Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY – FIRST PAPER

NOVEMBER 2009

MARKS: 100

TIME: 2½ hours

This question paper consists of 11 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX questions. Answer ALL the questions.

2. Number the answers correctly according to the numbering system used in this question paper.

3. The table for QUESTION 3.1, the graph paper for QUESTION 3.2 and the map for QUESTION 5 can be found in ANNEXURE A, B and C respectively at the end of this paper.

4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.

5. ALL the calculations and steps must be shown clearly.

6. ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise. Do NOT round off until you get to the final answer.

7. Start EACH question on a NEW page.

8. Write neatly and legibly.

QUESTION 1

Shanté sells wedges of chocolate cake at school to make her pocket money. She bakes the cake in a round cake-pan and cuts it into 24 wedges of cake that she sells for R3,00 a wedge. She uses the following recipe:

CAKE-PAN CHOCOLATE CAKE

Ingredients:

- 750 mℓ flour
- 20 mℓ baking powder
- 500 mℓ sugar
- 5 mℓ bicarbonate of soda
- ⅓ cup cocoa powder
- 1 teaspoon salt
- 500 mℓ boiling water
- 1 cup oil
- 2 teaspoons vanilla essence
- 50 mℓ white vinegar

Method:

Heat oven to 180 °C.
Spray pan with Spray-and-Cook
Mix all the dry ingredients in the pan.
Add the wet ingredients and whisk it together using a fork.
Bang the pan lightly for the bubbles to be removed.
Bake for 20 minutes or until done.

TEASPOONS	CUPS: RSA & USA
1 teaspoon = 5 mℓ	1 cup = 250 mℓ
SPOONS	1 spoon = 15 mℓ

1.1 How many cups of flour will she need for the recipe? (2)

1.2 There is 10 g of sugar in every 12,5 mℓ of sugar. If Shanté was given a scale to weigh off the sugar, how much must she weigh off for this recipe? (4)

1.3 Shanté uses a measuring spoon that is marked as 5 mℓ to measure some of the dry ingredients. How many spoons of baking powder will she need? (2)

1.4 She measures the cocoa with a jug calibrated in mℓ. How many mℓ of cocoa will she need? (2)

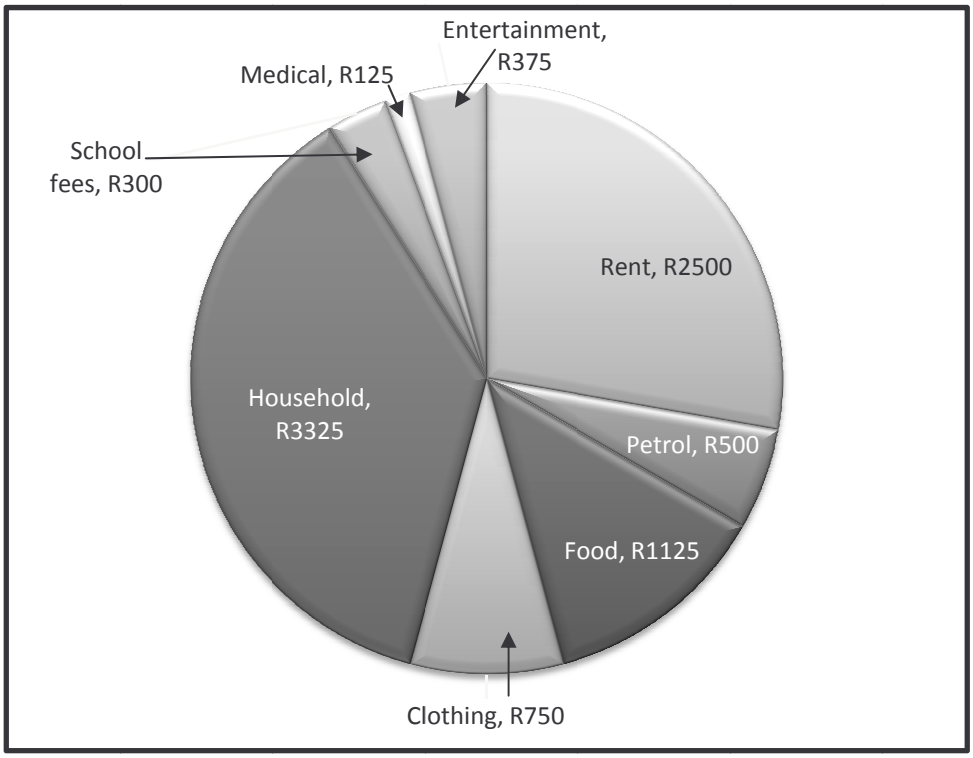
1.5 How much money will she make if she sells all the wedges of cake? (2)

1.6 It costs her R25,00 to bake one cake. How much profit does she make from one cake? (2)

[14]

QUESTION 2

2.1 The pie chart below shows the expenses that Bulelwa has every month. Study the chart and answer the questions that follow:



2.1.1 What is her total expense for the month? (2)

2.1.2 What percentage of her salary does she spend on food every month? (3)

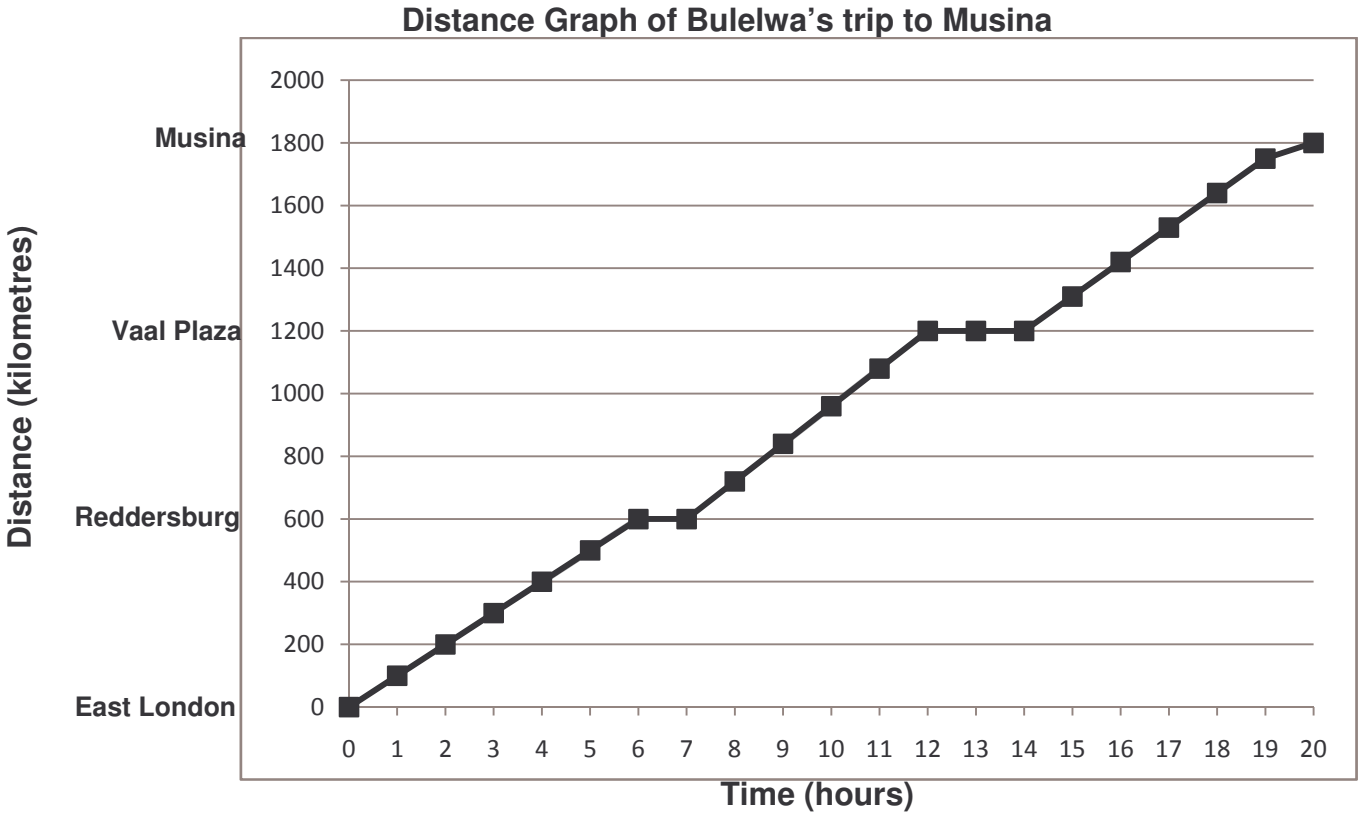
2.1.3 Bulelwa's monthly expenses increases by 4,5%. What will be her new expenses per month? (3)

2.1.4 Bulelwa got sick and had to have an operation. Her medical aid did not cover all the costs and she received an account of R3500,00 that she has to pay off over 12 months. How much will she pay per month? (2)

2.1.5 Bulelwa still pays R125 per month towards her medical aid. How much will she pay towards her monthly medical expenses now? (2)

2.1.6 Bulelwa wants to save money so she can go away on a trip with three of her friends. She decides to reduce her household expenses to R2 698,00 per month in order to save money. Calculate the new angle on the pie chart that would now represent her household expenses. (4)

2.2 Bulelwa's three friends stayed over at her house and at 05:00, they got up and got ready for their trip from East London to Musina in the Limpopo Province.



2.2.1 How many hours did it take to travel from Reddersburg to Vaal Plaza? (2)

2.2.2 What do you think the group did in Reddersburg? (1)

2.2.3 At what speed did they travel from Reddersburg to the Vaal Plaza? Use the following formula to calculate your answer:

Hint: Speed = $\frac{\text{Distance}}{\text{Time}}$

(4)

[23]

QUESTION 3

The monthly income and expenses of Gidima company which produces cricket bats can be calculated using the formulae:

Income = 4 × n and
Expense = n + 900
where n is the number of cricket bats sold.

3.1 Complete the table below.

Use the table in **ANNEXURE A.**

Number of Cricket Bats (n)	**Income (4 x n)**	**Expense (n + 900)**
100	400	
200		
300		
400		1300
500		

(4)

3.2 On the same system of axes on **ANNEXURE B**, plot graphs showing the company's expenses and income for values of n from 0 to 500. (4)

3.3 Use the graph to read the number cricket bats the company needs to sell in order to break even? (2)

3.4 If the company produces and sells 790 cricket bats in January, will they make a profit at the end of January? Show all calculations.
(***Profit = Income – Expense***) (3)

3.5 The company plans to increase the production of cricket bats in February by 20%.

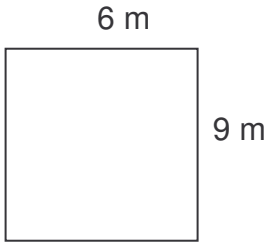
3.5.1 How many cricket bats should the company produce in February? (3)

3.5.2 Calculate the profit the company makes in February if they sell all the cricket bats. (3)

[19]

QUESTION 4

4.1 Mrs Caddy is running a day-care centre for the children living with HIV and Aids. She is a retired domestic worker. She decided to turn her garage into a day-care centre for children living with HIV/Aids. Her garage has the following dimensions:



4.1.1 What is the area of this garage?
Area of a rectangle = ℓ x b (2)

4.1.2 Mrs Caddy wants to tile the floor of her garage for the day-care centre. She chooses a square tile with sides of 30 cm. How many tiles will she need to tile her garage?
Hint: 1 m = 100 cm; Area of one tile = ℓ x b (3)

4.1.3 The DO-IT-YOURSELF tile shop heard her story and decided to sell the tiles at a reasonable price. Each tile costs R1,25 including VAT. How much will the tiles cost her? (2)

4.1.4 Her neighbour charges her R45,00 per m^2 to tile the garage. What will be the total cost of tiling the garage? (4)

4.1.5 Mrs Caddy decides to take a loan of R4 000,00 from ND Bank to cover the costs. The bank gives her a loan of R4 000,00 at 8% compounded yearly for 5 years. Calculate how much will she pay back to ND Bank after 5 years.

$A = P(1 + i)^n$ where:

A = total amount paid back
P = Principal amount
i = interest rate factor
n = number of times interest will be calculated (5)
[16]

QUESTION 5

A Cape Town family is planning a trip to Knysna. They are using the map given on ANNEXURE C and the given scale to estimate the distance of their journey.

Study the map given on ANNEXURE C and answer the questions that follow:

The questions below refer to their calculations around this trip and to a <u>ONE WAY</u> journey only.

5.1 If they travel along the N2 from Cape Town to Knysna, in which general direction will they travel? (1)

5.2 The family pass through Swellendam and the children wants to know which town they will pass through next. What answer did their dad give them? (1)

5.3 They expect to travel at an average speed of 80km/h. It is important to stop every 2 hours to avoid driver fatigue. The distance from Cape Town to Knysna is 480 km.

5.3.1 How many times during their journey should they plan to stop? (1)

5.3.2 Name the place(s) they could possibly stop over to take their breaks. (2)

5.4 If they leave at 08:00, stick to the expected average speed and take 45 minute breaks at their stop(s), at what time could they expect to arrive in Knysna?

Hint: Time = $\frac{\text{Distance}}{\text{Speed}}$ (5)

5.5 Their car covers a distance of 9 km per litre.

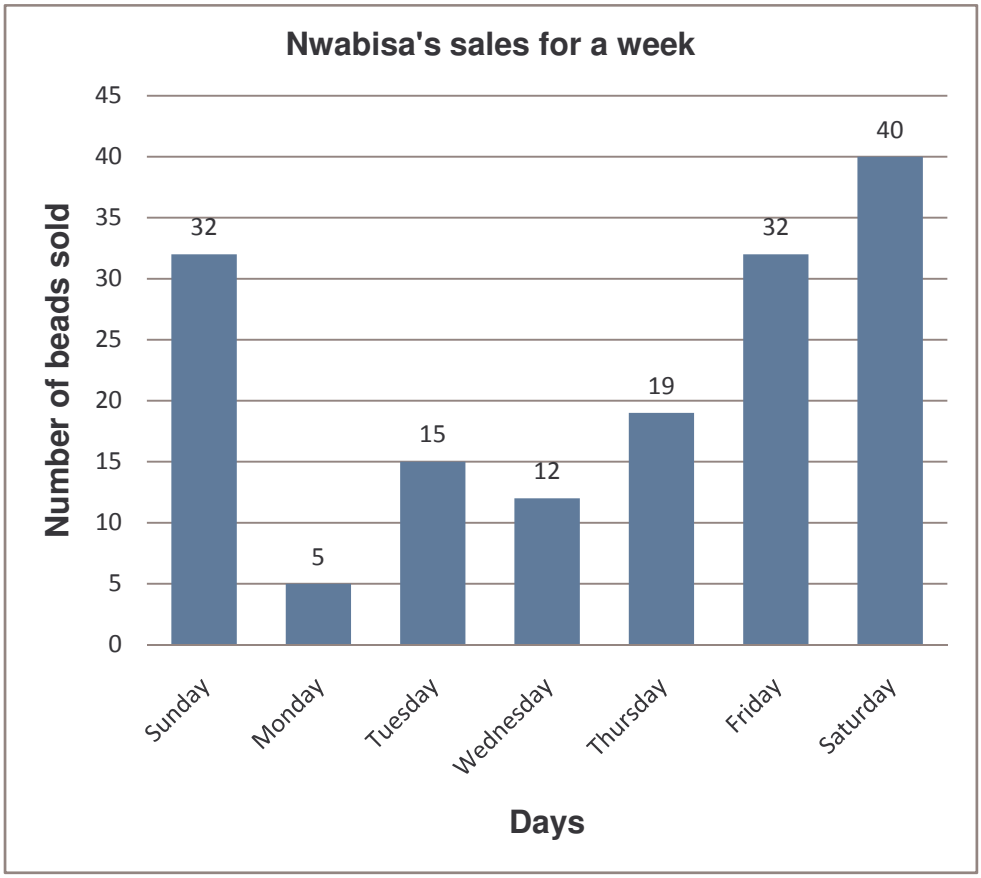
5.5.1 Calculate their petrol consumption for their one way trip. (**Give your answer to the nearest litre**) (3)

5.5.2 If the price of petrol is R7,27 per litre, calculate the cost of petrol for their journey. (**Give your answer to nearest Rand**) (3)

[16]

QUESTION 6

Nwabisa is a vendor at the Port Elizabeth aquarium where she sells her beaded items that she makes herself. The following bar graph shows her sales for the first week of a month.



6.1 Calculate the mean number of beaded items she sells per day, correct to the nearest whole number. (3)

6.2 Determine the median. (2)

6.3 Write down the mode. (1)

6.4 Determine the range for her sales. (2)

6.5 On which **three** days does she have good sales? (3)

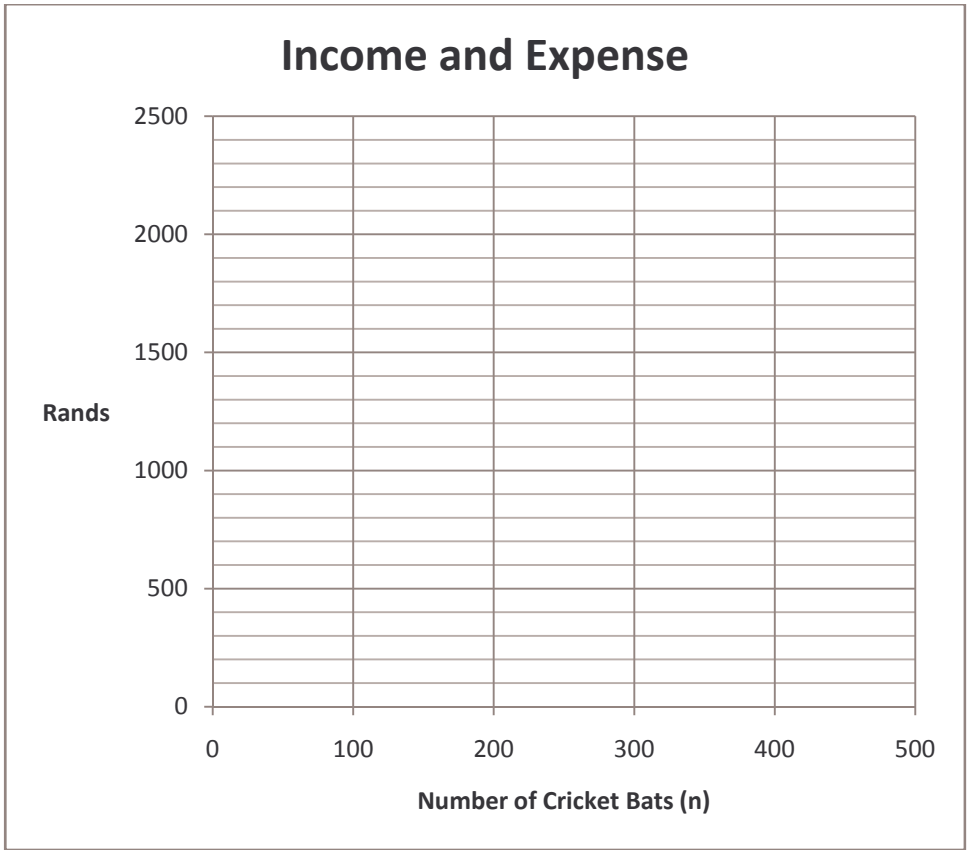
6.6 Give a reason for your answer to QUESTION 6.5. (1)

[12]

ANNEXURE A

Number of Cricket Bats (n)	Income (4 x n)	Expense (n + 900)
100	400	
200		
300		
400		1300
500		

ANNEXURE B



ANNEXURE C


Gamka
Piketberg
Saldanha
Western Cape
Tulbagh
Ceres
Prince Albert
N12
Eastern Cape
Langebaan
Malmesbury
Touwsrivier
Laingsburg
West Coast
27
Worcester
Melkbosstrand
Wellington
Montagu
Ladysmith
Oudtshoorn
Robertson
62
Calitz-dorp
Plettenberg Bay
Paarl
Franschhoek
McGregor
Barrydale
Knysna
Cape Town
Stellenbosch
Greyton
George
Riversdale
Hout Bay
Somerset West
Caledon
N2
Swellendam
Wilderness
Tsitsikamma
Garden Route
Mossel Bay
Hermanus
Bredasdorp
Stillbaai
De Hoop
Atlantic Ocean
Agulhas N.P.
Arniston
Gansbaai
Indian Ocean
0 25 50 75 100 km
N
L'Agulhas
South Africa: Western Cape