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# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

## NATIONAL CERTIFICATE (VOCATIONAL)

**MATHEMATICAL LITERACY**  
(Second Paper)  
NQF LEVEL 2

**NOVEMBER EXAMINATION**

(10401012)

**4 November (X-Paper)**  
**09:00 – 12:00**

**Calculators and drawing instruments may be used.**

**This question paper consists of 10 pages and 1 answer sheet.**



15

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<p><b>TIME: 3 HOURS</b>  <b>MARKS: 150</b></p>
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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that are used in determining the answers.
4. Number the answers according to the numbering system used in this question paper.
5. Answer QUESTION 3.6 on the attached answer sheet and submit the ANSWER SHEET with your answer book.
6. Diagrams are not necessarily drawn to scale.
7. Write neatly and legibly.



**QUESTION 1**

1.1 Shirley works at a furniture shop where she receives a basic salary of R4 250.

She also receives 5% commission on her total monthly sales if the sales for the month are more than R20 000.

Her sales for March 2013 were R43 100.

Study her income and expenditure statement for March 2013 below and answer the questions that follow:

<b>Income</b>	<b>Amount</b>	<b>Expenditure</b>	<b>Amount</b>
Basic salary	R4 250	Home loan	R1 050
Commission	.....	Water & Electricity	R300
		Groceries	R800
		Public transport	R260
		Clothing	R120
		Household insurance	R100
		Entertainment	R350

- 1.1.1 Calculate the amount that Shirley has available after all her expenses were paid for the month of March. Show ALL your calculations. (7)
- 1.1.2 Express the money allocated to groceries as a percentage of the total expenditure amount. (3)
- 1.1.3 State ONE advantage of having an income and expenditure statement. (2)
- 1.1.4 'I am hundred percent sure that the income for the month of April will be exactly the same as that of March.'
- Do you agree or disagree with the statement? Motivate your answer. (3)
- 1.1.5 Calculate the minimum monthly sales amount that Shirley should get to cover the home loan of R1 050. Show all your calculations.

Use the formula: Monthly sales amount =  $\frac{\text{home loan amount}}{\text{commission percentage}}$  (4)



1.2 Study Shirley's income and expenditure statement for April 2013 below and answer the questions that follow:

Income	Amount	Expenditure	% change in relation to March 2013 in QUESTION 1.1
Basic salary	R4 250	Home loan	0 %
Commission	R1 500	Water & Electricity	5%
		Groceries	-3%
		Public transport	5,3%
		Clothing	0%
		Household Insurance	0%
		Entertainment	-2,5%

- 1.2.1 Calculate her total monthly income. (2)
- 1.2.2 How much in Rands did she pay for household insurance in April 2013? (2)
- 1.2.3 Choose the correct answer between brackets:  
The '-' sign indicates a (increase, decrease or constant). (1)
- 1.2.4 Calculate the amount spent on groceries in April 2013. Show all your calculations. (3)
- 1.2.5 Calculate the transport costs for April. Show all your calculations. (3)
- 1.2.6 Calculate the percentage difference of her expenses between March 2013, in QUESTION 1.1 and April 2013. Show all your calculations. (3)
- 1.2.7 Are groceries a fixed or a variable expense? Motivate your answer. (3)

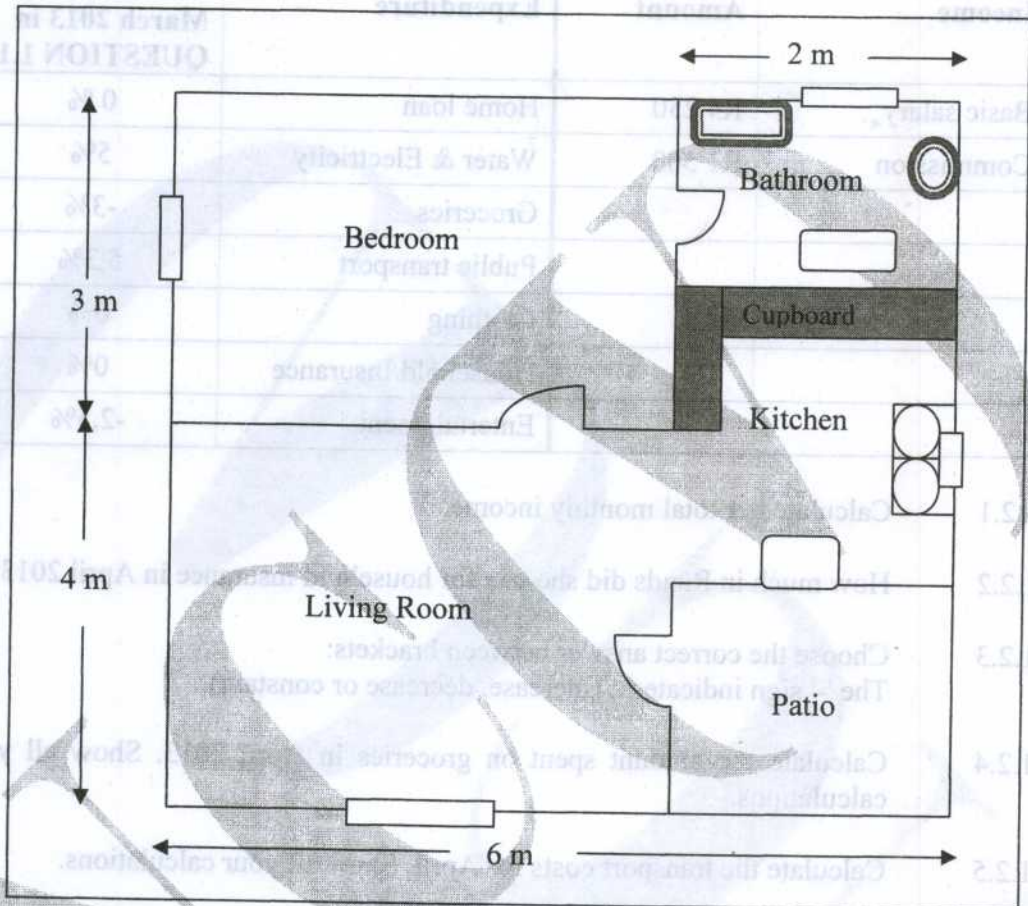
[36]

~~4634~~  
~~4164~~  
 35,23  
 10,07  
 26,85  
 8,72  
 4,03  
 11,74



**QUESTION 2**

Amanda completed her degree last year and started working three months ago. She bought herself a bachelor flat. Below is the floor plan of her flat. Study the floor plan and answer the questions that follow.










- 2.1 How many windows are in this flat? (1)
- 2.2 How many doors are in the bedroom? (1)
- 2.3 Calculate the area of the bedroom in  $\text{m}^2$ . Show all your calculations. (4)
- 2.4 Amanda wants to install laminated flooring in her bedroom. The type of laminated flooring that she likes costs R149,00 per  $\text{m}^2$ , excluding VAT of 14%. Calculate the VAT inclusive price of the laminated flooring for the bedroom. Show all your calculations. (5)
- 2.5 If the flat was advertised for R13 000 per  $\text{m}^2$ , what was the approximate price that Shirley paid for the flat? Show all your calculations. (4)
- 2.6 The monthly instalment for the flat is R3 800. If the instalment forms  $\frac{1}{5}$  of the total monthly income of Amanda, calculate what her total monthly income is. (3)

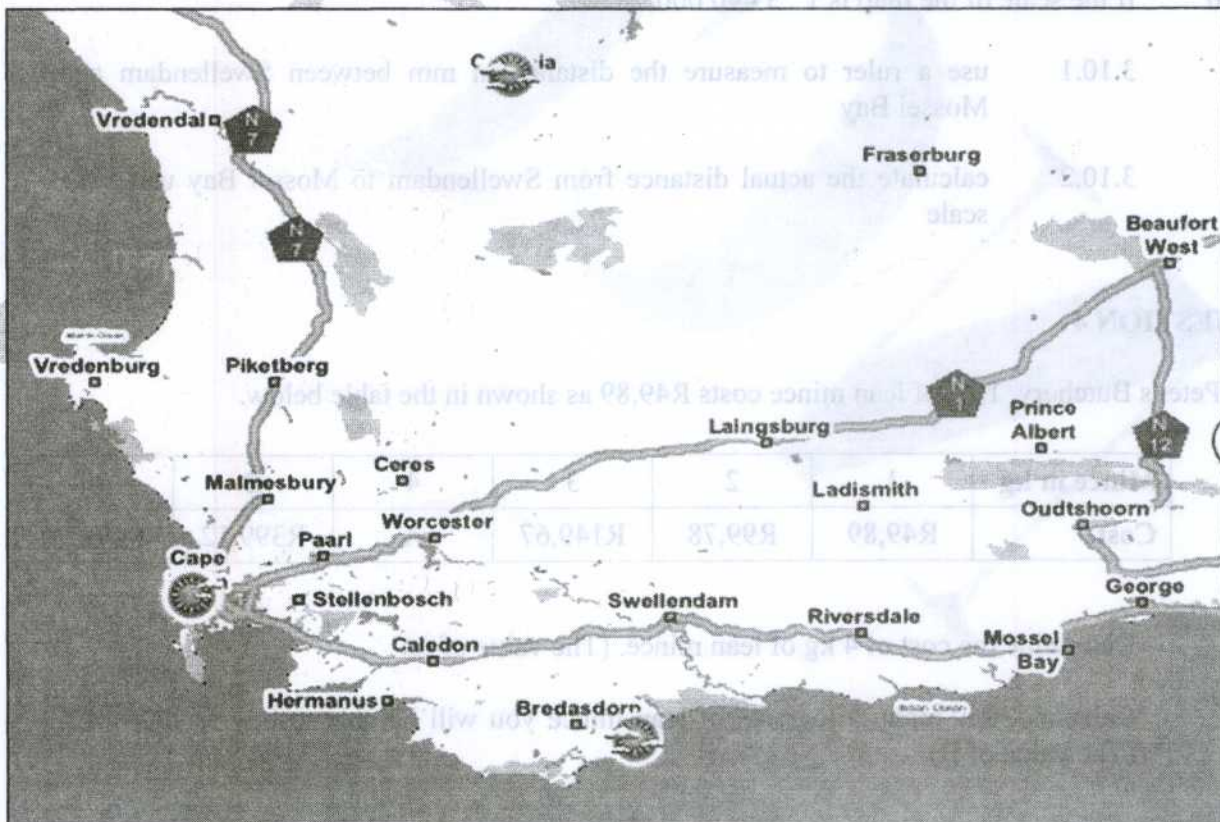
**[18]**

**QUESTION 3**

Sello is on holiday in Cape Town from 21 June to 27 June 2013. Below is a table that indicates a 7-day weather forecast as well as a map of that region. Use the table and the map to answer the questions that follow.

**7-day weather forecast: Cape Town**

Day	Date	Weather	Min	Max	Wind	Rain
Thurs.	June 21		11°C	18°C	19 km/h SE	0%
Fri.	June 22		12°C	16°C	9 km/h NW	0%
Sat.	June 23		12°C	15°C	28 km/h NW	30%
Sun.	June 24		10°C	15°C	19 km/h NW	30%
Mon.	June 25		12°C	16°C	37 km/h NW	30%
Tues.	June 26		12°C	16°C	28 km/h W	60%
Wed.	June 27		10°C	17°C	19 km/h SW	0%



- 3.1 What is the mode of the minimum temperatures? (2)
- 3.2 Determine the median of the maximum temperatures. Show all your calculations. (3)
- 3.3 Calculate the range of the maximum temperatures. (2)



- 3.4 Determine the mean wind speed of the north-westerly winds. Show all your calculations. (4)
- 3.5 Recommend the most suitable day on which Sello should climb Table Mountain. Motivate your answer. (3)
- 3.6 Draw a double bar graph to show the maximum and minimum temperatures per day on the attached ANSWER SHEET. Clearly label the maximum and minimum temperatures by completing the legend. (6)
- 3.7 On which National Road will you travel from Paarl to Worcester? (2)
- 3.8 What is the general direction from Mossel Bay to Cape Town? (2)
- 3.9 The distance between Mossel Bay and Cape Town is 388 km. Sello will depart from Mossel Bay to Cape Town at 10:30. If his average speed is 110 km/h, will he arrive before 15:00 or after 15:00 in Cape Town? Show all your calculations to support your answer. (5)

You may use the formula: 
$$\text{Average speed} = \frac{\text{distance}}{\text{time}}$$

- 3.10 If the scale of the map is 1 : 3 440 000,
  - 3.10.1 use a ruler to measure the distance in mm between Swellendam and Mossel Bay
  - 3.10.2 calculate the actual distance from Swellendam to Mossel Bay using the scale

(5) [34]

**QUESTION 4**

At Peter's Butchery, 1 kg of lean mince costs R49,89 as shown in the table below.

<b>Mince in kg</b>	1	2	3	4	<b>B</b>	10
<b>Cost</b>	R49,89	R99,78	R149,67	A	R399,12	R498,90

- 4.1 Determine the cost of 4 kg of lean mince. (The value of A) (2)
- 4.2 Calculate how many kilograms of lean mince you will be able to buy for R399,12. (The value of B) (2)

4.3 Lufuno is a hospitality student and was asked to serve lunch to eight members of a disciplinary committee. She decided to prepare a dish of which mince and rice are some of the ingredients.

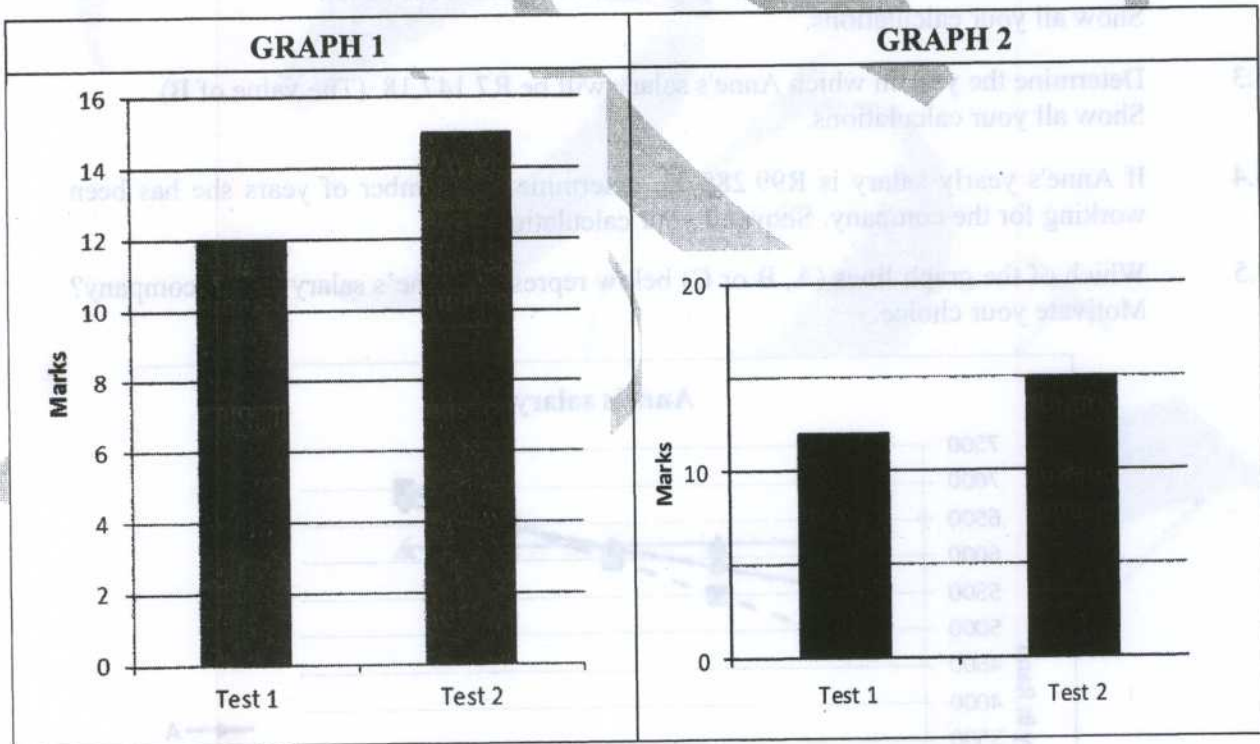
- She uses 2,5 kg of rice which costs R25,99.
- 1 kg of mince can serve a meal to three adults.
- The lean mince, to the nearest kg, will be bought from Peter's Butchery.

Calculate how much Lufuno will spend to buy these ingredients to provide lunch for all the members of the disciplinary committee. (4)

4.4 Convert the cost rate of lean mince to Rands per 100 gram. (3)

4.5 Why do shops advertise some products in Rands per 100 grams instead of Rands per kilogram? (2)

4.6 Lufuno's marks are displayed below in graph 1 and graph 2 for the same Hospitality tests. Study the graphs and then answer the questions that follow.



4.6.1 Which graph gives the impression that there is a big improvement in the student's marks? (2)

4.6.2 Which graph would the student prefer to use? (2)

4.6.3 What difference between the two graphs could lead to opposing (opposite) impressions? (2)

4.6.4 Calculate the percentage mark of Test 2 if the test total was 25 marks. (3)



4.6.5 Calculate the students average percentage if each test counted out of a mark of 25.

(4)  
[26]

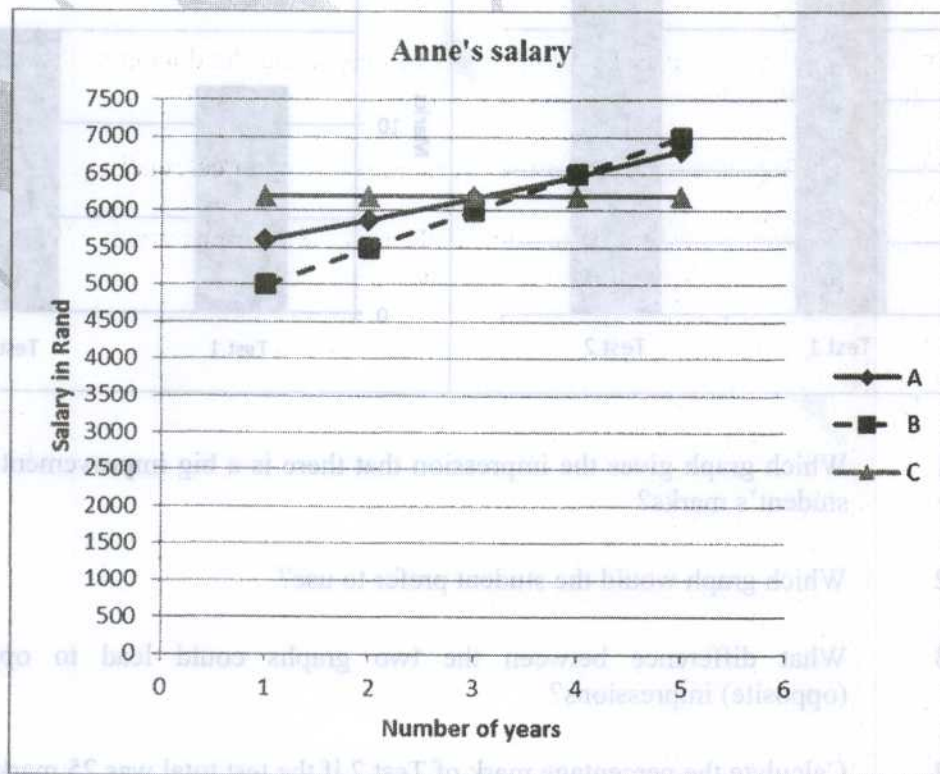
**QUESTION 5**

Anne is appointed as receptionist at a company and gets a salary of R5 600 per month. Part of the salary negotiations is to give her an increase of 5% every year as indicated in the table below.

**Table: Yearly salary increase**

Number of years	1	2	3	4	<b>B</b>
Monthly salary in rand	5 600	5 880	A	6 482,70	7 147,18

- 5.1 What will Anne's salary be in the 50<sup>th</sup> month of her career at this company? (2)
- 5.2 Determine Anne's salary in the 3<sup>rd</sup> year of work. (The value of A).  
Show all your calculations. (3)
- 5.3 Determine the year in which Anne's salary will be R7 147,18. (The value of B)  
Show all your calculations. (4)
- 5.4 If Anne's yearly salary is R99 285,05, determine the number of years she has been working for the company. Show all your calculations. (5)
- 5.5 Which of the graph lines (A, B or C) below represent Anne's salary at this company?  
Motivate your choice. (3)



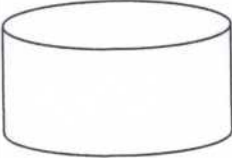
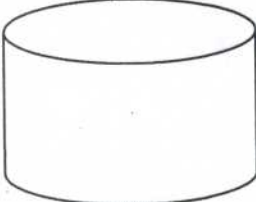

280

[17]



**QUESTION 6**

The table below shows the podiums for the first THREE athletes in an item used during the athletic championships. Use the table to answer the questions that follow.

PODIUMS FOR ATHLETES		
A	B	C
		

6.1 Which of podiums A, B or C will be used for the first, second and third place? Motivate your choices. (5)

6.2 The dimensions of podium A are as follow:

- Diameter = 180 cm
- Height = 45 cm

Calculate the area in  $m^2$  of the platform of podium A on which the athletes will stand. Show all your calculations.

Formula: Area =  $\pi \times r^2$  where  $\pi = 3,14$  and  $r = \text{radius}$ . (4)

6.3 The ratio of podium A : B is 1 : 1,4 in terms of height and the diameter. Use the ratio to calculate the following:

6.3.1 The height of podium B in metres. Show all your calculations. (3)

6.3.2 The volume in  $m^3$  of podium B. Round off your answer to TWO decimal places and show all your calculations.

Formula: Volume =  $\pi \times r^2 \times h$ , where  $h = \text{height}$  (7)

[19]

**TOTAL: 150**

The table below shows the podiums for the first THREE athletes in an event used during the athletic championships. Use the table to answer the questions that follow.

PODIUMS FOR ATHLETES		
C	B	A
		

6.1 Which of podiums A, B or C will be used for the first, second and third place? Motivate your choices. (2)

6.2 The diameters of podium A are as follows:

- Diameter = 1.80 cm
- Height = 45 cm

Calculate the area in  $m^2$  of the platform of podium A on which the athletes will stand. Show all your calculations.

6.3 The ratio of podium A : B is 1 : 4 in terms of height and the diameter. Use the ratio to calculate the following:

6.3.1 The height of podium B in metres. Show all your calculations. (3)

6.3.2 The volume in  $m^3$  of podium B. Round off your answer to TWO decimal places and show all your calculations. (4)

Formula: Volume =  $\pi \times r^2 \times h$ , where  $h$  = height

(7)

TOTAL: 150

