EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
DATE	NOVEMBER 2024
SUBJECT	MATHEMATICAL LITERACY
PAPER	1
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SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE

SUID-AFRIKAANSE KOMPREHENSIEWE ASSESSERINGSINSTITUUT

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 5 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. Diagrams are **NOT** necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly in **BLUE** ink **ONLY**.

QUESTION 1

1.1 A tertiary institution for Business Management has a campus in the northern suburbs of Johannesburg. In January 2024 they received the electricity account as shown below.

TAX INVOICE

Power Payments
P.O.BOX 123; Johannesburg, 0321
Tel: (011) 123 3210 Fax: (011) 123 3211
E-mail: accounts@powerpay.com

Account Details

Account Holder: TIBM Campus JHB	VAT Number: ***** 6273	Stand Size: 2135m²
Account Number: 456 5778 4500	Deposit: R5 000	Date of Valuation: 2015/12/12

Date	Details	Tariff	Cost	VAT	Amount Due
01/01/2024	Balance brought forward	--	--	--	R145,32
31/01/2024	Current charges	201,27c/kWh	R764,83	R114,72	R879,55
31/01/2024	Monthly service fee	R125,80	R125,80	R18,87	R144,67
31/01/2024	**Total**				**R1 169,54**

[Source adapted from www.industrialefficiency.co.za]

Use the information in the above document and answer the questions that follow:

1.1.1 Write down the account number. (2)

1.1.2 Name the type of expense which electricity can be classified as. Write **only** the correct letter down.

A	Fixed
B	Variable
C	Occasional

(2)

1.1.3 State whether the following statement is **TRUE** or **FALSE**:
"They pay R2,10 for one unit of electricity". (2)

1.1.4 From the list below, select the correct calculation to determine how the VAT amount for the current charges were calculated. Write **only** the correct letter down.

A	$764{,}83 \times \frac{100}{115}$
B	$764{,}83 \times \frac{15}{115}$
C	$764{,}83 \times \frac{15}{100}$

(2)

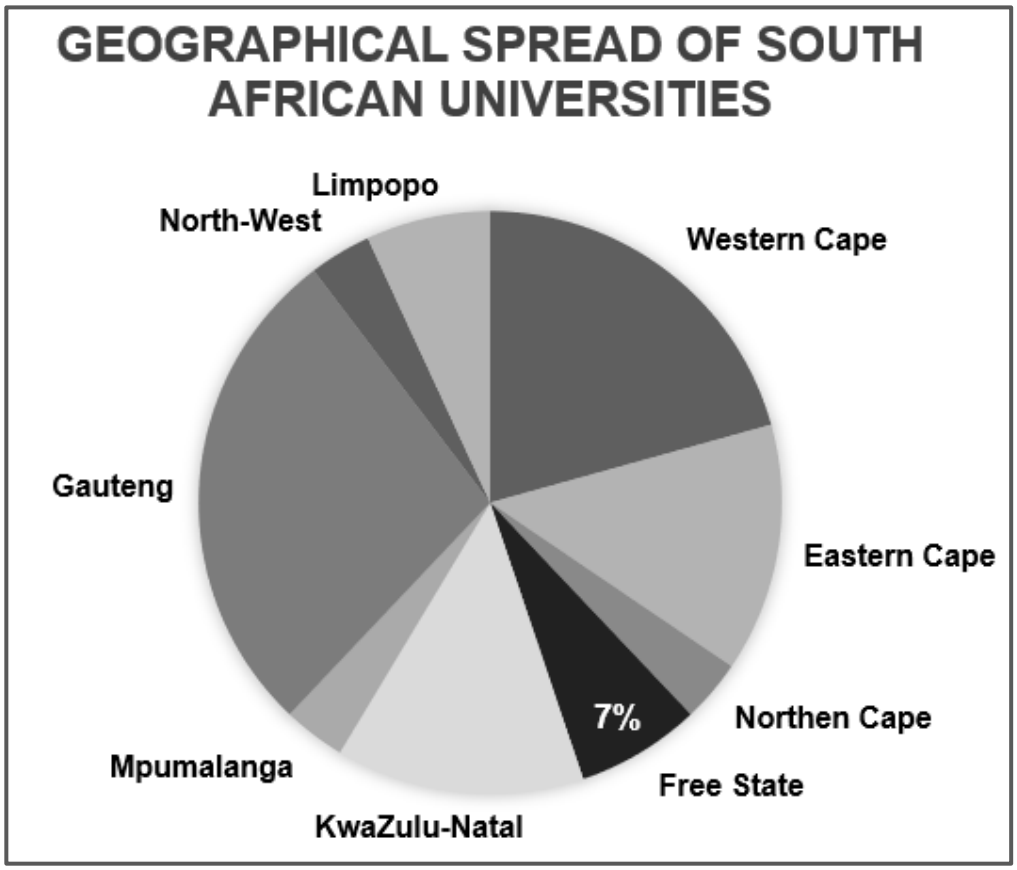
1.1.5 From the list below, choose the only fixed cost mentioned on the bill. Write **only** the correct letter down.

A	Monthly service fee
B	Current charges
C	Balance brought forward

(2)

1.1.6 On which date was the valuation of the property done? (2)

1.2 The pie chart below represents the geographical spread of South African universities. It was reported that an estimated 1 340 000 students applied to study at universities in 2024.



[Source adapted from: www.researchgate.net]

Study the pie chart and answer the questions that follow.

1.2.1 State whether the data represented in the pie chart is ***discrete*** or ***continuous***. (2)

1.2.2 Write down, in words, the number of students that applied to universities in 2024. (2)

1.2.3 State whether the following statement is **TRUE** or **FALSE**:

Northern Cape, North-West and Western Cape have the same number of universities. (2)

1.2.4 Which province has the largest number of universities? (2)

1.2.5 Seven percent of South African universities are situated in the Free State. State whether the following statement is **TRUE** or **FALSE**:

The probability of a student in South Africa attending a university in the Free State is 0,07. (2)

1.2.6 From the following options below, select the correct calculation to determine how the size of the sector for the Free State was calculated. **Only** write down the correct letter.

A	$\frac{7}{360} \times 100$
B	$\frac{100}{360} \times 7$
C	$\frac{7}{100} \times 360$

(2)

1.2.7 What is the main purpose of a pie chart? Select the correct answer from the list below. Write **only** the correct letter down.

A	To represent parts of a whole
B	To display trends over time
C	To show relationships between variables

(2)

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QUESTION 2

2.1 When their son is born, Mr. and Mrs. Lawrence want to invest R30 000 towards his future tertiary education. This investment will pay out on his 18th birthday. They investigate two different savings account options.

OPTION 1: 7,2% per annum, compound interest.
OPTION 2: Simple interest rate of 8,4% per annum.

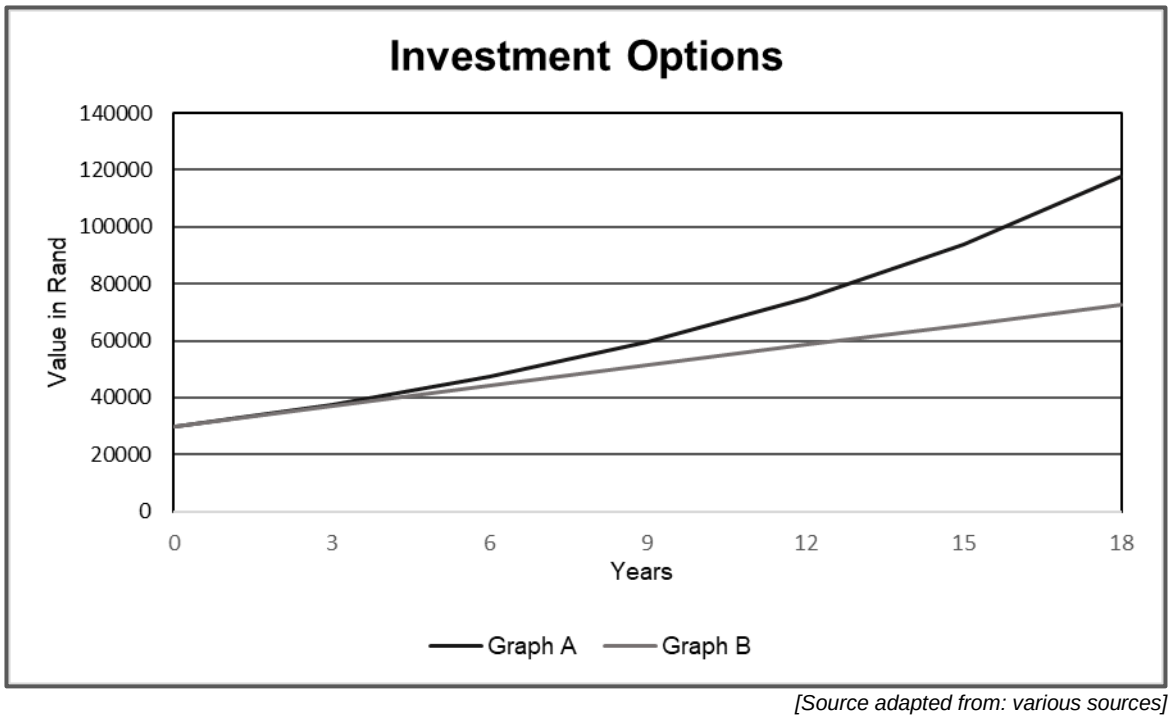
[Source adapted from: various sources]

Use the above information to answer the questions that follow.

2.1.1 Determine how much interest they would earn after 2 years with OPTION 1. Show all calculations. (5)

2.1.2 Determine the total amount that would be paid out at the end of the investment period with OPTION 2. Show all calculations. (5)

2.2 The graphs below show two alternative investment options, both at an interest rate of 7,9%.



[Source adapted from: various sources]

2.2.1 What type of interest is represented by Graph A? (2)

2.2.2 What type of interest is represented by Graph B? (2)

2.2.3 Give a reason why the graphs do not start at the origin. (2)

2.3 Mr. Lawrence is 34 years old, and he earns an annual taxable income of R350 000. He is a member of a medical aid and makes monthly contributions for himself, his wife as well as his daughter and son.

2024 Tax Year	
Taxable income (R)	**Rates of tax (R)**
1 – 237 100	18% of taxable income
237 101 – 370 500	42 678 + 26% of taxable income above 237 100
370 501 – 512 800	77 362 + 31% of taxable income above 370 500
512 801 – 673 000	121 475 + 36% of taxable income above 512 800
673 001 – 857 900	179 147 +39% of taxable income above 673 000
857 901 – 1 817 000	251 258 + 41% of taxable income above 857 900
1 817 001 and above	644 489 + 45% of taxable income above 1 817 000
Tax Rebates	
Primary	R17 235
Secondary (65 years and older)	R9 444
Tertiary (75 years and older)	R3 145
Medical Tax Credit Rates (per month)	
For the taxpayer	R364
For first dependent	R364
For each additional dependent	R246

[Source adapted from: www.sars.gov.za]

Use the above information to answer the questions that follow.

2.3.1 Determine which tax year the tax table above represents. (2)

2.3.2 Explain what the acronym SARS stands for. (2)

2.3.3 Determine the total annual amount Mr. Lawrence can claim for medical aid tax credits. (3)

2.3.4 Determine the amount of tax rebate he qualifies for. (2)

2.3.5 Calculate Mr. Lawrence's monthly tax payable amount, taking into account all applicable rebates and credits that are due to him. (7)

2.3.6 In the last tax bracket, a fixed amount of R644 489 is given. Show, by using calculations, how this amount was calculated. (3)

2.3.7 Mr. Lawrence stated that the bonus he will receive in December 2024 will be included in his non-taxable items. Is this statement correct or incorrect? If incorrect, give a reason for your answer. (3)

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QUESTION 3

3.1 At the beginning of 2024, 38 168 matriculants applied to study at a certain university in Gauteng. The table below provides information about the applicants' gender as well as their choice of study field.

	STUDY FIELD					TOTAL
	LAW	EDUCATION	BUSINESS	ENGINEERING	MEDICAL	
MALE	891	1 233	4 452	7 496	3 928	**18 000**
FEMALE	2 078	6 981	3 642	3 212	4 255	**20 168**
TOTAL	**2 969**	**8 214**	**8 094**	**10 708**	**8 183**	**38 168**

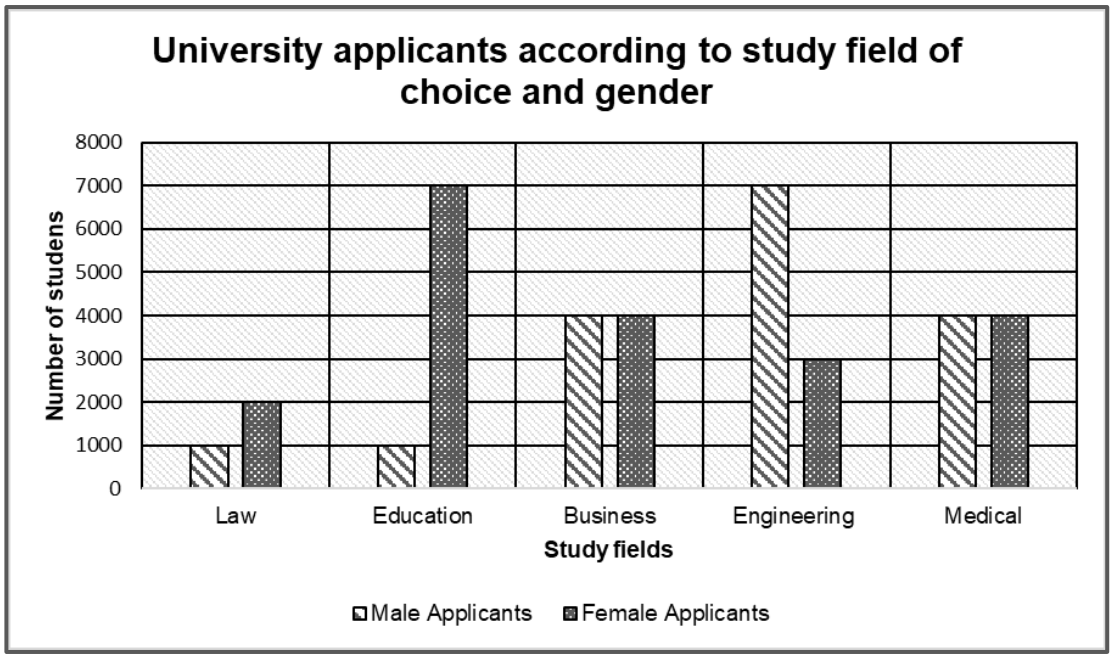
[Source adapted from: www.up.ac.za]

Use the above information to answer the questions that follow.

3.1.1 If an applicant is chosen at random, what is the probability of the applicant being a male who wants to study law? (2)

3.1.2 It is stated that if a female applicant studying engineering is chosen at random from the group of females, the probability is approximately 8%. Verify, showing all calculations, whether this statement is correct. (4)

3.2 The information about the applicants from the table in Question 3.1 can also be displayed on the double bar graph shown below. All the values from the table are rounded, to the nearest thousand, in the double bar graph.



[Source adapted from: www.up.ac.za]

Use the graph to answer the questions that follow.

3.2.1 Identify what the modal field of study is. (2)

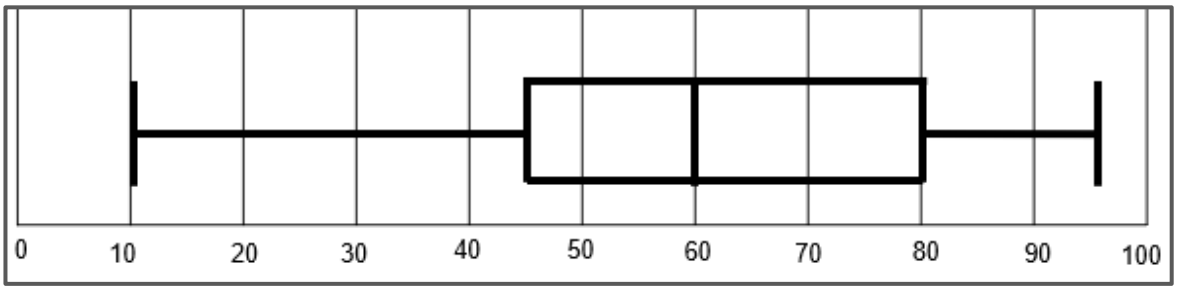
3.2.2 Calculate the percentage of law applicants who are male. (3)

3.2.3 Calculate the mean number of female applicants across all study fields at the beginning of 2024. (3)

3.2.4 Determine the median number of male applicants across all study fields at the beginning of 2024. (2)

3.2.5 Analyse the graph and describe the trend with regards to the most and least popular fields of study amongst male and female applicants. (4)

3.3 The box and whisker plot given below represents the graduation results (as percentages) of the final medical examination papers of 6 200 medical students who obtained their degrees in 2023.



[Source adapted from: www.up.ac.za]

Use the above information to answer the questions that follow.

3.3.1 Determine the five-number summary for the final medical examination papers and calculate the interquartile range. (5)

3.3.2 Determine the number of students who achieved an examination result less than the median. (3)

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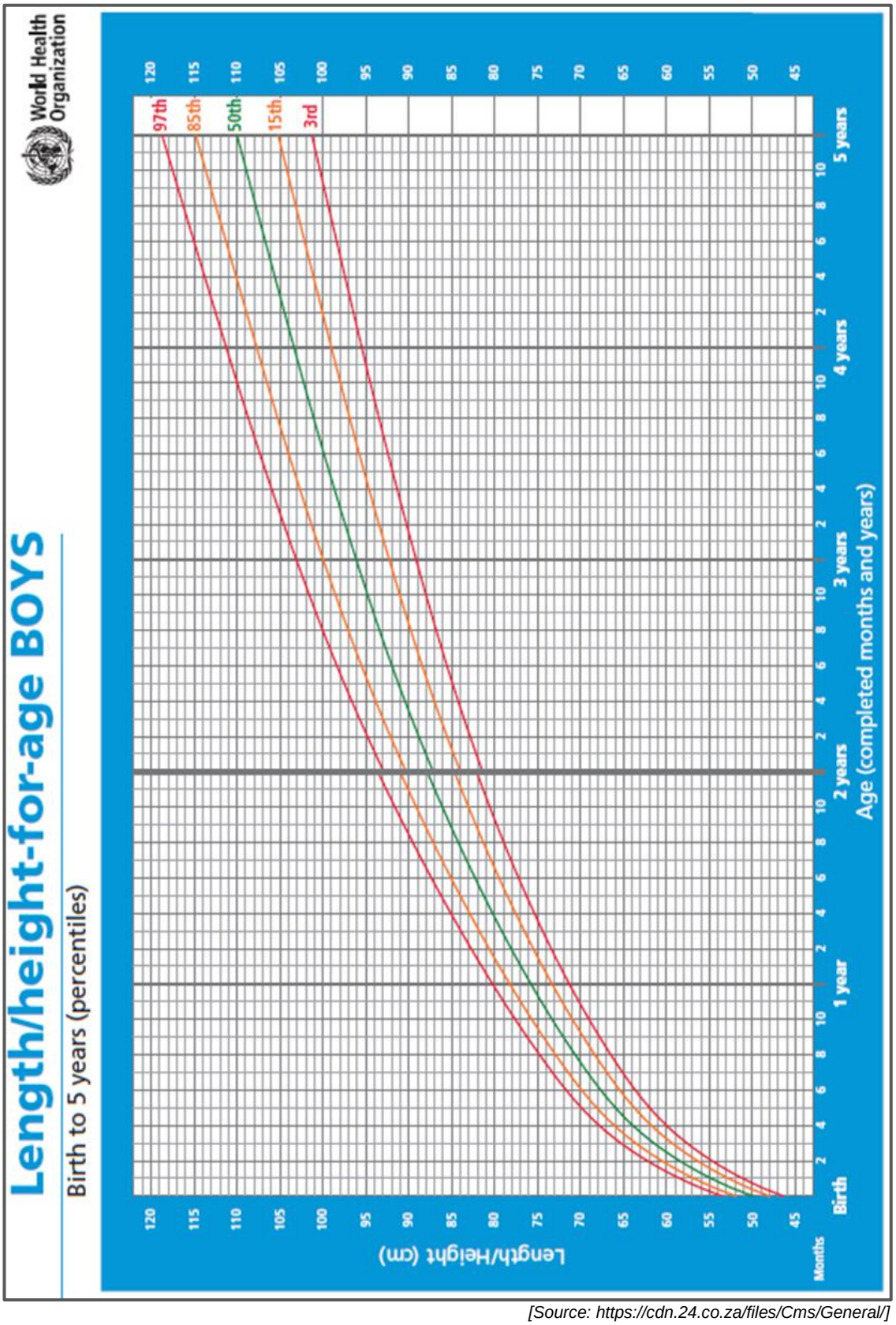
QUESTION 4

4.1 Clinics use growth charts to map a baby's growth up to 5 years. In South Africa, parents receive a booklet or card with their baby's birth weight and length plotted on a graph, as shown below.



[Source: https://cdn.24.co.za/files/Cms/General/]

Use the information given on the previous page to answer the questions that follow.

4.1.1 Amy's son was 68 cm tall at the age of 6 months. Using the given percentiles in the growth chart, describe his height compared to other boys his age. (3)

4.1.2 At a height of 90 cm and on the 50th percentile, determine, in months, the age of her son. (3)

4.1.3 When Amy's son turned three years old, he was on the 85th percentile. Determine his height at this age. (2)

4.2 The South African vaccine schedule is selected to combat the most commonly transmitted infectious diseases in children. This is in line with the recommendations of the World Health Organisation (WHO). The 2023 prices of some of the recommended vaccines, as well as exchange rate information, are given below.

Baby Clinic Information Sheet

Vaccination	Cost	Country of Manufacturing
Government vaccines	Free of Charge	Europe and USA
Menactra	R932	USA
MMR	R455	USA
Hepatitis A	R518	Europe
Adacel Quadra/Boostrix Tetra	R598	UK
Gardasil (HPV)	R1090	Europe
Varilrix/Onvara	R660	USA
Clinic Services		
Wellness check	Free of charge	
Vaccination consultation	R120	
General consultation	R150	

Exchange Rate Information:

R1 = 0,049 Euro

R1 = 0,053 United States Dollar

R1 = 0,042 Pound Sterling

[Source adapted from: www.dischem.co.za/baby-wellness-clinics]

Use the above information to answer the questions that follow.

4.2.1 Identify the name of the most expensive vaccine. (2)

4.2.2 The MMR and Hepatitis A vaccines can be administered together. Calculate the total amount Amy would pay at the clinic to get her son immunised with these vaccines. (4)

4.2.3 If the price of the Menactra vaccine increased to R1 043,84 in 2024, determine the percentage increase of this vaccine in one year. (4)

4.2.4 Write the given exchange rate for Pound Sterling to South African Rand in the format: **1£ : R…** (3)

4.2.5 Varilrix vaccines are sold as 1 000 doses per box. Each box costs $26 545. Determine the cost of 5 boxes, in Rand. (4)

4.2.6 The price of the MMR vaccine increased by 9,6% from 2022 to 2023. Calculate the price of the MMR vaccine in 2022. Round your answer off to the nearest rand. (3)

4.2.7 The clinic receives a donation of R54 000. They decided to use this money to upgrade the facility, provide free consultations to people who are unable to afford the consultation fees and host a thank-you dinner for their nurses in the ratio 4:3:1. Determine the amount of money the clinic will have available to upgrade the facility. (4)

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QUESTION 5

5.1 Jane owns her own nail salon business. Her fixed monthly costs add up to R600 and her variable costs per set of nails are R195. The price that her clients need to pay for a set of nails is R320.

5.1.1 The formula that is used to determine her total income is given as: Income = 320 × n, where n represents the number of nail sets sold.

Determine the formula that can be used to calculate her total expenses. (2)

5.1.2 By means of calculations, show whether Jane will make a profit or loss when selling 45 sets of nails in June. Motivate your answer. (5)

5.1.3 If Jane's income for July was 14,7% more than her income for June, determine her income, in Rands, for July. (2)

5.1.4 Describe, in this context, what is meant by the break-even point and how this can assist Jane with profitable decision-making in her business. (4)

5.2 A sample group of Jane's clients were asked to state their favourite nail polish colour. Their responses are recorded below.

Pink	Pink	Purple	Purple	Pink
Pink	Red	Red	Pink	Pink
Red	Blue	Pink	Pink	Purple
Purple	Blue	Red	Red	Blue
Purple	Pink	Purple	Blue	Red

[Source adapted from: tammytaylorglobal.b-cdn.net]

Use the given responses to answer the questions that follow.

5.2.1 Complete the following frequency table by only writing the question number and answer e.g. 5.2.1 A l l.

Colour	Tally	Frequency
Pink	~~l l l l~~ l l l l	**B**
Red	**A**	6
Purple	**A**	6
Blue	l l l l	4
Total		**C**

(3)

5.2.2 Determine which colour nail polish will have the largest stock at the nail salon. (2)

5.2.3 Are the responses recorded in the table at 5.2 ***categorical*** or ***numerical*** data? Motivate your answer. (4)

5.2.4 One bottle of red nail polish cost R416,84 in June. If the inflation rate from June to July was 1,4% and the inflation rate from July to August was 1,2%, calculate how much Jane would pay for one bottle of red nail polish in August. (4)

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GRAND TOTAL: [150]