



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2
PREPARATORY EXAMINATION 2008

MARKS: 150

TIME: 3 hours

This question paper consists of 10 pages and 3 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. QUESTIONS 1.1.1, 1.2.4, 4.1 and 5.1.1 must be answered on the attached ANNEXURES. Write your name and surname in the space provided and hand in the annexures with the ANSWER BOOK.
3. Number the answers correctly according to the numbering system used in this question paper.
4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
5. Show ALL calculations clearly.
6. ALL final answers must be rounded off to TWO decimal places, unless stated otherwise.
7. Start EACH question on a NEW page.
8. Write neatly and legibly.

QUESTION 1

- 1.1 Deborah was born at the end of January and she had a mass of 3,00 kg at birth. She is taken to the clinic at the end of each month and her mass is recorded in TABLE 1.

Use the table to answer the questions below.

TABLE 1: Deborah's mass

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Mass (kg)	3,0	4,5	5,0	6,0	7,0	8,0	7,0	8,5	9,5	10,0	11,0	10,0

- 1.1.1 Use the grid provided on ANNEXURE A to draw a line graph of the data in the table above. (8)
- 1.1.2 Describe the trend of the graph from January to June and give a reason for this trend. (4)
- 1.1.3 During which months did Deborah's mass decrease? Give TWO possible reasons. (6)

- 1.2 A survey was done at a clinic to determine the number of babies and the type of milk feeding they receive. The data was summarised as follows:

TABLE 2: Type of milk feeding

TYPE OF MILK FEEDING	FREQUENCY
Milk A (Breast-feeding)	240
Milk B	110
Milk C	90
Milk D	160

- 1.2.1 Determine the most popular type of milk feeding. (2)
- 1.2.2 Give TWO reasons for your answer in QUESTION 1.2.1. (4)
- 1.2.3 How many babies were involved in this survey? (2)
- 1.2.4 Use the grid provided on ANNEXURE A to draw a bar graph to represent the summarised data from TABLE 2. (6)
- 1.2.5 How can you identify the mode on the bar graph? (2)

[34]

QUESTION 2

Mukala is busy building his new house. The length of the house is 11 m and the width is 6,10 m. The building is a double storey. The details below are found in his notebook.

TABLE 3

STAGE OF WORK	LABOUR COST
1. Foundations	R5 500,00
2. Building of walls below the top floor	R7 000,00
3. Plastering of walls inside and outside below the top floor	R6 000,00
4. Preparing for throwing the concrete on the top floor	R4 500,00
5. Throwing of concrete on the top floor	R18 000,00
6. Building of support columns	R4 500,00
7. Roofing	R14 000,00
8. Electrical installation	R3 600,00
9. Building of walls on the top floor up to the roof	R9 000,00
10. Plastering of walls inside and outside on the top floor	R11 000,00

2.1 Calculate the total labour cost of the building that Mukala will be paying. (2)

2.2 Express the cost of the most expensive stage of the work as a percentage of the total labour cost. (4)

2.3 The length of the top floor is 11 m, the width, including the balcony, is 7,60 m and the thickness is 17 cm.

2.3.1 Calculate the volume of the concrete used for the top floor.

Volume of a rectangular prism = length x width x height (4)

2.3.2 A cubic metre of concrete costs R850,00. How much did Mukala pay for the concrete of the top floor? (3)

2.3.3 If the maximum load of concrete that the lorry can carry is 6 m^3 , how many loads of concrete were delivered to pour the top floor? Give a reason for your answer. (5)

2.4 The balcony of the top floor is supported by cylindrical concrete columns. If the diameter of a cylindrical concrete column measures 50 cm and the column is 2,40 m high, how many cubic metres of concrete are needed in such a column?

Volume of a cylinder = $\pi \times r^2 \times h$ (using $\pi = 3,14$) (5)

- 2.5 The distance on the plan between two walls is 27,5 cm and the actual distance between the two walls is 11 m. What is the scale used on the plan? (4)
- 2.6 Mukala measures the height of the steps in his new house and finds that the distance between two consecutive steps is the same. The first step is 15 cm above the floor, the second step 30 cm, the third step 45 cm and the fifth step is 75 cm above the floor. What is the height of the 17th step above the floor? (3)
- [30]**

QUESTION 3

- 3.1
 Guylain has an embroidery and sewing workshop. He makes wedding dresses and wedding suits. He uses imported ribbon from England for the suits and the dresses.

 Guylain needs 4 feet 8 inches of ribbon for one suit and 6 feet 7 inches for one dress.

 Guylain would like to calculate the length of ribbon needed to make one suit and one dress.

3.1.1 How many inches of ribbon does he need? (**1 foot = 12 inches**) (4)

3.1.2 How many metres of ribbon does he need? (**1 inch = 2,54 centimetres**) (3)

- 3.2
 Guylain borrows R15 000 from his friend, Molefe, to finish an order for his customers. Molefe offers the following two options of repayment after one year:

 A: The loan plus 12% p.a. interest compounded half-yearly

 B: The loan plus 12% simple interest per annum

3.2.1 Calculate the amount Guylain has to repay according to option A, using the following formula:

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

where

A = the final amount

P = the amount borrowed

i = the interest rate and

n = the period

(5)

3.2.2 Calculate the amount Guylain has to repay according to option B, using the following formula:

$$A = P(1 + in) \quad (3)$$

3.2.3 Which of the two options would Guylain prefer? Why? (2)

3.2.4 Which of the two options would Molefe prefer? Why? (2)

3.3

Guylain has a programme at his workshop whereby workers can improve their qualifications through further studies after hours. The scores below represent the workers' performance in a 50-mark test written in March 2008.

34; 9; 44; 20; 22; 33; 40; 35; 46; 37; 43

3.3.1 Determine the mean. (3)

3.3.2 Determine the median. (3)

3.3.3 What percentage does this mean value represent in relation to the total mark of the test? (2)

3.3.4 The following is a summary of a 50-mark test written in February, by the same workers:

Mean = 38

Median = 35

Compare the two tests' results and motivate which one was easier.

(4)
[31]

QUESTION 4

Sello is a public servant and received a gross salary of R14 125,25 per month during the 2007/2008 tax year. Every month PAYE (pay-as-you-earn), contributions to the pension fund and medical aid are deducted from his salary.

The table below shows his September 2007 payslip for the tax year 2007/2008.

TABLE 4: Sello's payslip for September 2007

Pay date/Betaaldatum			Notch/Kerf		
20070915			xxxxxxxx		
EARNINGS/VERDIENSTE			DEDUCTIONS/AFTREKKINGS		
Item			Item		
0001	Basic salary	13 625,25	0001	Pay-as-you-earn (PAYE)	2 350,00
0543	Housing maximum	500,00	0002	Pension (7,5% of monthly salary)	1 021,87
			0005	Medical aid contribution	1 562,20
	Gross salary	14 125,25	Total deductions		xxxx
			Net pay due		xxxx

4.1 Answer the following questions and complete the payslip on ANNEXURE B:

4.1.1 If the notch is your basic salary multiplied by twelve, calculate Sello's notch. (A) (2)

4.1.2 What will be his net salary per month after all the deductions have been made? (B and C) (4)

4.2

SARS published the table below for the tax year ending on 29 February 2008. Use it to answer the questions that follow.

RATES APPLICABLE TO INDIVIDUALS (TAX YEAR 2007/2008)					
TABLE INCOME		RATES OF TAX			
R	R	R			R
0	— 112 500		18%	of each R1	
112 501	— 180 000	20 250	+	25%	of the amount above 112 500
180 001	— 250 000	37 125	+	30%	of the amount above 180 000
250 001	— 350 000	58 125	+	35%	of the amount above 250 000
350 001	— 450 000	93 125	+	38%	of the amount above 350 000
450 001	and above	131 125	+	40%	of the amount above 450 000

Tax rebates

- Primary rebate R7 740
- Additional rebate (for persons 65 years and older) R4 680

Tax threshold

- Persons under 65 years R43 000
- Persons 65 years or older R69 000

Example provided by SARS: A 30-year-old person earning R125 000 per year.

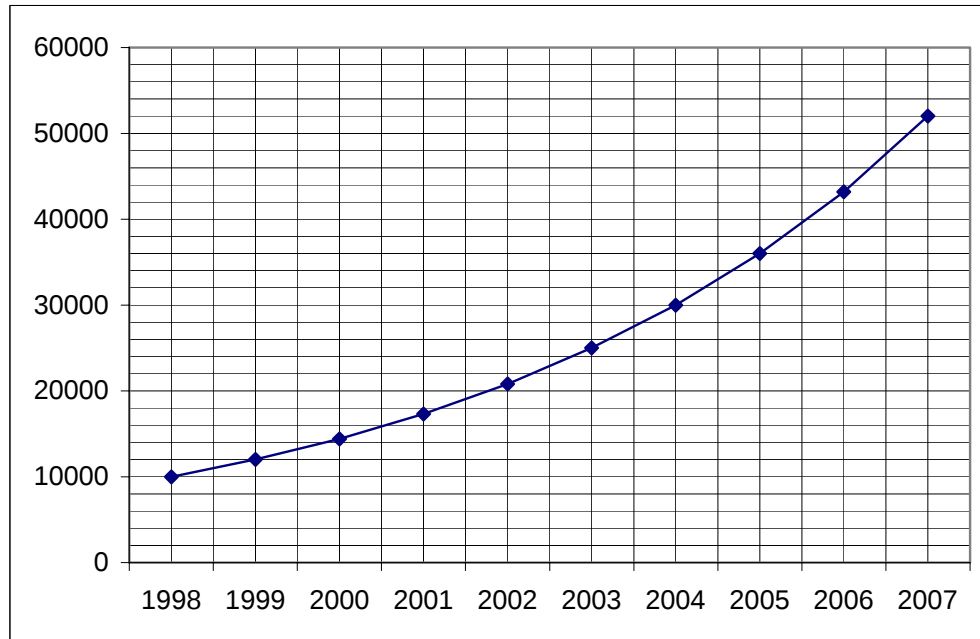
$$\begin{aligned}\text{Tax payable per year} &= \text{R}20\,250 + 25\% \text{ of } (\text{R}125\,000 - \text{R}112\,500) - \text{R}7\,740 \\ &= \text{R}15\,635\end{aligned}$$

Mr Sello, 34 years old, used the above table to calculate whether the PAYE tax that was deducted from his September salary was sufficient.

4.2.1 Sello calculated that his taxable income for the year will be R169 503,00. Calculate the monthly income tax (tax RSA) Sello has to pay on his salary. (5)

4.2.2 Was sufficient PAYE tax deducted from Sello's September 2007 salary? Give a reason for your answer. (3)

- 4.3 Sello has had an investment policy since 1998. The value of the investment at the end of each year is shown in the graph below.



- 4.3.1 If the value of the investment at the end of 1999 is R12 000, calculate the increase rate between the end of 1998 and 1999. (3)
- 4.3.2 During which year did the investment earn the most interest? Explain how you can see this on the graph. (3)

- 4.4 A daily newspaper called *Universe* is sold from Monday to Friday in Sello's hometown. The price of the newspaper is R4,00 (VAT included). To have it delivered to your door, you must pay the subscription fee in advance. The table below shows the subscription rates for the newspaper.

PERIOD	AMOUNT
One month	R72,00

- 4.4.1 How many newspapers would Sello get in a month like February that has 4 weeks? (2)
- 4.4.2 Sello considers buying the newspapers at full price. How much would 20 newspapers cost if he paid the full price for each newspaper? (2)
- 4.4.3 What percentage discount does the newspaper effectively give a person who subscribes for one month? (3)
- 4.4.4 Give TWO reasons why Sello may consider the option of subscribing to the newspaper. Explain. (4)

[31]

QUESTION 5

5.1

Pizza is a favourite of many teenagers in South Africa.

Botha and his friends want to order a pizza. They have the following choices:

SIZE	CRUST	INGREDIENT
Medium (M)	Regular (R)	Sausage (S)
Large (L)	Thick (T)	Pineapple (P)
		Ham and cheese (H)

To find the possible choices for their pizza, they decide to draw a tree diagram.

5.1.1 Complete the tree diagram on ANNEXURE C showing all the possible outcomes and using the symbols in brackets. (9)

5.1.2 How many possible outcomes are there? (2)

5.1.3 Calculate the probability that a pizza with pineapple on it will be ordered. (3)

5.2

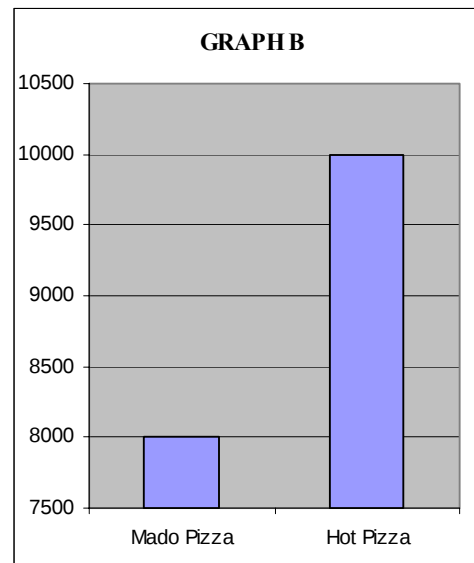
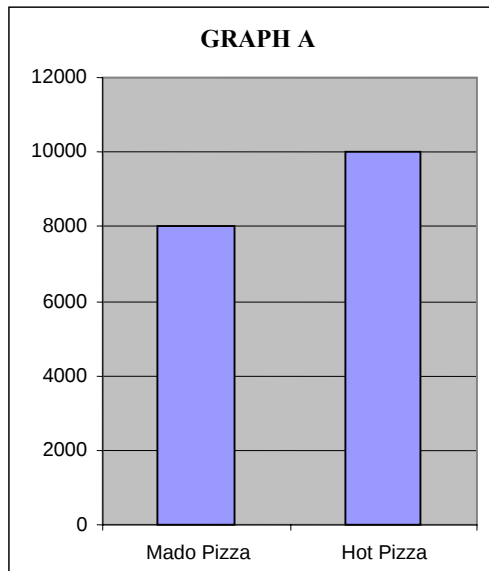
Two stores are selling pizza ovens: Masakhane and Umoja. Masakhane advertises that they had fewer returns. Only 6 of their pizza ovens have been returned as defective. At Umoja they had 28 pizza ovens returned. Masakhane sold 40 pizza ovens and Umoja 196.

5.2.1 What percentage of pizza ovens was returned to Masakhane store? (2)

5.2.2 What percentage of pizza ovens was returned to Umoja store? (2)

5.2.3 Which store had the higher return rate? (2)

- 5.3 The graph below compares the number of customers that bought pizza at two pizza shops in a recent year



- 5.3.1 Which graph is misleading? (2)
- 5.3.2 What makes it misleading? Explain. (2)
- [24]**

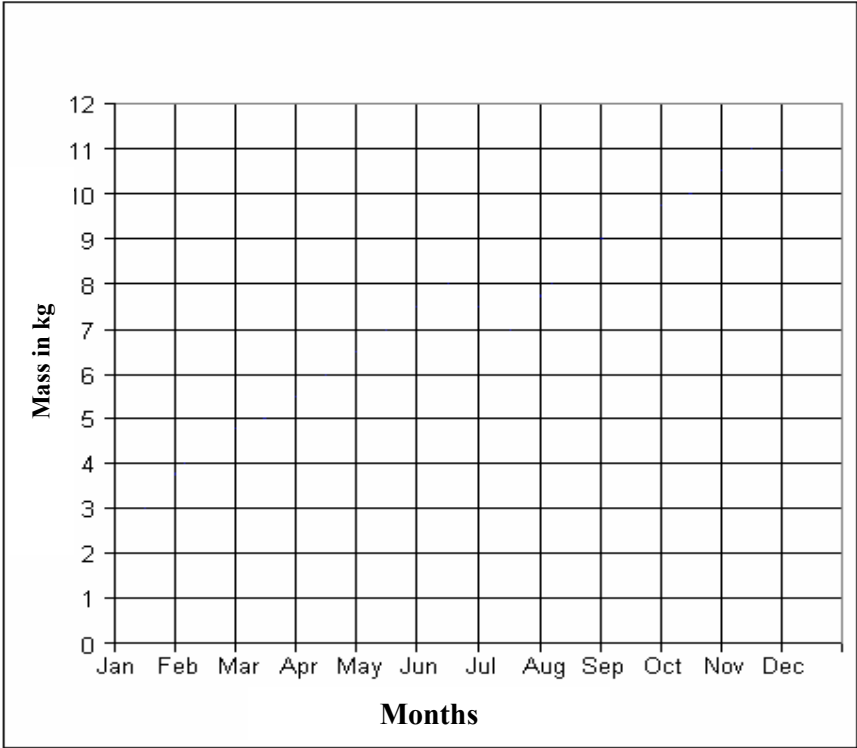
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NAME:

ANNEXURE A

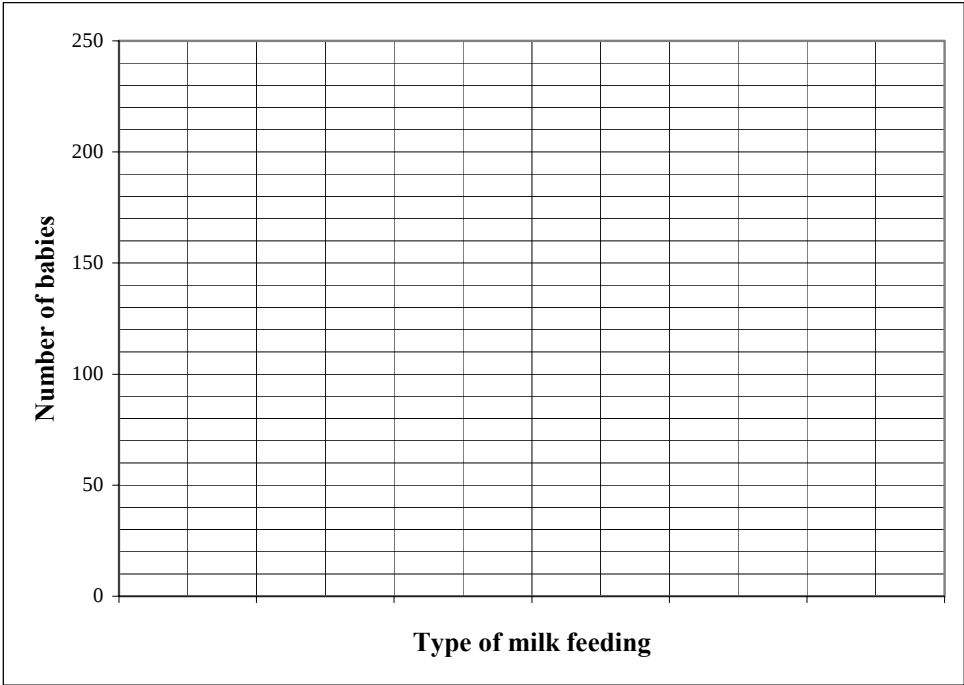
1.1.1

DEBORAH'S MASS



1.2.4

BAR GRAPH



NAME:

ANNEXURE B

4.1

SELLO'S PAYSリップ

Pay date/Betaaldatum			Notch/Kerf		
20070915			(A)		
EARNINGS/VERDIENSTE			DEDUCTIONS/AFTREKKINGS		
Item			Item		
0001	Basic salary	13 625,25	0001	Pay-as-you-earn (PAYE)	2 350,00
0543	Housing maximum	500,00	0002	Pension (7,5% of monthly salary)	1 021,87
			0005	Medical aid contribution	1 562,20
	Gross salary	14 125,25	Total deductions		(B)
			Net pay due		(C)

NAME:

ANNEXURE C

5.1.1

Tree diagram representing the possible choices for pizza:

SIZE

CRUST

INGREDIENT

OUTCOMES

