higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(Second Paper)
NQF LEVEL 2

(10401012)

7 November 2019 (Y-Paper)
13:00 – 16:00

Drawing instruments and non-programmable calculators may be used.

This question paper consists of 12 pages and 2 addenda.

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 your calculations, diagrams, graphs, et cetera that you have used to determine your answer.

5. Round ALL your answers to TWO decimal places where necessary, unless stated otherwise.

6. Diagrams are NOT necessarily drawn to scale.

7. Answer QUESTION 2.2.1 on ADDENDUM A, and QUESTION 3.1.4 on ADDENDUM B. Write your EXAMINATION NUMBER on the ADDENDA and hand it in with the ANSWER BOOK

8. Write neatly and legibly.

Copyright reserved

QUESTION 1

1.1 Themba Gcasamba is a student at Moremogolo TVET college and is funded by Inkhunzi bursary fund. The fund gives Themba a monthly stipend of R1 800 for living expenses and he also receives an allowance of R800 from his parents. Themba has identified the following expenses for the month:

Groceries	R1 100
Taxi fare	R300
Clothing account	R150
Cellphone contract (flat rate)	R110
Entertainment	R250
Haircut	R60
Rent	R550
Airtime and data	R120

1.1.1 Draw up a budget for Themba in which you clearly show his income, fixed expenses and variable expenses. (10)

1.1.2 Explain why it is important to know which expenditure items are fixed and which are variable? (2)

1.1.3 Do you think Themba is in a good financial position? Provide an explanation for your answer. (2)

1.1.4 If Themba wanted to reduce the amount spent on certain expenses, which items would you suggest he should try to spend less on? Provide an explanation for your answer. (2)

Copyright reserved

1.2 Given below is a bank statement of Mr. Themba Funny.

CREDIT CARD STATEMENT

Mr. T Funny
226 Mupudu street
Ipeleng Location
Kimberley 8345

Credit Card No.: 495289445
Branch Code: 54795

Statement date: 30/03/2019
Payment due date: 15/04/2019

Transaction Date	Transaction Details	Debits (R)	Credits (R)
	Amount due from last month	R257,20	
This month			
02/03/2019	Checkers	R371,10	
05/03/2019	Kentucky Fried Chicken	R170,40	
09/03/2019	Links Pharmacy	R105,60	
13/03/2019	Woolworths	R311,30	
13/03/2019	JET	R170,00	
13/03/2019	Checkers	R116,54	
19/03/2019	Petrol	R400,00	
23/03/2019	MTN Cellular-Airtime	R300,00	
	Card Total	R1 944,94	
28/03/2019	Payment received		R800,00
	Amount due	R1 402,14	
Interest rate on money owed: 21%			

1.2.1 In which month did the purchases, shown on the statement, occur? (1)

1.2.2 How much money did Mr Funny spend on 13/03/2019? (2)

1.2.3 How much money did Mr Funny owe from purchases on his credit card from the previous month? (1)

1.2.4 Did Mr Funny make any payments into his credit card account during the month of this credit card statement? Provide an explanation for your answer. (2)

1.2.5 Show how the "Amount Due" value of R1 402,14 was calculated. (2)

1.3 A bag of 2,5 kg of cake flour is advertised for R24,69. The price of R24,69 already includes VAT of 15%. Calculate the VAT amount that is included in the price. (4)

Copyright reserved

1.4 The table below represents the pay slip for Ms Nkuna.

PAY- ADVISE SALARY SLIP			
Payslip No. 127	**Employee Name: Ms T. Nkuna**	**Position: Assistant Manager**	**Pay Date: 15/03/2019**
Employer: PC Company, 123 Polokwane			Date of Birth: 26/09/1989
Earnings	**Amount**	**Deductions**	**Amount**
Basic Salary	R32 500,00	Tax	R2 112,50
Overtime	R2 160,00	Medical Aid	R2 849,20
		Pension	R2 177,50
		UIF (1%)	R346,60
Gross Pay	R34 660,00	Total Deductions	R7 485,80
Taxable income	R29 633,30	**NET PAY**	R27 174,20

Refer to the table above and answer the following questions.

1.4.1 Use the amount given on the pay slip to show how the following values were determined:

(a) Total deductions (2)

(b) Net Pay (2)

1.4.2 If Ms Nkuna is given an 8% increase on her basic salary, what will her new basic salary be? (3)

1.4.3 If the Overtime amount, deductions for pension and Medical Aid remain the same and the taxable amount increases by R234,00, determine how the increase of 8% calculated in QUESTION 1.4.2 will affect Ms Nkuna's Net Pay.

The new UIF amount will change in accordance with the new Gross Salary amount.

Show all your calculations. (5)

[40]

QUESTION 2

2.1 The table below gives the maximum temperatures (in °C) during a summer's day for the 9 capital cities of South Africa.

CAPITAL CITIES	TEMP (°C)
Johannesburg	27
Cape Town	26
Port Elizabeth	25
Bloemfontein	31
Nelspruit (Mbombela)	29
Durban	28
Kimberley	33
Polokwane	28
Mahikeng	26

2.1.1 Calculate the mean temperature for the capital cities. (3)

2.1.2 Determine the median of the given data set. (3)

2.1.3 Determine the modal temperature for the given data. (2)

2.1.4 Determine the range of the temperatures for the given data. (2)

2.2 The table below provides the test marks for 25 students from a TVET college. Analyse the data and answer the questions that follow.

TEST MARKS	**No. of Students**
20–29	3
30–39	4
40–49	5
50–59	3
60–69	4
70–79	3
80–100	3

2.2.1 Use the attached **ADDENDUM A** to construct a histogram of the information given in the table above. Label the axes. (9)

2.2.2 Use the graph drawn in QUESTION 2.2.1 to determine which class interval has the highest frequency. (2)

2.3 The graph below shows the monthly costs of electricity used in a household.

Use the above graph to answer the following questions:

2.3.1 Determine the approximate average (mean) monthly amount that has been spent on electricity during this 12-month period. (4)

2.3.2 How would knowing the average monthly cost of electricity help the household to be able to plan and manage their household finances? (2)

2.3.3 Describe the trend that you notice in the cost of electricity over this 12-month period. (7)

2.3.4 Provide a reason for the described trend in QUESTION 2.3.3. (1)

[35]

QUESTION 3

3.1 Macho Mama's internet café in Cape Town offers internet, printing and photocopying services. The internet café charges the following rates for colour photocopies:

Number of copies	5	10	**B**	20	25	30
Total cost (R)	**A**	20	30	40	50	**C**

3.1.1 Determine the missing values **A**, **B** and **C** from the table given above.
Formula: Total Cost = 2 × Number of copies (3 × 2) (6)

3.1.2 What is the proportional relationship between the number of copies and the total cost of the copies. Provide an explanation for your answer. (2)

3.1.3 Use the table above to name the following:

(a) Dependent variable (2)

(b) Independent variable (2)

3.1.4 Use the data from the completed table above to draw a graph. Use **ADDENDUM B** to plot the graph. Label the axes and provide a suitable heading for the graph. (6)

3.1.5 Determine how many copies you will be able to make if you have R122. (2)

3.2 The fuel (petrol) consumption of a Polo Vivo motor vehicle after a certain number of kilometres travelled is given by the graph below.

3.2.1 By making use of the coordinates of each of the points on the given graph, how much petrol does the Polo Vivo use for every 50 km that it travels? (2)

3.2.2 Give, with a reason, the proportional relationship between the distance travelled and the petrol remaining in the tank. (3)

3.2.3 Copy the table into your answer book and fill in the missing values by analysing the given graph.

Distance (in km)	0	100	**B**	300	**D**
Petrol (in ℓ)	50	**A**	25	**C**	**5**

(4)

3.2.4 If the driver of the Polo Vivo wants to travel a 1 000 km, how many litres of petrol would he use?

Formula: Number of litres = Number of km ÷ 10 (3)

3.2.5 The price of petrol is R16,73 per litre.

How many litres will you be able to put in the tank of the Polo Vivo for R920,15? (3)

[35]

QUESTION 4

4.1 A real estate company are interested in investing in a complex outside Johannesburg. The company plans to build apartments in the complex with the following layout: (Note: The floor plan is not drawn to scale. WIC is a Walk IN Closet)

4.1.1 Determine the area of the above apartment in m^2.

Formula: Area = length × breadth (3)

4.1.2 Determine the perimeter of the above apartment.

Formula: Perimeter = (2×length) + (2×breadth) (2)

4.1.3 If the complex has an area of 4 100 m², determine how many apartments the company could build in the complex. The apartments will be built next to each other without spaces between them. (3)

4.1.4 How much will it cost to build the entire complex if it costs R268 000 to build one apartment? (2)

4.1.5 The real estate company plans to sell one apartment for R450 000.

How much profit will the company make on the entire complex? Justify your answer by showing all your calculations. (4)

4.2 Each apartment, in QUESTION 4.1, will be fenced with a concrete wall and will have a small rectangular gate. Each gate will consist of a steel frame that will be covered with strips of wood. The drawing of the planned steel gate is shown below. The height of the gate is 1,2 m and its breadth is 95 cm. The diagonals on the diagram of the gate below are also made of steel.

How much steel, in meters, is needed to build the gate? Justify your answer by showing all your calculations.

HINT: Steel is only sold per meter. (7)

4.3 During the drought season, the residents of Sol Plaatje Municipality were provided with rectangular water tanks and cylindrical water buckets as shown below.
Note: Diagrams are NOT drawn to scale.

.

4.3.1 Calculate the volume of the rectangular tank.

Formula: Volume = length × breadth × height (3)

4.3.2 Calculate the volume of the cylindrical bucket. Round off to three decimal places.

Formula: Volume = $\pi r^2 h$, where $\pi = 3{,}14$ (3)

4.3.3 How many full cylindrical buckets will be needed to fill the rectangular tank to 75% capacity?
HINT: 1 m^3 = 1 000 ℓ. (7)

4.4 Given below is the map of Africa and the capital cities.

4.4.1 Name the capital cities of Zimbabwe and Nigeria. (2)

4.4.2 Measure the distance between Windhoek and Lusaka on the map and use the scale to calculate the actual distance in kilometres.

Scale: 1 mm : 69 km (4)

[40]

TOTAL: 150

Copyright reserved

ADDENDUM A **EXAMINATION NUMBER:**

QUESTION 2.2.1

ADDENDUM B **EXAMINATION NUMBER:**

QUESTION 3.1.4

Copyright reserved