higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(Second Paper)
NQF LEVEL 2

(10401012)

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

This question paper consists of 10 pages and 2 answer sheets.

023Q2S2025

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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, used in determining the answers.
5. Approved calculators may be used, unless stated otherwise.
6. Round off the answers to TWO decimal places, unless stated otherwise.
7. Use $\pi = 3{,}14$. Learners will be penalised if any other value is used.
8. Drawing instruments, including rulers, pairs of compasses and protractors may be used.
9. Answer QUESTION 2.2 on ANSWER SHEET 1 and QUESTION 3.1.3 on ANSWER SHEET 2.
10. Diagrams are not necessarily drawn to scale.
11. Work neatly.
12. Start each question on a new page.

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QUESTION 1

1.1 Mr Mphahlele acquired a piece of land for his gardening project. He divided the land into three pieces (A, B, C, as shown in the diagram below). Mr Mphahlele decides to plant a different type of vegetable on each piece of land.

1.1.1 Name the shape labelled A. (2)

1.1.2 Calculate the perimeter of the garden.

Perimeter of circle = $2 \times \pi \times r$, where $\pi = 3{,}14$
Perimeter is the distance around the garden (7)

1.1.3 Show, by calculations, that the area of the garden is 302,52 m^2.

Area of circle = $\pi \times r^2$, where $\pi = 3{,}14$
Area of rectangle = length × breadth
Area of triangle = ½ × base × height (9)

1.1.4 Mr Mphahlele wants to buy fertiliser for the garden. It is sold in 5 kg bags.

How many bags does he need to buy if a 5 kg bag of fertiliser can cover 15 m^2 of the garden? (3)

1.1.5 How much will Mr Mphahlele have to pay for the fertiliser if it costs R110,50 per 5 kg bag? (3)

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1.2 Mzansi Bricks produces rectangular clay bricks with 10 cylindrical holes that go through the brick. Each cylindrical hole has a radius of 2,5 cm. The brick has the following outer dimensions: length = 25 cm, breadth = 15 cm and height = 10 cm. Use the diagram, picture and dimensions below to answer the questions.

1.2.1 Calculate the volume of the cylindrical holes of one brick.

Volume of cylindrical holes = $10 \times \pi \times r^2 \times$ height, where $\pi = 3{,}14$ (4)

1.2.2 Calculate the volume of one clay brick.

Volume of brick = length × breadth × height – volume of cylindrical holes (5)

1.2.3 How many bricks can Mzansi Bricks make with 2 000 000 cm^3 of clay mix? Show all calculations. (4)

1.2.4 Calculate the total income that Mzansi Bricks will receive if they sell all the bricks calculated in QUESTION 1.2.3 for R11,50 each? (3)

[40]

QUESTION 2

2.1 Given below is a pay slip of Mr Mshangwina. Study the pay slip and answer the questions that follow:

CemForce Engineering Ltd			
Employee name: Mr S Mshangwina			**Employee number:** 217008408
Pay date: 25/08/2018	**ID number:** 790612 5518 086	**Job title:** Boilermaker	777 Nobengula Street Muizenberg Cape Town 8301
Bank name: Mkepana Ltd	**Account number:** 6201254563	**Bank code:** 690010	
Earnings	**Amounts**	**Deductions**	**Amounts**
Basic salary Overtime	29 600,00 7 330,00	PAYE UIF Pension fund Medical aid Life cover	5 200,00 **A** 2 300,00 3 500,00 460,00
Total earnings:	**B**	**Total deductions:**	**C**
		Net salary:	25 174,00

2.1.1 Write each of the following acronyms out in full:

(a) PAYE

(b) UIF

(2 × 1) (2)

2.1.2 Determine the missing values of A, B and C. (3 × 2) (6)

2.1.3 How much does Mr Mshangwina pay towards tax annually. Show all calculations. (3)

2.1.4 Is overtime a fixed or variable income? Give a reason for your answer. (2)

2.2 You are required to deposit R750 to Mrs Nicole Michaels for services rendered to you today. Her bank details are as follows:

Bank: SA Bank Ltd
Account number: 795 623 5602
Branch code: 032546
Reference: your EXAMINATION NUMBER

You have R750 which comprises two R200 notes; three R100 notes; two R20 notes and two R5 coins.

Use ANSWER SHEET 1 (attached) to complete the bank deposit slip. (9)

2.3 Sipho wants to buy a TV on hire purchase. The cash price of the TV is R5 000 (VAT excluded). The store offers Sipho the following hire purchase deal:

Deposit = R1 250
Monthly instalments = R270
Payment period = 24 months

2.3.1 Define the term *hire purchase*. (2)

2.3.2 Determine the VAT-inclusive price of the TV if VAT is 15%. Show all calculations. (3)

2.3.3 Determine the amount, in Rands, that Sipho will owe the store after paying the deposit. (3)

2.3.4 Calculate the total amount, in Rands, Sipho will pay for the TV after 24 months. (4)

2.3.5 Calculate the interest amount, in Rands, Sipho will pay after 24 months. (3)

2.3.6 Calculate the interest rate that will be charged on the hire purchase. (3)

[40]

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QUESTION 3

3.1 Denise travels to work from Hatfield to Centurion. She buys a Monthly Product Gautrain ticket for R1 347. The ticket allows her 44 single trips in 44 days, after which it expires. The relative cost per trip of travelling from home to work depends on the total number of trips Denise makes from home to work within the 44 days.

Relative cost per trip = R1 347,00 ÷ number of trips per month

Number of trips	1	2	5	10	20
Relative cost per trip in Rands	1347,00	673.50	269.40	134.70	67.35

Use the above information to answer the questions.

3.1.1 Calculate the relative cost per trip if Denise completes all trips in 44 days. (2)

3.1.2 How many trips would Denise have taken if the relative cost per trip was R44,90. (3)

3.1.3 Use the table above to draw and label a line graph of Denise's relative cost per trip on the grid found in Answer Sheet 2 (attached). Label the horizontal and vertical axes, and provide a suitable heading for the graph. (9)

3.1.4 What type of proportion does the graph represent? Give a suitable reason for your answer. (3)

3.1.5 Merlin also travels from Hatfield to Centurion. He buys a single trip ticket at a price of R36 per trip.

(a) How much would Merlin pay for 44 single trips? Show your calculation. (3)

(b) Calculate the amount that Merlin would save on 44 single trips if he bought a Monthly Product ticket. (3)

3.2 Mary is a funeral insurance sales agent. She earns a basic salary of R1 500 per month and commission of R350 for each policy sold.

Salary = R1 500 + 350 × number of policies sold

Number of policies	0	5	**B**	15	20
Salary	**A**	3 250	5 000	6 750	**C**

Use the above information to answer the questions.

3.2.1 Use the information and the table above to extend the numerical patterns by completing the missing values **A, B** and **C**. Write only the answer next to the letter (A–B) in the ANSWER BOOK. (6)

3.2.2 The graph below represents Mary's salary. Use the graph to answer the questions.

(a) Which is the dependent variable? Give a reason for your answer.

(b) Give two reasons why Mary's salary does not represent a direct proportion.

(c) What is the minimum number of policies Mary must sell to earn a salary above R5 000?

(3 × 2) (6)

[35]

QUESTION 4

4.1 The table and the pie chart below represent a dealership's car sales figures for 2018. Use them to answer the questions.

MODEL	SALES
Polo TSi	37
Golf TSi	55
Polo Vivo	78
Polo GTi	12
Golf GTi	22

4.1.1 Determine the total number of cars the dealership sold in 2018. (2)

4.1.2 Use the pie chart to determine the percentage of the Polo GTi the dealership sold in 2018. Show all calculations. (3)

4.1.3 Calculate the size of the angle of the slice of the pie chart which, represents the percentage of the Polo Vivo sold in 2018. Round off your answer correct to the nearest percentage. Show all calculations.

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

4.1.4 The dealership sold 257 cars in 2019.

Determine the percentage increase in car sales for 2019. Show all calculations.

$$\text{Percentage increase} = \frac{\text{car sales in 2019 - car sales in 2018}}{\text{car sales in 2018}} \times 100$$ (4)

4.2 The graph below gives the minimum and maximum temperatures, in degrees Celsius, for six cities on a summer's day. Use the graph to answer the questions.

4.2.1 Name the type of graph used above. (2)

4.2.2 Name the city that had the highest temperature on that day. (1)

4.2.3 Does the graph represent discrete or continuous data? (1)

4.2.4 Calculate the difference in temperature for Bloemfontein on that day. (3)

4.2.5 Determine the range in temperature between the six cities on that day. Show all calculations. (3)

4.2.6 Calculate the median of all the minimum and maximum temperatures of the six cities on that day. Show all calculations. (5)

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4.2.7 The graph below also represents the minimum and maximum temperatures, in degrees Celsius, for six cities on a summer's day.

The graph is missing important information and it is misleading.

(a) Name the type of graph used above. (1)

(b) Name TWO important elements missing from the graph. (4)

(c) Give ONE reason, other than the answers in QUESTION 4.2.7 (b), which causes the above graph to be misleading. (2)

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TOTAL: 150

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ANSWER SHEET 1 **EXAMINATION NUMBER:**

QUESTION 2.2

DEPOSIT SLIP/DEPOSITO-STROKIE

S A Bank

Date/Datum _____

Credit
Krediteer _____

Acc no/ Rek no

	R	C
Notes/Note		
Nickel/Nikkel		
Bronze/Brons		
MO/PO and/en PO		
Subtotal/Subtotaal		

Teller's date stamp and signature Kassier se datumstempel en handtekening	Drawer's name Trekker se naam	Bank			
	1				
	2				
	3				

Details of depositor/Besonderhede van deponeerder

Name(Print)
Naam(Drukskrif)

Signature
Handtekening Tel ( )

Total
Totaal R .

Dep reference
Dep verwysing

9

ANSWER SHEET 2

EXAMINATION NUMBER:

QUESTION 3.1.3

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