	105,000	100,000	5,000	85,000	90,000	-5,000	130,000	125,000	5,000
Rental Income	40,000	35,000	5,000	30,000	25,000	5,000	25,000	20,000	5,000
Referral Fees Income	10,000	8,000	2,000	20,000	18,000	2,000	5,000	4,000	1,000
Interest Income Earned	5,000	5,000	0	5,000	5,000	0	5,000	5,000	0
Income from Hedging	35,000	5,000	30,000	15,000	10,000	5,000	7,000	5,000	2,000
Total Income	195,000			155,000			172,000		
Expense Breakup									
Salaries Paid	15,000	15,000	0	15,000	15,000	0	15,000	15,000	0
Advertising Expense	10,000	8,000	-2,000	9,000	7,000	-2,000	11,000	13,000	2,000
Rent Paid	20,000	20,000	0	20,000	20,000	0	20,000	20,000	0
Commission Paid	8,000	10,000	2,000	15,000	10,000	-5,000	16,000	20,000	4,000
Travelling Expense	20,000	15,000	-5,000	22,000	20,000	-2,000	25,000	30,000	5,000
Repairs	15,000	20,000	5,000	12,000	15,000	3,000	18,000	25,000	7,000
Damages	18,000	10,000	-8,000	25,000	20,000	-5,000	20,000	22,000	2,000
Material Charges	44,000	50,000	6,000	22,000	20,000	-2,000	15,000	20,000	5,000
Total Expense	150,000			140,000			140,000		

Annexure B:

Kickstart Payslip of D. Amos for the month of April

		Kickstart Coaching Office 12 Eagle Office block 38 Oval Road Pinetown 3612		
<u>Payslip for the Month of April 2021</u>				
Employee: Daniel Amos		Paid days: 25		
Id No.9904025017087		LOP days: 25		
Earnings		Amount	Deductions	Amount
Basic		R 5 200	UIF	A
OT Hours	14		PAYE	R936
OT Rate	75			
OT payment		R1 050		
TOTAL Earnings		R6 250	TOTAL Deductions	R988
Net Pay: R5 262				

Annexure C:

Capital 1 Bank Tariff charges for Payment types

Choose the best way to transact	App/ Internet	*120*3279# ¹	Card	Branch ²
Stop Orders				
Add, amend or cancel recurring payment (stop order)	FREE	-	-	5.00
Recurring payment (stop order)	1.50	-	-	5.00
Debit Orders				
DebiCheck authentication ¹⁰	1.50	1.50	FREE	5.00
Printed DebiCheck list	-	-	-	5.00
Stop debit order	5.00 (App)	-	-	5.00
Transfers/Payments				
Transfer between own accounts	FREE	FREE	FREE (ATM)	FREE
Early release: fixed-term savings ⁹	-	-	5.00 (ATM)	-
Early release: tax-free savings ⁹	-	-	5.00 (ATM)	300.00
Payment to other bank/Capital 1 Bank account	1.50	-	-	5.00
Payment to other bank (immediate)	10.00	-	-	-
Payment to Capital 1 Bank (with verified cellphone number)	1.50	1.50	-	-
Payment received from MoneySend	-	-	1.50	-
Purchases				
Purchase at local/international card machine ^{3,6,8}	-	-	FREE	-
Purchase online/telephone/mail ^{6,7}	-	-	FREE	-
Airtime/Data/SMS bundles & electricity	FREE	-	FREE	-
Airtime/Electricity (cellphone)	-	FREE	-	-
Airtime (other bank ATM)	-	-	1.50	-
Cash Withdrawals (fixed fees⁴)				
PnP/Shoprite/Checkers/Boxer tillpoint	-	-	1.50	-
Capital 1 Bank ATM	-	-	6.00	-
Other bank ATM	-	-	8.50	-
International ATM ^{3,6,8}	-	-	50.00	-
International card machine ^{3,6,8}	-	-	6.50	-

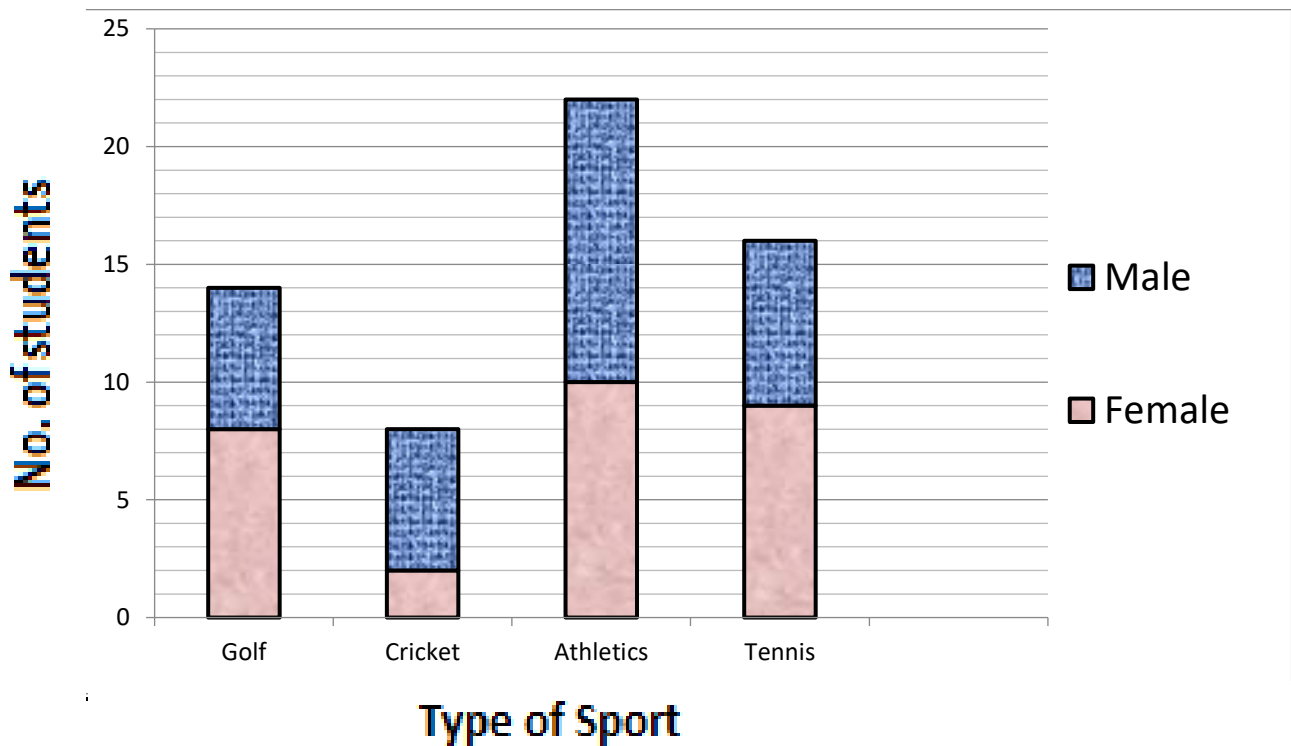
Annexure D:

Students per sport type at Kickstart Coaching

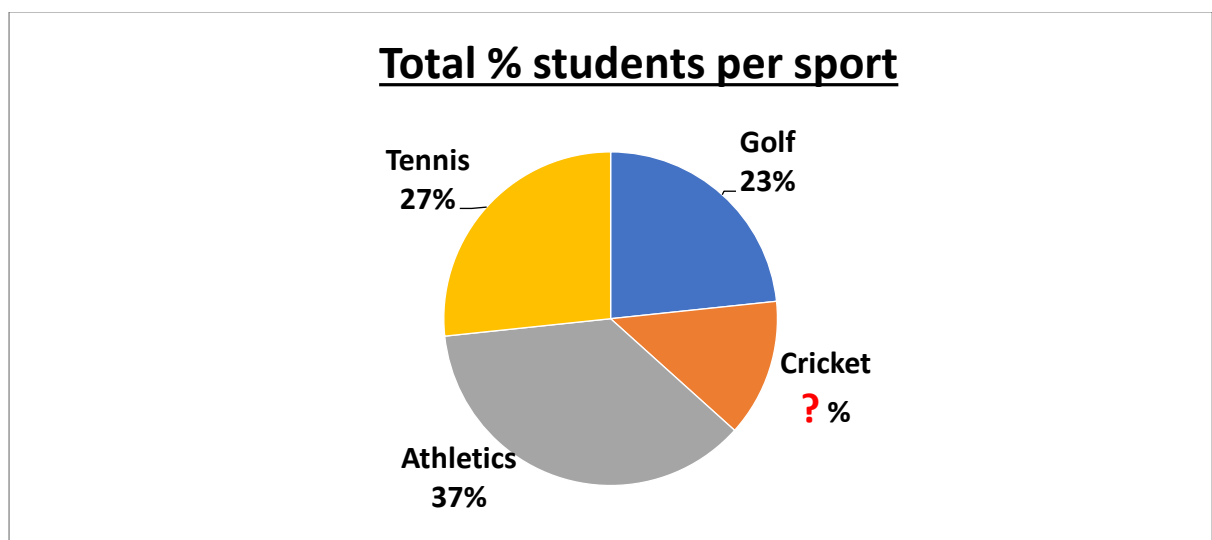
	Golf	Cricket	Athletics	Tennis	<i>Netball</i>	TOTALS
Male	6	6	12	7	-	31
Female	8	2	10	9	-	29
TOTALS	14	8	22	16		60

Annexure E:

Students at Kickstart Coaching



Annexure F:

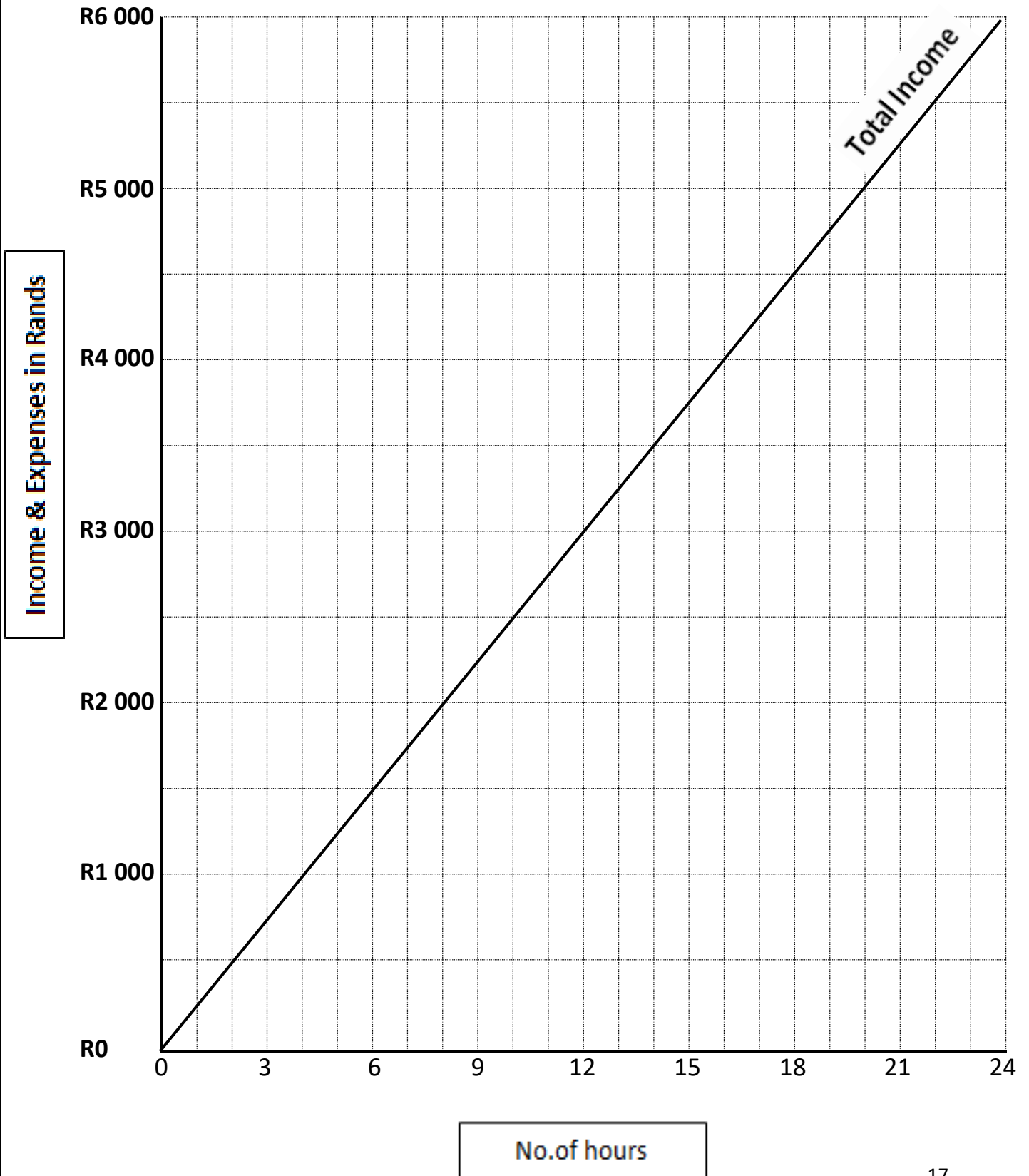


ANSWER SHEET 1

Question 2.2.6

NAME: _____

Break even analysis for Ezra's April coaching.



ANSWER SHEET 2

Question 4.3.2 & Question 4.3.5

NAME: _____

