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EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
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SUBJECT	MATHEMATICAL LITERACY
PAPER	1
MARK TOTAL	150
DURATION (HOURS)	3
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INSTRUCTIONS AND INFORMATION

1. This question paper consists of 4 questions.
2. Answer **ALL** the questions.
3. Number the answers according to the numbering system used in the question paper.
4. Start each question on a new page.
5. An approved non-programmable and non-graphical calculator may be used.
6. Show **ALL** calculations clearly.
7. Round **ALL** final answers off according to the context unless stated otherwise.
8. Indicate **ALL** units where applicable. Units **MUST** be shown in final answers.
9. Maps and diagrams are **NOT** necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly in **BLUE** ink **ONLY**.

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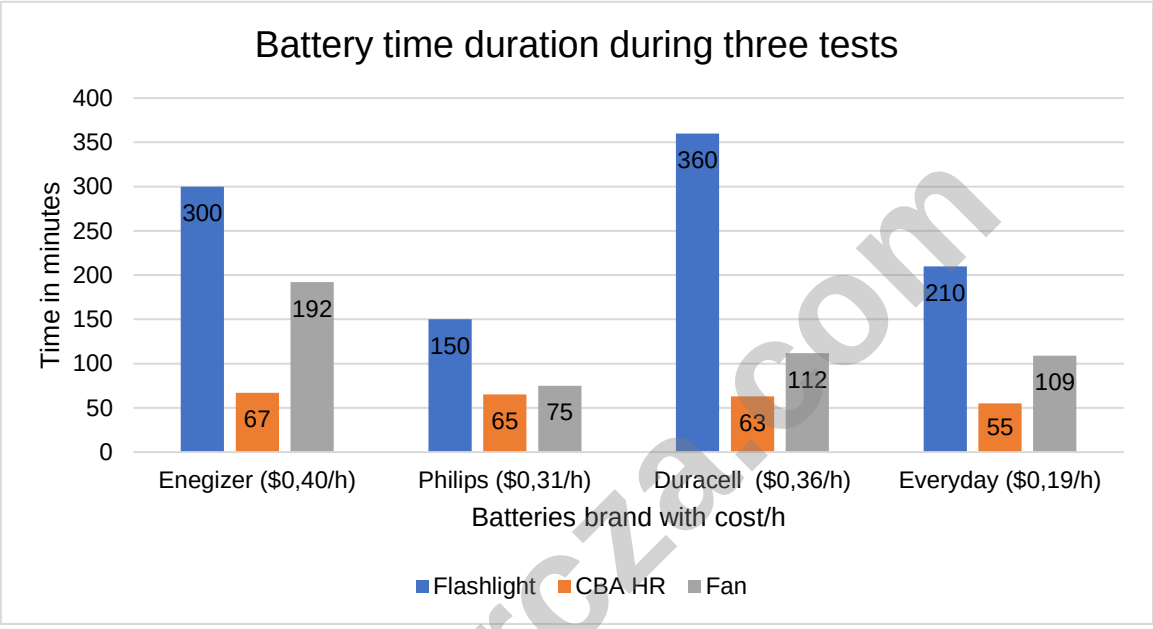
QUESTION 1

1.1 The graph below represents the results of three different tests *(Flashlight, CBA HR and Fan test)* performed on AA batteries. The four main batteries are; *Energiser, Phillips, Duracell, and Every day*.



[Source: Source adapted from:mybroadband.co.za and cinemasound.com]

Study the information mentioned above to answer the questions on the next page.

1.1.1 Identify the type of graph used to compare the batteries. (2)

1.1.2 What is the dependent variable used in the above-mentioned graph? Write **only** the correct letter.

A	Time in minutes
B	The battery brands with cost/h

(2)

1.1.3 How many battery brands are represented in the above-mentioned graph? (2)

1.1.4 Which currency is used in the above-mentioned graph? (2)

1.1.5 Complete the following sentence by writing down the correct word.
"The cost per hour for a battery is compared in this graph. This is an example of cost ***ratio/rate****."* (2)

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1.1.6 Which battery brand, according to the graph, is the most expensive battery per hour? (2)

1.1.7 If the exchange rate for Dollars to Rands is, $1 = R18,27, state whether the following statement is **TRUE** or **FALSE**:
"The cost per hour in rand for the Everyday battery will be R3,47." (2)

1.1.8 Select the correct calculation from the following list to determine the range of the fan test in minutes. Write **only** the correct letter.

A	Range = 300 min – 55 min = 245 minutes
B	Range = 192 min – 75 min = 117 minutes
C	Range = 67 min – 55 min = 12 minutes

(2)

1.1.9 Which battery brand, according to the graph, exceeds three hundred minutes, for any test? (2)

1.1.10 Name the battery brand that performed the best overall. (2)

1.1.11 State whether the following statement is **TRUE** or **FALSE**:
"*The total cost per hour for one Energizer battery according to the flashlight test is $120,00.*" (2)

1.1.12 The probability (in a decimal fraction) of choosing the best battery brand from the above-mentioned battery brands will be. Write **only** the correct letter.

A. 0,2	**B.** 0,25	**C.** 0,5

(2)

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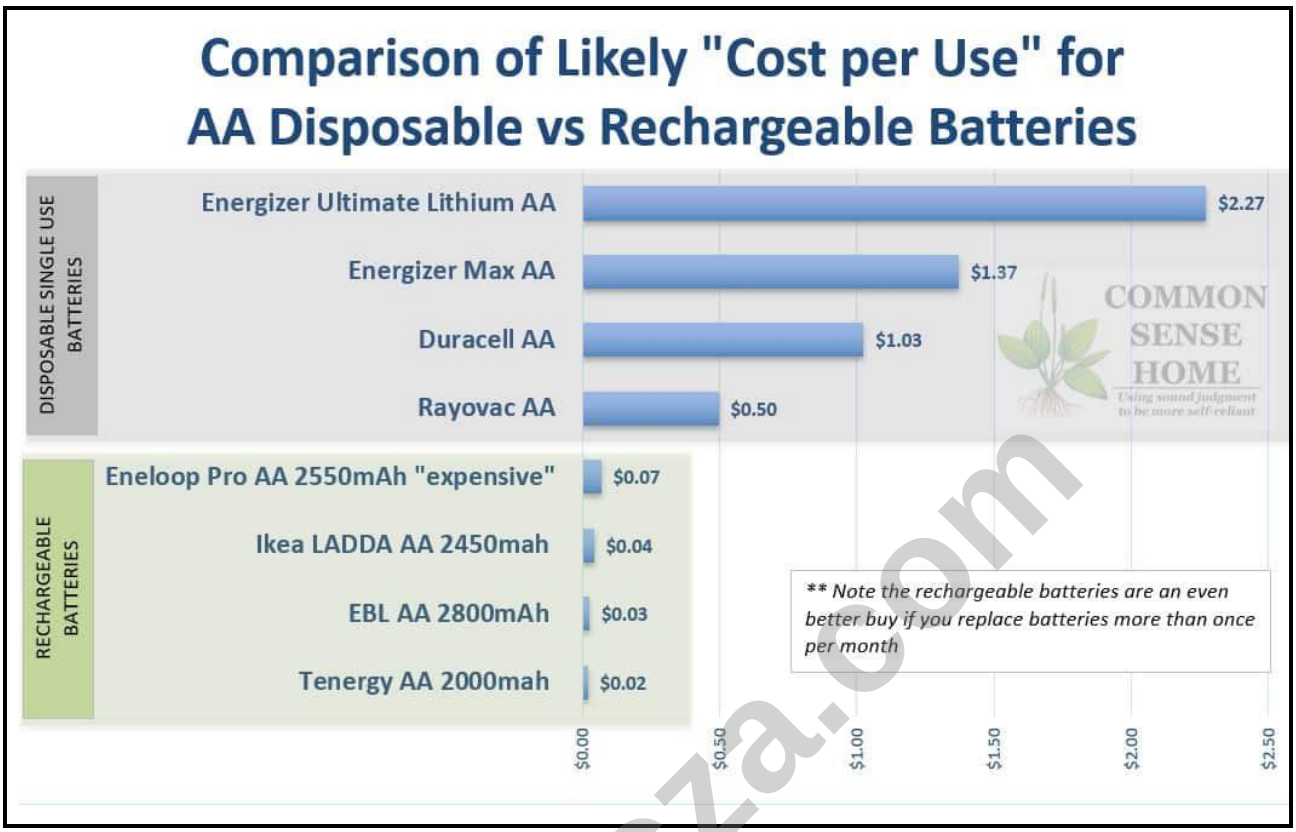
1.2



[Source: https://commonsensehome.com/best-rechargeable-aa-batteries]

Study the information above to answer the questions that follow.

1.2.1 Which type of battery, ***disposable*** or ***rechargeable***, is the cheapest overall? (2)

1.2.2 Write out the ratio of the cost of Rayovac disposable AA battery to the Tenergy rechargeable AA battery, in its simplest form. (2)

1.2.3 How much will a pack of 6 Duracell batteries cost in dollar? (2)

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QUESTION 2

2.1 Toyota was comfortably the best-selling brand in December 2022, with 11 250 units sold in the month. Volkswagen, the second best-selling brand in December, sold 5 331 units – not even 50% of Toyota's total sales.

National Association of Automobile Manufacturers (NAAMSA) says sales grew from 35 944 in December 2021 to 41,783 in December 2022 – a 16,2% gain. Overall, 2022 sales data shows the market is returning to pre-pandemic levels, with 528 963 vehicles sold throughout the year – 13,9% year-on-year growth for the whole year.

<u>Top 5 best-selling cars in December are as follows</u>:

1. Toyota Hilux 2 556 units sold
Starting price: R313 000

2. Toyota Corolla Cross 1 834 units sold
Starting price: R360 400

3. Toyota HiAce 1 539 units sold
Starting price: R497 800

4. Ford Ranger 1 495 units sold
Starting price: R349 390

5. Volkswagen Polo Vivo 1 421 units sold
Starting price: R247 300

[Source adapted from: https://businesstech.co.za/news/motoring/658929/14-of-the-best-selling]

Study the above-mentioned information to answer the following questions on the next page.

2.1.1 The likelihood of choosing a Toyota out of the top 10 best-selling car list is ***(even chance / impossible).*** Choose the correct word. (2)

2.1.2 Arrange the starting price of the top 5 best-selling in ascending order. (2)

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2.1.3 Which car on the top 5 best-selling cars is the most affordable? (2)

2.1.4 Determine the total income that the Ford company received by selling their Ford Ranger. (3)

2.1.5 Show, with calculation, if the following statement is **CORRECT**:
"Toyota was comfortably the best-selling brand in December 2022, with 11 250 units sold in the month. Volkswagen, the second best-selling brand in December, sold 5 331 units – not even 50% of Toyota's total sales." (3)

2.1.6 According to NAAMSA the total car sales grew from 35 944 in December 2021 to 41 783 in December 2022 – a 16,2% gain. Show with calculations if this statement is **CORRECT**.

$$\%\ Change = \frac{Difference\ in\ cost}{Original\ cost} \times 100$$

(4)

2.1.7 The overall sales data shows the market is returning to pre-pandemic levels, with 528 963 vehicles sold throughout the 2020 year with a 13,9% growth expected for 2021. Calculate how many vehicles were sold in 2021. (4)

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2.2 Balloon payment plans are becoming more common among car buyers in South Africa. A balloon payment is normally charged between 10% - 35% of the car loan amount. Simply put, it's a lump sum payment made at the end of your loan. Tshepang is interested in buying the Toyota Hilux and applies for a loan. MFC Bank offers him the following:

Transaction	Amount
Cash price incl. VAT	R313 000,00
Compulsory once off initiation fee	R 1207,50
Total Loan amount:	**A**
Terms	
Simple Interest rate	13,75 %
Repayment period	60 months
Balloon payment	20%
First payment date 31/06/2023	
Monthly instalment	**B**
Monthly admin fee	R 69,00
Total Monthly instalment	**C**

[Source adapted from: https://www.mfc.co.za/instalment-calculator]

2.2.1 Calculate the cash price for a Toyota Hilux excluding VAT. (3)

2.2.2 Write down repayment period in years. (2)

2.2.3 Determine the value of **A**, the total loan amount. (2)

2.2.4 Calculate the total value of the loan after 60 months. Show **ALL** calculations. (6)

2.2.5 Determine the value of **B**, the monthly instalment fee. (3)

2.2.6 Calculate the value of **C**, the total monthly instalment fee. (2)

2.2.7 Calculate the value of the balloon payment. (2)

2.2.8 Tshepang calculated that he would pay R283 996,00 more than the cash price value for the Toyota Hilux, if he takes this balloon payment offer. Determine the total cost for the Toyota Hilux on this balloon payment offer to validate if his statement is correct. (6)

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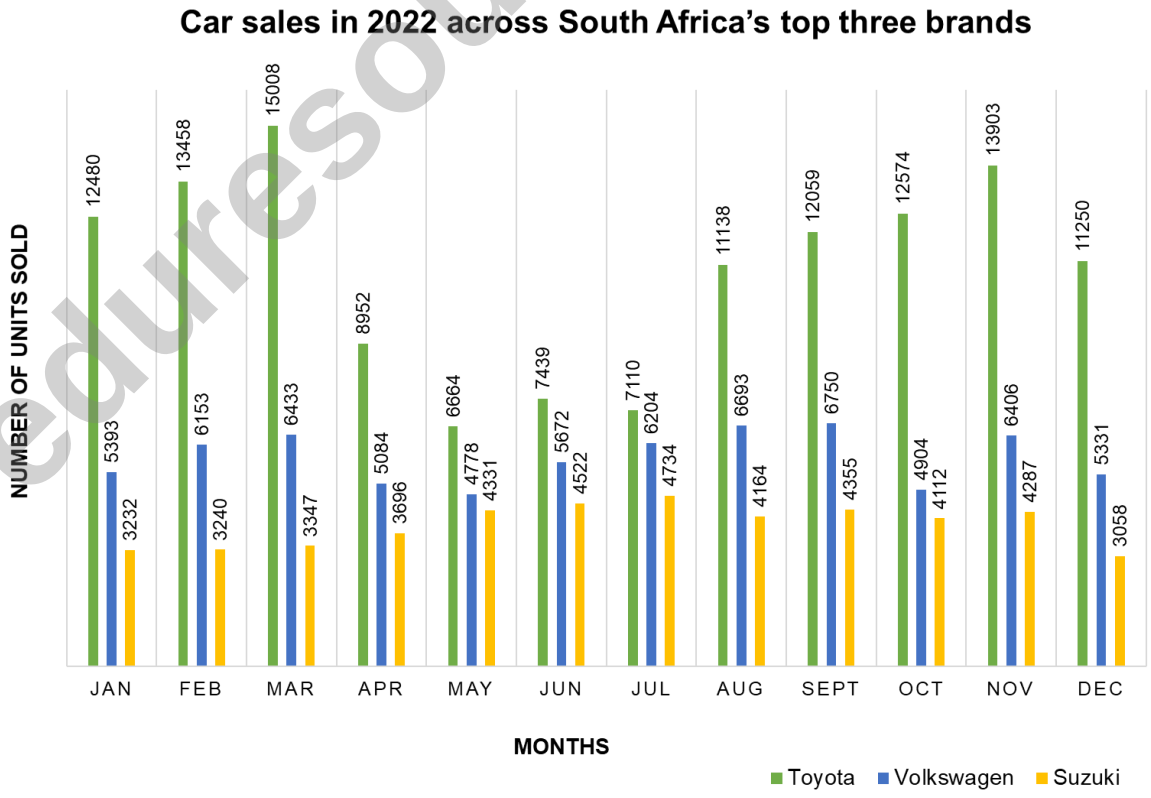
QUESTION 3

3.1 While vehicle sales in South Africa have somewhat recovered from the dip in 2020 caused by Covid-19, they have not quite returned to pre-pandemic levels. However, South Africa's almost 14% car sales increase in 2022 is impressive, considering the challenges motorists faced during the year.

Higher inflation, an upward trend in interest rates, record high fuel prices and frequency of load-shedding were some of the headwinds consumers faced in 2022. While load-shedding may seem somewhat unrelated, its increased intensity weighed heavily on both business and consumer confidence.

South Africa's fuel price reached as high as R26,74 per litre. For unleaded 95 it costs R7,13 per litre more than at the start of the year, as a result of several factors, including the conflict in Ukraine. The following graph shows the top three car brands, Toyota, Volkswagen and Suzuki sales in 2022. Study the graph to answer the questions that follow:



[Source adapted from:https://mybroadband.co.za/news/motoring/475883-south-africas-l]

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3.1.1 In which month did Toyota sell the most units? (2)

3.1.2 Choose the correct **WORD**, in brackets, that would make the following statement **TRUE:** "*This type of graph represents (**discrete** / **continuous**) data*". (2)

3.1.3 Show that the range for Volkswagen sales in 2022 is 1846 units. (2)

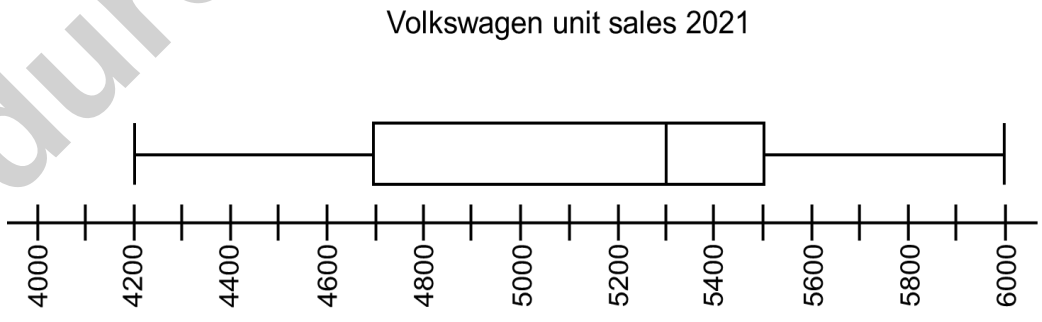
3.1.4 Calculate the probability, as a percentage, for Toyota selling more than 12 000 units during the year. (3)

3.1.5 Name **TWO** challenges motorists faced that influenced the car sales in 2022. (2)

3.1.6 Calculate the average unit sales of Volkswagen in 2022. Show **ALL** calculations. (4)

3.1.7 The following data set shows the Suzuki unit sales in 2022:
3053; 3232; 3240; 3347; 3696; 4112; 4164; 4287; 4331; 4355; 4522; 4734.
Using the data set, determine the five-number summary. (6)

3.1.8 The following graph shows the unit sales of Volkswagen for 2021.



Use the graph to determine the inter-quartile range for Volkswagen unit sales in 2021. (4)

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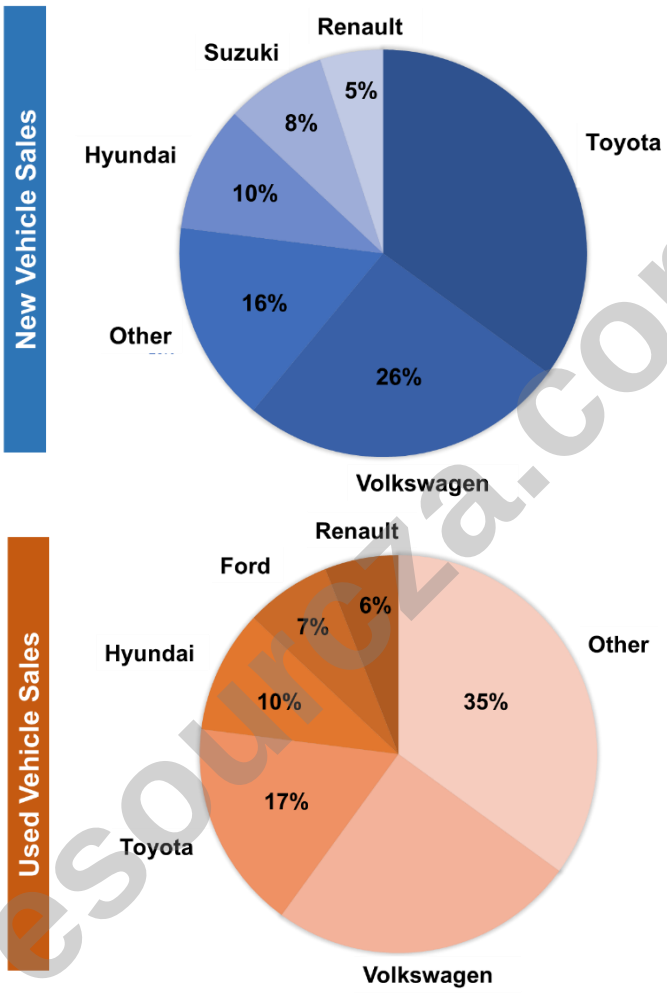
3.2 Figures revealed that new vehicle sales grew by 19.3% year-on-year to 363 092 units in 2022 from 304 341 units in 2021. Consumer buying patterns in the first quarter of 2022 indicated more than 32% of total new vehicles financed were hatchbacks, whereas 20% were SUVs.



[Source adapted from: https://topauto.co.za/news/49073/used-car-prices]

Study the above-mentioned information to answer the following questions:

QUESTION 3.2.1 FOLLOWS ON THE NEXT PAGE …

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3.2.1 How many new vehicle sales were there in 2022? (2)

3.2.2 Calculate how many units of the total new vehicles sales were hatchbacks in 2022? (4)

3.2.3 Identify the type of graphs used to compare the sales of new and used vehicles. (2)

3.2.4 How many vehicle brands are represented in the used vehicle sales graph? (2)

3.2.5 Choose the correct word, in brackets, to complete the sentence correctly: *"This type of graph represents (**categorical data / numerical data**)."* (2)

3.2.6 Calculate the total number of other vehicles sold in the new vehicle sales. (2)

3.2.7 Name the vehicle brand from the new vehicle sales graph which was not included in the used vehicle sales graph. (2)

3.2.8 Calculate the percentage value for Toyota in the new vehicle sales graph. (2)

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QUESTION 4

4.1 Thabiso (35) is married with one child. He works for Mahindra Pretoria North, as a new vehicle sales manager and earns a taxable income of R24 610,00 per month. Thabiso has some questions regarding his income tax and found the following tax rates for the 2023 -2024 financial year.

Threshold	
Under 65 years old	R95 750 p.a.
65 to 74 years old	R148 217 p.a.
75 years and older	R165 689 p.a.

Rebate	
Primary	R17 235
Secondary (65 and older)	R9 444
Tertiary (75 and older)	R3 145

Medical Tax Credits	
Taxpayer only	R364 p.m.
Taxpayer and one dependent	R728 p.m.
For each additional dependent	R246 p.m.

Taxable income p.a.	Tax Rate
R1 – R237 100	18% of taxable income
R237 101 – R370 500	R42 678 + 26% of taxable income above R237 100
R370 501 – R512 800	R77 362 + 31% of taxable income above R370 500
R512 801 – R673 000	R121 475 + 36% of taxable income above R512 800
R673 001 – R857 900	R179 147 + 39% of taxable income above R673 00
R857 901 – R1 817 000	R251 258 + 41% of taxable income above R857 900
R1 817 001 and above	R644 489 + 45% of taxable income above R1 817 000

[Source adapted from: sars.go.za/tax-rates]

Study the information above to answer the following questions.

4.1.1 Explain the meaning of taxable income. (2)

4.1.2 Explain with calculations whether Thabiso is eligible to pay income tax. (3)

4.1.3 State the amount of rebate Thabiso qualifies for. (2)

4.1.4 Calculate Thabiso's medical aid tax credits for this financial year. (3)

4.1.5 Thabiso states that he pays more than R2 500,00 p.m. towards his income tax. Calculate Thabiso's tax payable amount per month to validate his statement. (10)

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4.2 Mahindra Pretoria West–introduced the following incremental commission scale to motivate their employees to increase vehicles sales.

Number of vehicles	Commission per unit
0 – 4	R0
5 – 7	R2000
8 – 10	R2500
11 and more	R3000

[Source adapted from: Mahindra document]

4.2.1 State the minimum number of vehicles which Thabiso need to sell to qualify for commission? (2)

4.2.2 Calculate how much commission Thabiso would get if he sold nine vehicles this month. (3)

4.3 The official price for one litre of 95 petrol in April 2023 was R22,97 per litre, this includes all taxes and VAT. A breakdown of the extra taxes you pay, excluding VAT, for one litre 95 petrol, at inland pricing, is shown below.

- Fuel Levy – R3,93 per litre
- Road Accident Fund Levy – R2,18 per litre
- Customs and Excise – 4 cents per litre
- Demand-Side Management Levy – 10 cents per litre
- Other Levies – 1 cent per litre

[Source adapted from: https://topauto.co.za/features/11058/how-much-tax-you-really-pay-to-own]

Study the information above to answer the following questions.

4.3.1 Calculate the total cost of extra taxes you pay for a litre of 95 petrol, excluding VAT. (2)

4.3.2 Determine how much it costs for one litre of 95 petrol, excluding the extra taxes and VAT. (4)

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GRAND TOTAL: [150]

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