higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(Second paper)

NQF LEVEL 2

(10401012)

6 November 2024 (Y-paper)
13:00–16:00

Drawing instruments and non-programmable calculators may be used.

This question paper consists of 10 pages.

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MATHEMATICAL LITERACY
NQF LEVEL 2
(Second paper)
TIME: 3 HOURS
MARKS: 150

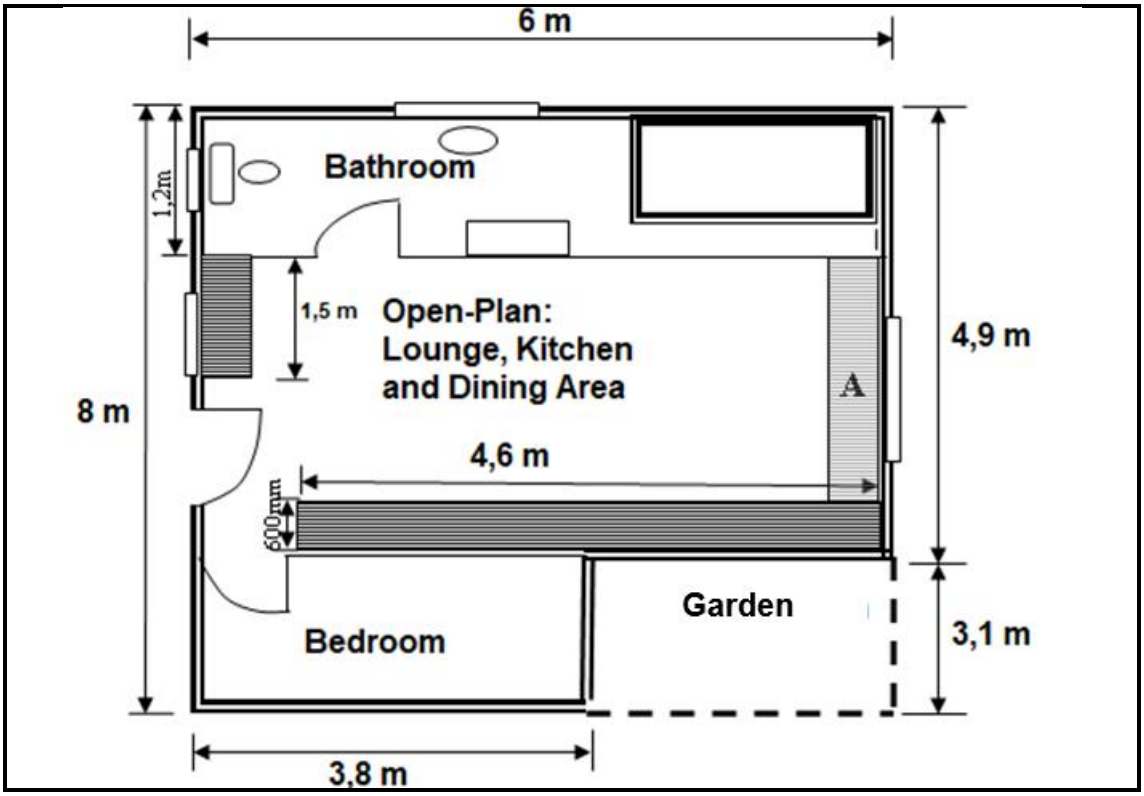
INSTRUCTIONS AND INFORMATION

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. Clearly show all calculations, diagrams, graphs et cetera used in this paper.
5. Round off the answers to TWO decimals where necessary, unless otherwise stated.
6. Drawing instruments, including rulers, compasses and protractors may be used.
7. Diagrams are not necessarily drawn to scale.
8. Use only a black or blue pen.
9. Write neatly and legibly.

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QUESTION 1

1.1 Below is a floorplan (not drawn to scale) of an apartment. Study the floorplan and answer the questions.



1.1.1 Name the two-dimensional shape that is labelled as the Garden. (1)

1.1.2 Calculate the area of the garden. (3)

1.1.3 What percentage of the entire house is made up of the bedroom (3)

1.2 The bedroom needs to be tiled. Use the floorplan in QUESTION 1.1 and the information below to answer the following questions.



Tiles are only sold in boxes of 20 tiles.
Each tile is a square with a length and breadth of 200 mm.

1.2.1 Convert 200 millimetres (mm) to metres (m).
HINT: 1 m = 1 000 mm (2)

1.2.2 Calculate the area of one tile in m².
Use the formula: Area = length × breadth (2)

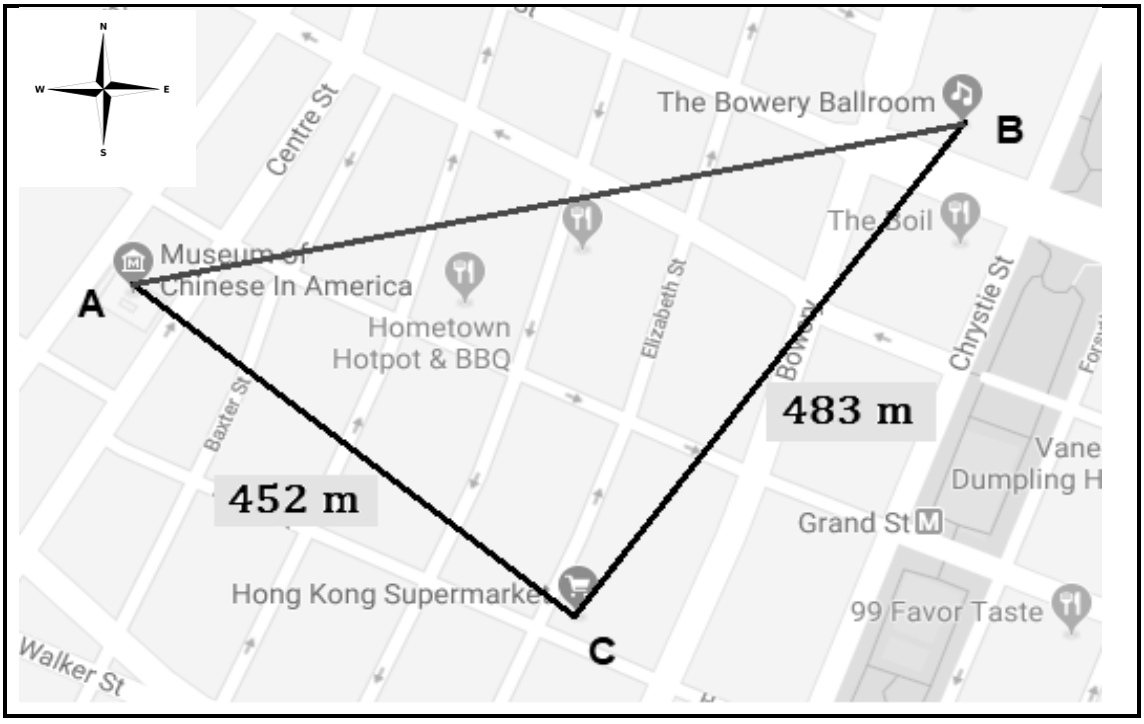
1.2.3 How many boxes of tiles are required to tile the bedroom if an additional 5% of tiles are required to complete the work . (7)

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1.2.4 Why is it important to add an additional percentage for tiles when you are tiling? (2)

1.2.5 A box of tiles costs R120,45 and labour is charged at R80 per m². Five bags of tile cement are needed at a cost of R 79,00 per bag and two bags of grout are required at a price of R 110,00 per bag. Calculate the total cost to tile the bedroom. (6)

1.3 Study the map below and answer the questions.



1.3.1 In which direction is The Bowery Ballroom from The Hong Kong Supermarket? (1)

1.3.2 Name the restaurant that is directly east from The Hong Kong Supermarket. (1)

1.3.3 Calculate the straight-line distance between The Bowery Ballroom and The Museum of Chinese in America (AB). Use the Theorem of Pythagoras where $AB^2 = AC^2 + BC^2$ (4)

1.3.4 If a person had to walk from The Bowery Ballroom to The Museum of the Chinese in America, would it be exactly the same distance as calculated in QUESTION 1.3.3? Give a reason for your answer. (3)

1.4 The scale of a map is 1:150 000. If the distance between two points is 19 mm on the map, calculate the real distance between the two points. Give your answer in km and round it to the nearest km.

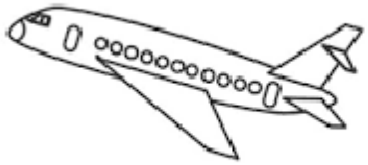
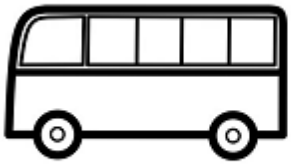
HINT: 1 m = 1 000 mm and 1 km = 1 000 m (5)

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QUESTION 2

2.1 Lebo is costing out a trip for herself. She will be travelling from Durban to Johannesburg and back to Durban again. Lebo found two options for transport during her internet search.
Study the options and answer the following questions:

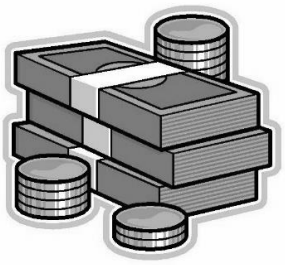
OPTION 1: Flight	OPTION 2: Bus
 R 1 480 VAT Exclusive on a return flight	 R 480 VAT inclusive for a one way ticket

2.1.1 Explain what the term *VAT exclusive* means. (1)

2.1.2 Advise Lebo as to which option would be the most economical way to travel. Show all your calculations. All calculations should be VAT (15%) inclusive. (6)

2.1.3 It seems that flying is much more expensive than travelling by bus. Give ONE reason why you think people choose to fly, rather than take the bus. (2)

2.2 Calculate Lebo's total expenses for her planned trip. The following information is applicable:



Travel per bus: R960
Accommodation: R450 per day for 5 days
Food: R250 per day for 5 days
Transport in Johannesburg: R60 per day for 5 days
Johannesburg Zoo Entrance Fee: R120
Gold Reef City Entrance Fee: R265
Sci-Bono Discovery Centre Entrance Fee: R60
Apartheid Museum Entrance Fee: R150 (9)

2.3 Lebo has the following means of income to cover the cost of her trip:

Birthday money from friends: R1 500
Money from part-time job: R80 per hour and she worked for 21 hours
Money from Lebo's savings: R900
Contribution from parents: R1 000

2.3.1 Give ONE reason why it is important to try and save money every month. (2)

2.3.2 Calculate whether Lebo will have a surplus or a deficit and the value of the surplus or deficit. Use your answers in QUESTION 2.2 as well as the information in QUESTION 2.3 for your calculation.
Surplus or Deficit = Income – Expenses (8)

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2.3.3 Assuming that Lebo had a deficit in QUESTION 2.3.2, supply her with TWO possible ways to make sure that she will have enough money to cover her expenses for her trip. (2 × 2) (4)

2.3.4 Lebo's parents want to deposit R1 000 into her bank account. She has two accounts, which charge different fees per transaction.

Pay-As-You-Use Account: R4 + R1,40 per R100
Access Account: R1,60 per R100

Into which account should they pay the money? Give a reason for your answer. Show all your calculations. (6)

2.3.5 In finance, what does the acronyms ATM and EFT stand for? (2)
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QUESTION 3

3.1 A charity organisation is planning to host a dinner in order to raise funds. They approached two events companies to quote for the cost of hiring a venue and providing a meal.



SHAKES EVENTS will charge R1 000 for the venue and R100 per person for the meal. The venue can accommodate 200 people.

COOLIO SISTERS will charge R2 000 for the venue and R75 per person for the meal. The venue can accommodate 150 people.

Study the two tables below and answer the following questions:



TABLE 1: SHAKES EVENTS

Number of people	0	20	40	60	80
Cost	1 000	**A**	5 000	7 000	9 000

Cost = R1 000 + R100 per person



TABLE 2: COOLIO SISTERS

Number of people	0	20	40	**B**	80
Cost	2 000	3 500	5 000	6 500	8 000

Cost = R2 000 + R75 per person

3.1.1 Identify the dependent variable in Table 1. (1)

3.1.2 State whether Table 2 is an example of a direct or indirect/inverse proportion. Give a reason for your answer. (3)

3.1.3 Calculate the value for A in Table 1. (2)

3.1.4 Calculate the value for B in Table 2. (3)

3.1.5 Which company would be the best if they were to host 100 people? Give a reason for your answer. Show all your calculations. (6)

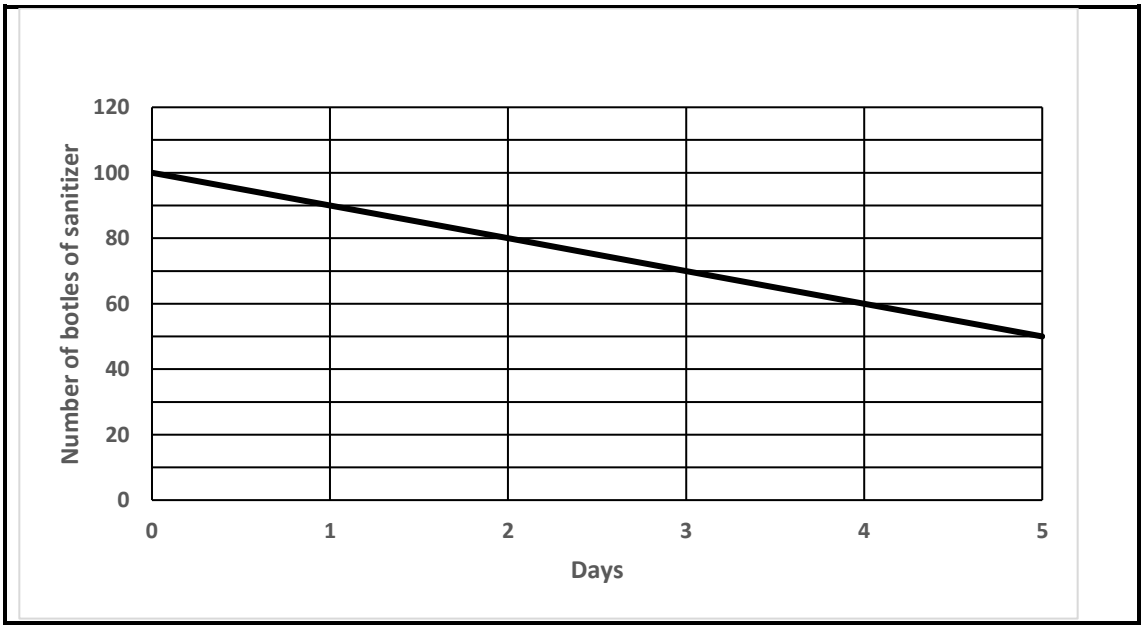
3.1.6 The charity decides to host 180 people at the event.

Which company would be the best option? Give a reason for your answer. (3)

3.1.7 At how many people would the cost of the event be the same for SHAKES EVENTS and COOLIO SISTERS? (2)

3.2 Victor has a part-time job at a small hotel. One of his daily duties is to place ten full bottles of sanitizer at strategic spots around the hotel. The bottles are replaced every day. The hotel orders their bottles of sanitizer in bulk in batches of 100.

The graph below indicates how the stock of sanitizer decreases on a daily basis. Study the graph and answer the following questions.



3.2.1 Supply a suitable heading for the graph. (1)

3.2.2 Is this graph an example of a direct or an indirect/inverse proportion? Give a reason for your answer. (3)

3.2.3 Make use of the information on the graph and write down the value/s for A – F in the table below.

Days	0	1	2	A	B	C
Number of bottles	100	90	D	70	E	F

(6)

3.2.4 After how many days will the batch of sanitizer be finished? (3)

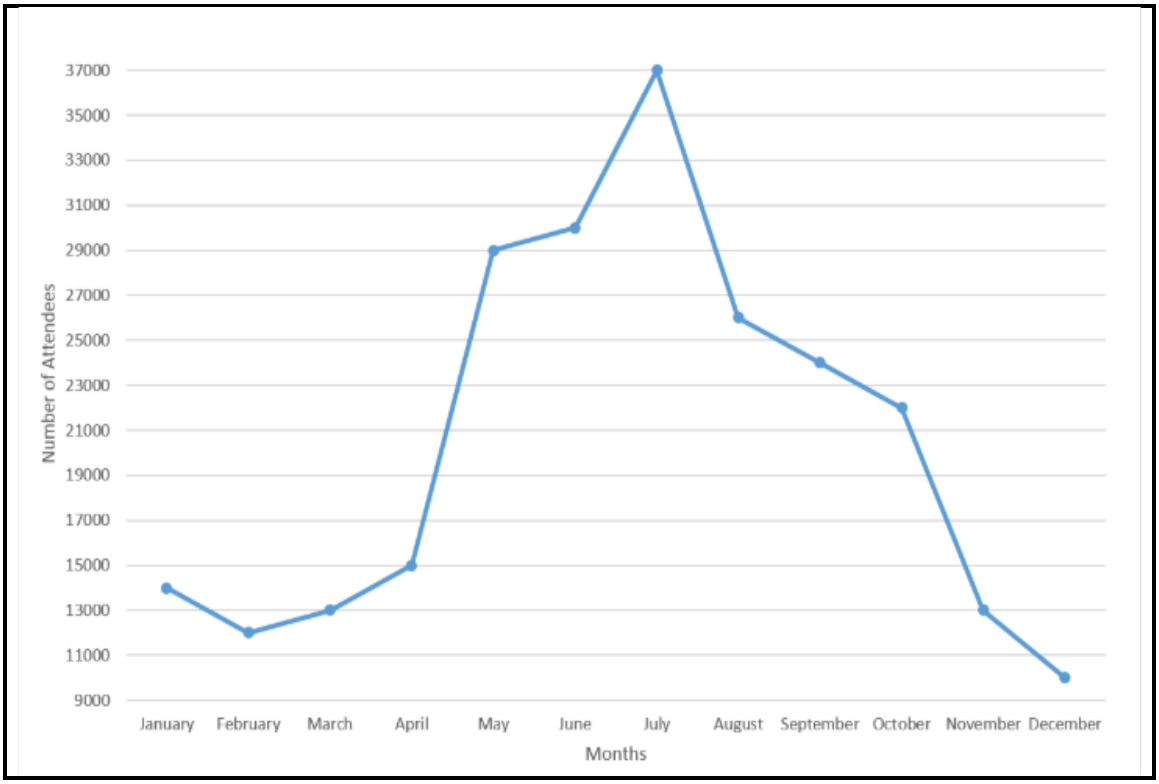
3.2.5 The management normally orders new stock when they have 40 bottles of sanitizer remaining. On which day would they order the sanitizer? (2)

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QUESTION 4

4.1 The following graph charts shows the number of attendees at a theme park over the course of a year. Use the line graph below to answer the following questions.



4.1.1 Which month has the lowest attendance in the park? (1)

4.1.2 Calculate the increase in the number of attendances from June to July. (2)

4.1.3 There was an increase in the number of attendees from April to May. How much more is that increase as compared to the increase between June and July? (4)

4.2 A survey of 92 people was conducted and the results are displayed in the table below. Use the table below to answer QUESTION 4.2.1 to 4.2.6:

		Overall Number
Gender	Male	42
	Female	50
Age Group	< 10 years	0
	11 – 18 years	9
	19 – 30 years	7
	31– 50 years	36
	51– 65 years	A
	>65 years	12
Occupation	Working	43
	Seeking Work	6
	House Person	13
	Retired	18
	Student/at School	7
	Sick/Disabled	1
	Carer/Voluntary	4
Smoking Habits	Current Smoker	17
	Ex-Smoker	28
	A never Smoker	45
Time spent on physical Activity Per Week	None	2
	$0 - 2\frac{1}{2}$ hours	27
	$2\frac{1}{2}$ – 5 hours	25
	Over 5 hours	38

4.2.1 Calculate the percentage of males present in the survey. (2)

4.2.2 Determine the number of people that are in the age group 51−65 years (the value of A). (2)

4.2.3 Calculate the percentage of the people that are retired. (2)

4.2.4 Did all participants answer the smoking habits question? Explain (2)

4.2.5 Which category under the “Smoking Habits” has the fewest people? (1)

4.2.6 Which time period under “Time spent on physical activity per week” is the most popular? (1)

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4.3 Classes in the college were asked to collect money for charity. The money that each class collected was counted by the lecturers and the amounts are recorded in the table below. Study the table and answer the following questions:



LEVEL 2 GROUPS	AMOUNT	LEVEL 3 GROUPS	AMOUNT
TA	R544	TI	R294
TB	R321	TJ	R321
TC	R567	TK	R475
OA	R324	OJ	R470
OB	R188	OK	R320

4.3.1 Was the data gathered with the use of a survey, observation or questionnaire? Give a reason for your answer. (2)

4.3.2 Was the data gathered based on FACT or OPINION. Give a reason for your answer. (2)

4.3.3 Calculate the range of the amounts of money collected by the Level 2 groups. (3)

4.3.4 Calculate the median of the amounts of money collected by the Level 3 groups. (2)

4.3.5 Calculate the mode of the amounts of money that were collected by all the groups. (2)

4.3.6 Calculate the average/mean amount of money collected by the level 3 groups. (3)

4.3.7 Which measure of central tendency in QUESTION 4.3.4, QUESTION 4.3.5 and QUESTION 4.3.6 is the best to use and why? (2)

4.3.8 Calculate the total amount of money that was collected by all the groups. (2)

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TOTAL: 150

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