higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(First paper)

NQF LEVEL 3

(10401023)

14 February 2025 (X-paper)
09:00–12:00

Non-programmable calculators may be used.

This question paper consists of 8 pages and 1 answer sheet.

009Q1S2514

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
MATHEMATICAL LITERACY
NQF LEVEL 3
(First paper)
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. Start each question on a new page.
5. Show all the calculations clearly.
6. Round off the answers correctly according to the given context. In all cases where the context is not specific, round off the answers to two decimal places.
7. Indicate units of measurement where applicable.
8. Diagrams are not necessarily drawn to scale.
9. Answer QUESTIONS 5.2.3 and 5.2.4 on the attached ANSWER SHEET. Write your EXAMINATION NUMBER and CENTRE NUMBER on the ANSWER SHEET, detach it from the question paper and hand it in with the ANSWER BOOK.
10. Write neatly and legibly.

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QUESTION 1

1.1 Calculate each of the following without using a calculator. Show all the calculations:

1.1.1 $18-(3\times 2)+2^2$ (2)

1.1.2 $\sqrt[3]{3^2-2^3}+(-1)^5$ (3)

1.1.3 $$\frac{5\frac{1}{5}\times 3\frac{1}{8}}{5\frac{1}{10}-2\frac{3}{5}}$$ (3)

1.2 The sum of three numbers is 11 287. The first number is 5 476 and the second number is 3 789. What is the value of the third number? (2)

1.3 A Private Hospital has six new-born babies in high care. A baby gets 3 ml of special nutrient formula for each 600 g of weight.

1.3.1 If the hospital uses 12,6 ml of formula for a baby, what is the weight of the baby in grams? (2)

1.3.2 The total weight of the six babies is 5 412 g. How much formula does the hospital use? Show all the calculations. (2)

1.3.3 If the formula comes in 20ml tubes, how many whole tubes of formula should the hospital order for the six newborn babies? Round off to the nearest tube. (2)

1.4 A courier company charges R250 to deliver a parcel that weighs 5 kg. They also charge an additional amount of R3,50 for every 250 grams above the weight of 5 kg. How much will they charge to courier a box that weighs 7,25 kg? (4)

1.5 Mr Mthembu saves 20% of his monthly salary. Each month he saves R2 200. Calculate his monthly salary. (3)

1.6 Determine the cost of 12 books if three books cost R36. Use proportion to find the answer. (3)

1.7 A taxi driver is driving from Graaff-Reinet to Cape Town. The distance is 668 km.

Formula: $\text{speed}=\frac{\text{distance}}{\text{time}}$

1.7.1 How long will it take the Taxi driver to get to Cape Town if she drives at an average speed of 100 km/h? Round off the answer to the nearest hour. (2)

1.7.2 If it took a taxi driver nine hours to get to Cape Town, calculate the average speed. (2)

[30]

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QUESTION 2

2.1 Choose a description from COLUMN B that matches a term in COLUMN A. Write only the letter (A–G) next to the question number (2.1.1–2.1.5) in the ANSWER BOOK.

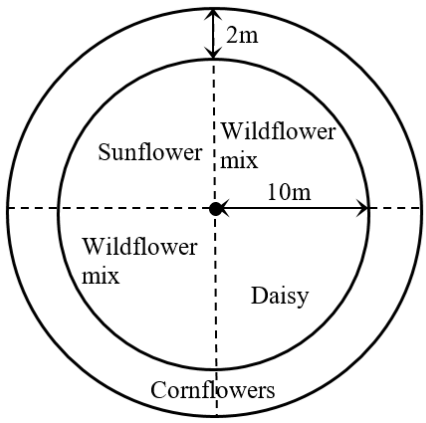
COLUMN A		COLUMN B	
2.1.1	Volume	A	the amount of space that a shape covers
2.1.2	Area	B	the maximum amount of substance an object can hold or contain
2.1.3	Perimeter	C	the distance from the centre of the circle to the circumference
2.1.4	Capacity	D	line dividing the circle into two halves
2.1.5	Radius	E	line touching a circle at one point
		F	the amount of space that an object can occupy
		G	the distance around the outside of the shape

(5 × 1) (5)

2.2 A student measured a length of 12 mm on a map which represents the actual distance of 300 m on the ground. Determine the scale of the map. (2)

2.3 A gardener plants flowers in a circular flower garden bed with a radius of 12 m.

Use the formula: $A = \pi r^2$, where $\pi = 3.14$



2.3.1 Calculate the area to be covered by sunflowers. (4)

2.3.2 Calculate the area to be covered by cornflowers. (4)

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2.3.3 Two packets of seeds are needed for each square metre to be planted. How many packets does he/she need to plant the wildflowers? (4)

2.4 A carpenter bought a wooden block with dimensions of 215 mm by 300 mm by 52 mm. The mass of the block is 2,48 kg.

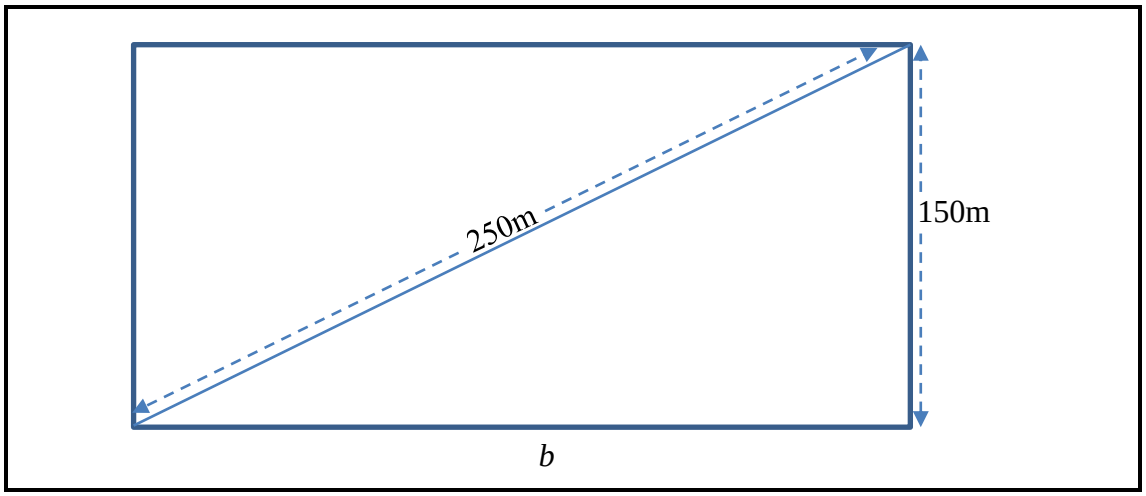
2.4.1 Calculate the volume of the block in metre cubes (m^3).

Formula: $V = l \times b \times h$ (3)

2.4.2 How heavy would 1 000 m^3 of this block be in kg? (4)

2.5 The diagonal length of a rectangular empty stand is 250 m, and the length of one of the sides is 150 m as shown below. Calculate the length of the other side.

Use the Theorem of Pythagoras: $a^2 = b^2 + c^2$



(4)
[30]

QUESTION 3

3.1 Michael Moore is an employee at the J&B Fuel Company. He earns R10 500 per month. He pays 1% of his salary to UIF, which is deducted directly from his salary. The company contributes the same amount as Michael to UIF. Employee tax is charged at 10,5% on taxable income.

3.1.1 Calculate the total UIF contributions that are made. (3)

3.1.2 How much tax will Michael have to pay at the end of the year? (3)

3.1.3 Calculate the total deductions from Michael's monthly salary. (2)

3.1.4 Determine how much money Michael receives per month. (2)

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3.2 Retailer stocks goods from the wholesaler for R6 550,95 including VAT. The goods were sold to the public for R6 750,85 with VAT excluded. VAT is charged at 15% and is transferred to the South African Revenue Services (SARS).

3.2.1 How much VAT will SARS receive from the wholesaler? (4)

3.2.2 What will the resale price to the public be with VAT? (2)

3.2.3 Determine the total amount SARS will receive for the same goods? (2)

3.3 The bank charges 11% interest per annum on loans over 5 years. Mrs Morris borrows R15 000.
Given the formula: $I = Prt$, where I = interest, P = the principal (amount borrowed), r = annual rate and t = time

Calculate:

3.3.1 The amount of interest due (3)

3.3.2 The total amount to be repaid (2)

3.3.3 The monthly repayments needed (2)

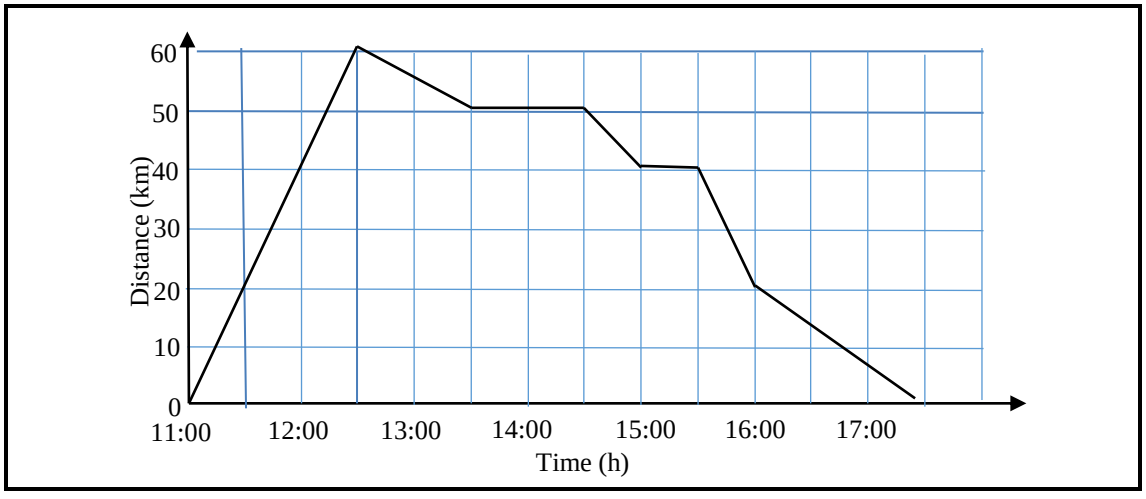
3.4 Thabo is a security guard. He is paid at a basic rate of R10,50 per hour.

3.4.1 Calculate the hourly overtime rate for working on a public holiday if it is calculated as double time. (2)

3.4.2 Calculate the hourly overtime rate for working on a weekend if it is calculated as time and a quarter. (3)
[30]

QUESTION 4

4.1 Jones cycled around Centurion. He started and finished at the car park at the shopping mall. The following distance-time graph illustrates his journey.



4.1.1 At what time did Jones start his journey? (1)

4.1.2 At what time did he reach the furthest distance from the car park? (2)

4.1.3 How many times did he stop during the journey? (1)

4.1.4 Jones stopped for refreshments at 13:30. For how many minutes did he stop? (2)

4.1.5 State between which times were the two fastest times that he cycled. (2)

4.1.6 At what speed did Jones cycle between 15:30 and 16:00? (3)

4.2 Betty is working in a local brickyard. She is packing bricks for delivery in the brickyard. She can pack 200 bricks per half an hour. How many hours will it take her to pack 900 bricks? (3)

4.3 Makhado local municipality gives the first 5 kℓ of water for free and the next 5 kℓ cost R5,34 per kℓ.

Determine the cost of using 9,85 kℓ. (3)

4.4 You are given the formula: $y = 12x + 16$

4.4.1 Determine the first three terms of the pattern. (3)

4.4.2 Determine the constant difference. (1)

4.4.3 What is the relationship between the variables (x and y)? (2)

4.5 Shaun deposits R3 845 in his savings account every month.

4.5.1 Represent the amount of money deposited at the end of each month as an equation in terms of x and y. (4)

4.5.2 If Shaun deposited the same amount for 12 months, calculate the amount he saved. (3)

[30]

QUESTION 5

5.1 The heights in centimetres (cm) of new employees in the company are shown in the table below:

175	176	175	176	175	168	169	176	169	191	176

5.1.1 What is the height of the tallest new employee? (1)

5.1.2 Find the mode of the height of these new employees. (2)

5.1.3 Write down the median of their heights. (2)

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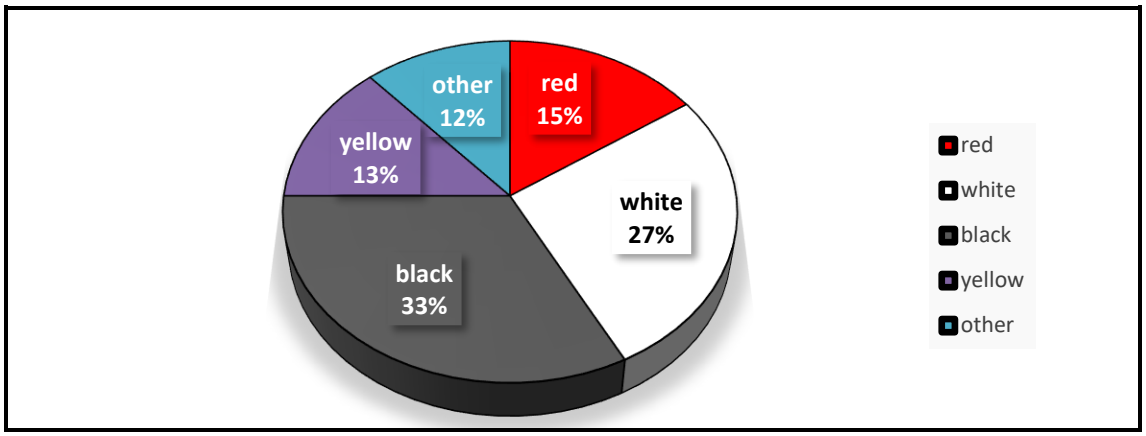
5.1.4 Calculate the range of their heights. (2)

5.1.5 Calculate the average mean of their heights to the nearest cm. (3)

5.2 52 employees are attending a teambuilding session. The pie chart below represents the T-shirt colours that were worn by team members.



5.2.1 How many employees wore a white T-shirt? Round off to the nearest whole number. (2)

5.2.2 Which colour has been chosen the most? (1)

5.2.3 Use the information in the pie chart to complete the frequency table provided on the ANSWER SHEET. (4)

5.2.4 Use the information you provided in QUESTION 5.2.3 to complete the bar graph on the ANSWER SHEET. Write your EXAMINATION NUMBER and CENTRE NUMBER on the ANSWER SHEET, detach it from the question paper and hand it in with the ANSWER BOOK. (6)

5.2.5 If an employee is selected at random, what is the probability of choosing the one that wears a red or white T-shirt? (3)

5.3 A certain probability is represented in the table below:

Outcome	Decimal form	Percentage form	Fraction
Y	*a*	25%	*b*

Express the probability of the given outcome Y in different forms by writing the missing values next to the letter (*a* and *b)* in the ANSWER BOOK. (2)

5.4 A fingerboard is numbered 1 to 25. A coin is thrown across the board.

What is the probability of the coin landing on the number 4? Write the answer as a common fraction. (2)

[30]

TOTAL: 150

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ANSWER SHEET **EXAMINATION NUMBER:**

CENTRE NUMBER:

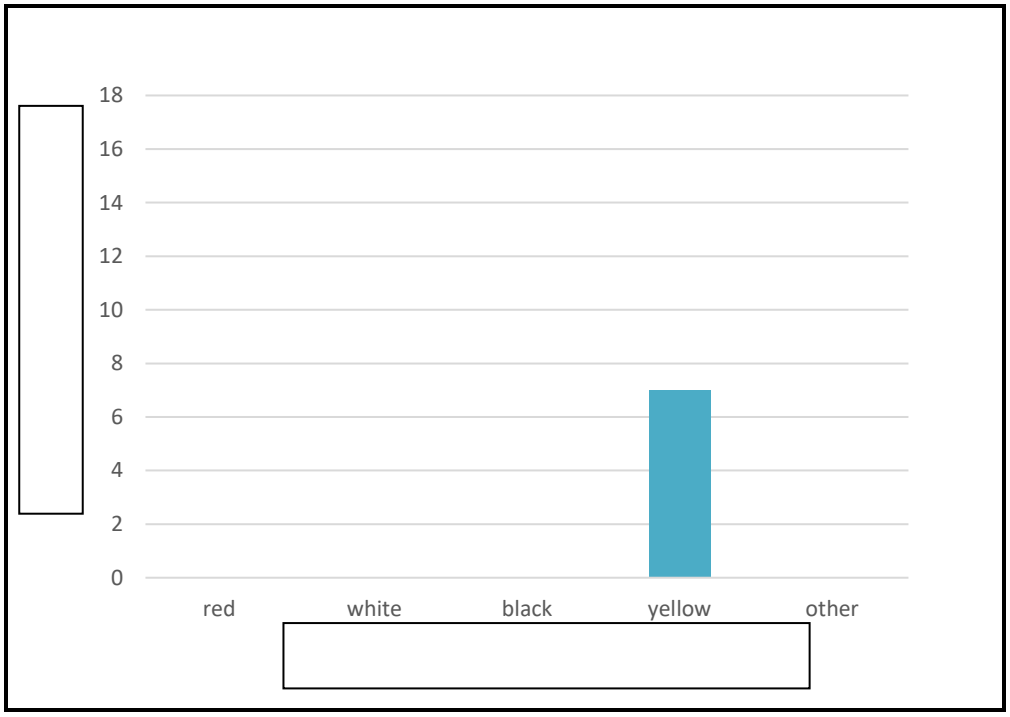
QUESTION 5

5.2.3

Colour of T-shirts	**Red**	**White**	**Black**	**Yellow**	**Other**
Frequency	*a*_____	*b*_____	*c*_____	7	*d*_____

(4)

5.2.4



(6)

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