higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(Second paper)

NQF LEVEL 2

(10401012)

25 November 2020 (Y-paper)
13:00–16:00

Nonprogrammable calculators may be used.

This question paper consists of 9 pages and 2 addenda.

105Q2N2025

Copyright reserved

TIME: 3 HOURS
MARKS: 150

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Clearly show all calculations, diagrams, graphs, et cetera that will be used in this paper.
5. Round off all final answers according to the given context, unless stated otherwise.
6. Diagrams are not necessarily drawn to scale.
7. Indicate units of measurement where applicable.
8. Write neatly and legibly.

Copyright reserved

QUESTION 1

1.1 The World Rugby Sevens Series has become a very popular sports event. The series consists of 10 tournaments that are played in different countries all over the world. In 2018 South Africa won the series with Fiji coming second. The winner of the series is the team which accumulates the most points whilst playing in the 10 tournaments. The winner of a specific tournament receives 22 points. Below is a table that shows the number of points South Africa and Fiji received during each tournament:

Study the table below and answer the questions.

	Dubai	Cape Town	Sydney	Hamilton	Las Vegas	Vancouver	Hong Kong	Singapore	London	Paris
RSA	22	17	19	19	15	17	17	15	19	22
FIJI	15	13	12	22	17	22	22	22	22	13

1.1.1 How many tournaments did Fiji win? (1)

1.1.2 Which tournaments did South Africa win? (2)

1.1.3 Use the table above to draw and label a bar graph of South Africa's (RSA) points per tournament on the grid found in ADDENDUM A (attached). Label the horizontal and vertical axes and provide a suitable heading for the graph. (8)

1.1.4 Calculate the difference between the mean point of South Africa and the mean point of Fiji. (6)

1.2 The table and the pie chart below represent the short term insurance policy sales figures of one employee for the year 2019. Use the table and the pie chart to answer the questions.

Short Term Policy	Number Sold
Household	50
Vehicle	**A**
Personal	12
Medical	20
Travel	14
Total	**135**

1.2.1 Determine A, the number of Vehicle policies sold in 2019. (3)

1.2.2 Use the pie chart to determine the percentage of Personal short term insurance policies sold in 2019. Show all calculations. (3)

Copyright reserved

1.2.3 Name the two short term insurance policies that were least sold. (2)

1.2.4 Give two ways on how this employee could improve the sales of the two least sold policies? (2)

1.2.5 Calculate the size of the angle of the slice of the pie chart which, represents the percentage of Household short term insurance policies sold in 2019. Round off your answer correct to the nearest angle. Show all calculations.

HINT: The angles of a circle add up to 360°. (4)

1.2.6 The employee sold 107 short term insurance policies in 2020.

Determine the percentage decrease in short term insurance policies sold in 2020. Show all calculations.

$$\text{Percentage decrease} = \frac{\text{Policy sales in 2019} - \text{Policy sales in 2020}}{\text{Policy sales in 2019}} \times 100$$

(4)

[35]

QUESTION 2

2.1 Study the information below regarding landline call tariffs.

Automatic calls	**Minimum charge in rand (Exc. VAT)**	**Minimum charge in rand (Inc. VAT)**	**Charge per second in rand (Exc. VAT)**	**Charge per second in rand (Inc. VAT)**
	Standard time: Monday to Friday 07:00–19:00			
Local (0–50 km)	0,690	0,794	**A**	0,00744
Long distance (>50 km)	0,690	0,794	0,00962	0,01106
Automatic calls	**Minimum charge rand (Exc. VAT)**	**Minimum charge rand (Inc. VAT)**	**Charge per second in rand (Exc. VAT)**	**Charge per second in rand (Inc. VAT)**
	Callmore time: Monday to Friday 19:00–07:00 and Friday 19:00–Monday 07:00			
Local (0–50 km)	0,690	0,794	0,00314	0,00361
Long distance (>50 km)	0,690	0,794	0,00481	0,00553

2.1.1 On which days of the week and during what times of the day do standard time tariffs apply? (2)

2.1.2 Is it cheaper to make a local call during Standard time or Callmore time? Justify your answer by referring to the values in the table. (3)

2.1.3 What is the minimum charge (including VAT) for a long-distance call made during Callmore time? (1)

2.1.4 What does minimum charge per call mean? (1)

2.1.5 VAT in South Africa is 15%. Calculate the value of **A**, the charge per second (excluding VAT) for a local call during standard time, correct to 5 decimal places. (5)

2.1.6 Calculate the cost (including VAT) of a local call made on a Thursday at 8:45 am lasting 7 minutes 18 seconds. (6)

2.2 Study the till slip below and answer the questions.

Supermarket
12 Main Road Malamulele

Protex soap 150g	8,99
MAQ Washing powder 2kg	15,99
Potatoes 1kg	*12,99
Beef Brisket/Short Rib 2kg	159,98
ALBANY Bread 700g	*13,99
Light Bulb 250 W	6,59
Cabbage	15,99
Spekko Rice 2 kg	*21,59
Cadbury Chocolate 80g	11,57
TOTAL	267,68
CASH ROUNDING	- 0,08
CASH	270,00
CHANGE	2,40
15% VAT	28,58

05/02/2020 10:47
CASHIER: Tsakani

Customer help line:0860 137 3689

ENJOY YOUR DAY

2.2.1 What was the date and time of the purchase? (2)

2.2.2 What does the cash rounding value of -R0,08 shown on the slip mean? (2)

2.2.3 The items marked with an asterisk (*) are exempt from VAT charges.

Show that the total amount in rand of the items that are VAT inclusive is R219,11 (2)

2.3 Jane is a student who works part-time as a waitress. She also rents a flat and receives monthly financial support from her parents. She kept a record of her income and expenses for the month of July. She recorded the following rounded off amounts:

Wages including tips	R4 715
Entertainment	R950
Airtime and Data	R550
Electricity	R750
Groceries	R1 570
Rent	R3 500
Transport	R480
Clothing account	R1 800
Parent's support	R5 000

2.3.1 Use the records to draw up Jane's budget for the month of August on the table found in Addendum A (attached). (11)

2.3.2 Calculate whether Jane's budget has a surplus or a deficit.

Formula: Surplus/deficit = Income - Expenses (3)

2.3.3 Jane sets a goal to save R 1 000 per month. Give two ways in which Jane could achieve this goal. (2)

[40]

QUESTION 3

3.1 Dharam is welding a rectangular steel gate. The sketch represents the steel gate frame. The dimensions of the length = 3,4 cm and the width = 1,5 cm. Use the sketch to answer the questions.

3.1.1 Determine the sum of the length of the two diagonal pieces of steel correct to 2 decimal places.

Formula: $BD^2 = BC^2 + DC^2$. (5)

3.1.2 Determine the total length of steel, in complete metres, needed to make the steel gate. (7)

3.2 The sketch represents an oil drum with a diameter of 58 cm and a height of 82 cm.

Determine the volume of the oil drum correct to 1 decimal place.

Formula: Volume = π x r^2 × height, π =3,14 (5)

3.3 Below is a rectangular shape gravel around a right angled triangular flower garden. The length of the rectangle is made up of three sections which are 80 cm, 240 cm and 80 cm in dimension, and the width has three sections which are 70 cm, 180 cm and 70 cm in dimension.

Determine the area of the gravel.

Formula: Area of rectangle = length × breadth

Area of triangle = $\frac{1}{2}$ × base × perpendicular height (7)

3.4 The sketch shows the layout of a classroom and a lecturer's office attached to the classroom.

3.4.1 How many doors are shown on the plan? (1)

3.4.2 Describe the location of the doors in QUESTION 3.4.1. (2)

3.4.3 How many windows are shown on the plan? (2)

3.4.4 How many desks are there in the classroom? (2)

3.4.5 Do you agree with the arrangement of desks in the classroom? Justify your answer. (2)

3.4.6 What type of scale is used on the layout? (1)

3.4.7 The dimensions of the classroom on the layout is as follows:

Length = 13,5 cm, width = 7,5 cm

Determine the actual area of the classroom in square metres, if the scale of the layout is 1 cm = 2 m.

Formula: Area = length × breadth (6)

[40]

QUESTION 4

4.1 Write down the missing two numbers in the following patterns:

4.1.1 21 ; 16 ; 11 ; …… ; …….. (2)

4.1.2 4 ; 12 ; 36 ; 108 ; ……. ; ……. (2)

4.2 Bob takes a monthly cellphone contract. The contract does not include data or SMS. The details of the contract are found in the table below:

Cellphone contract	
Subscription Fee	Anytime voice calls
R40,00	R1,90/min

4.2.1 Calculate the cost per second for voice calls. Give the answer in cents. (3)

4.2.2 Calculate how much Bob would pay, if he makes calls for 90 minutes in one month. Show all calculations. (4)

4.2.3 Use Bob's contract information above to calculate the values of **A**, and **B** in the table below.

Minutes of call time	0	10	20	40	80	**B**
Monthly cost	**A**	R59	78	116	R192	268

(4)

4.2.4 Use the table in QUESTION 4.2.3 to draw a line graph on the grid found in ADDENDUM B (attached). Provide a suitable heading and label the horizontal and vertical axes for the graph. (9)

4.2.5 Is the cellphone contract an example of an increasing or decreasing relationship? Give a reason for your answer. (2)

4.3 The table below shows various bus fare options for a route in a city:

Options	Single trip bus Ticket	12-Day Trip bus Ticket	14-Day Trip bus Ticket
	R8,90	R68,40	R79,80

4.3.1 Calculate cost of 12 single trip bus tickets. (3)

4.3.2 Calculate the relative cost per trip, if you buy a 12-Day trip bus ticket and use the ticket 12 times. (3)

4.3.3 Is it cheaper to buy single trip bus tickets for 9 trips or to buy the 14-day trip bus ticket for 9 trips? Justify your answer with calculations. (3)

[35]

TOTAL: 150

Copyright reserved

ADDENDUM A

EXAMINATION NUMBER:

QUESTION 1.1.3

QUESTION 2.3.1

BUDGET FOR AUGUST				
INCOME			**EXPENSES**	
Description	Amount in Rand		Description	Amount in Rand
Total income			**Total expenses**	

8

11

ADDENDUM B

EXAMINATION NUMBER:

QUESTION 4.2.4

9

NOTE: Hand in the completed DIAGRAM SHEET with the ANSWER BOOK.

Copyright reserved