



Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2011

MATHEMATICAL LITERACY P1

MARKS: 100

TIME: 2½ hours

This question paper consists of 12 pages, including annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions.
2. Answer ALL the questions.
3. QUESTIONS 2.2 and 2.3 and 3.5 must be answered on the attached ANNEXURE A, ANNEXURE B and ANNEXURE C respectively. Write your name in the space provided on the annexure and hand it in with your ANSWER BOOK.
4. Number your answers correctly according to the numbering system used in the question paper.
5. A non-programmable and non-graphical calculator may be used, unless stated otherwise.
6. ALL calculations and steps must be shown clearly.
7. ALL final answers must be rounded off to TWO decimal places, unless stated otherwise.
8. Units of measurement must be indicated where applicable.
9. Start EACH question on a NEW page.
10. Write neatly and legibly.

QUESTION 1

When you first start working and have to move out into a flat of your own, one of the first things you have to do is buy some furniture because your parents can only help you with so much and no more. Besides that, it is nice to have new furniture that is your choice and not someone else's unwanted goods.

When you have to buy a number of items, you often have to use the hire purchase option as you will not have enough cash to buy all you want at once.

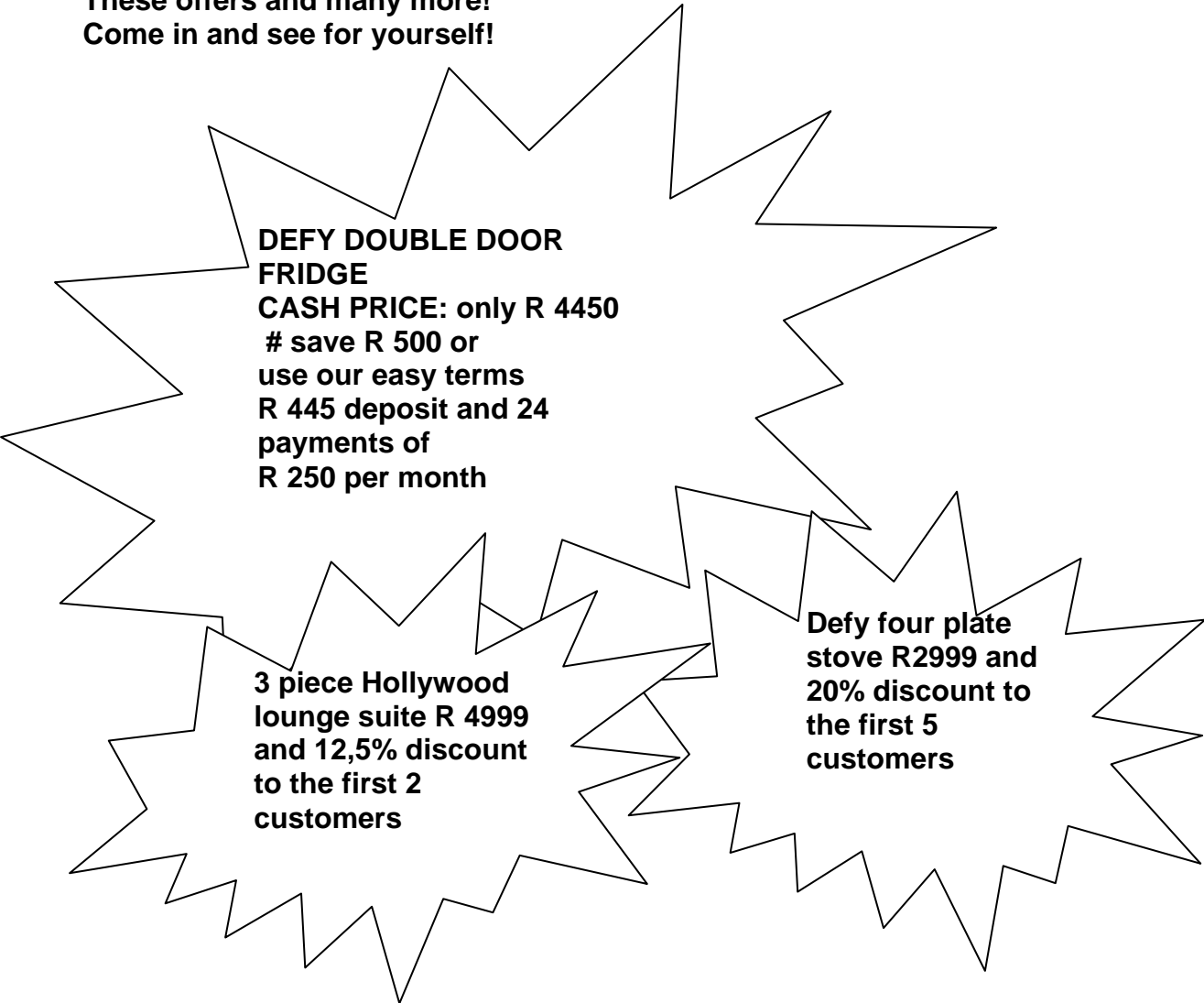
You have been working for a couple of months now and have managed to save up some money that can be used either to buy things or as a deposit for bigger items.

You have received the following pamphlet in the post and have decided to go to the new shop and see what they have on offer.

COMFEY FURNITURE STORE

Come see our opening bargains. Valid for ONE day only!

**These offers and many more!
Come in and see for yourself!**



**DEFY DOUBLE DOOR
FRIDGE**
CASH PRICE: only R 4450
save R 500 or
use our easy terms
R 445 deposit and 24
payments of
R 250 per month

**3 piece Hollywood
lounge suite R 4999**
and 12,5% discount
to the first 2
customers

**Defy four plate
stove R2999 and**
20% discount to
the first 5
customers

- 1.1 One of the items on special you really need is a fridge, as your food is going off fast and furthermore, if you want something cold to drink, you must remember to buy ice which is not always easy if you are using public transport to go home.
- 1.1.1 Calculate the percentage deposit the shop is asking you to put down on the fridge. (2)
- 1.1.2 Calculate how much you will pay for the fridge using their payment terms of 24 months. (3)
- 1.1.3 How much will you have paid for the fridge in total? (2)
- 1.1.4 How much would you save if you paid cash for the fridge? (2)
- 1.1.5 Calculate the percentage interest you will have paid per year using their payment plan. (3)
- 1.2 You saw the advertisement yesterday and were able to make some enquiries at the bank in order to borrow money on a personal loan basis, as you do not have enough money saved up to pay cash for the fridge. You were approved for a loan with the following offer: You can borrow the full amount required over a period of 2 years at 11,5% compounded annually.
- 1.2.1 Calculate how much you would pay back to the bank over the 2 years.
- Use the following formula; $A = P(1 + i)^n$ where:
- A = Future Value
 i = interest rate
 P = Starting Value
 n = number of years (4)
- 1.2.2 Decide which method of payment you will use: The store's hire purchase plan or the bank's offer. Give a reason why. (1)

[17]

QUESTION 2

Your car has been involved in an accident while you were on holiday in Cape Town. You will have to hire a car for the remaining week of your holiday so that you can get around as you definitely don't want to sit around in the hotel for a week.

You have looked in the local papers and found the following advertisements.

QUALITY CAR HIRE

Basic charge: R 350 and only R 1,25 per kilometre.

STARR CAR HIRE

Basic charge: only R 200 and R 1,55 per kilometre.

- 2.1 Using the linear function $y = mx + c$, write down the equation to use to calculate costs for:
- 2.1.1 Quality Car Hire (2)
- 2.1.2 Starr Car Hire (2)
- 2.2 Using the equations from QUESTIONS 2.1.1 and 2.1.2, complete the costing tables below for the two companies. (Use the tables provided in ANNEXURE A for your answers).

QUALITY CAR HIRE					
Kilometres travelled	100	200	500	1000	1500
Basic Charge	350	350	350	350	(a)
Total Cost	R475	R600	(b)	(c)	(d)

(4)

STARR CAR HIRE					
Kilometres travelled	100	200	500	1000	1500
Basic Charge	200	200	200	(e)	200
Total Cost	R355	(f)	R975	(g)	(h)

(4)

- 2.3 Using the grid provided in ANNEXURE B, draw a graph for both companies on the same set of axes showing kilometres travelled against total cost. (6)
- 2.4 Using the graphs you have drawn, estimate the following:
- 2.4.1 How much would it cost you to drive 600 km using Starr Car Hire? (2)
- 2.4.2 If you have R 1500 to spend on car hire, which company should you use to get the most distance? (2)
- 2.5 Using the graph drawn:
- 2.5.1 Give the co-ordinates of the break-even point on the graph. (2)
- 2.5.2 Explain what this tells you about the two car-hire companies and costs. (2)

QUESTION 3

HIV-infections are still growing daily and Sub-Saharan African figures are the highest in the world. These figures include South Africa.

An extract from HIV Research

Based on antenatal data, the study estimate that 6,29 million South Africans were HIV-positive by the end of 2004, including 3,3 million women and 104 863 babies. In producing these figures it is assumed that pregnant women accurately represent all women aged 15 – 49 years old, that men were 85% as likely to be infected as women, and that 30% of babies born to infected mothers would themselves be HIV-positive (ignoring any reductions due to preventative action).

Reference: <http://www.avert.org/saafricastats.htm>: August 2005

Below is a table showing the breakdown of male/female %HIV-infections in given age groups to show how each age group is infected.

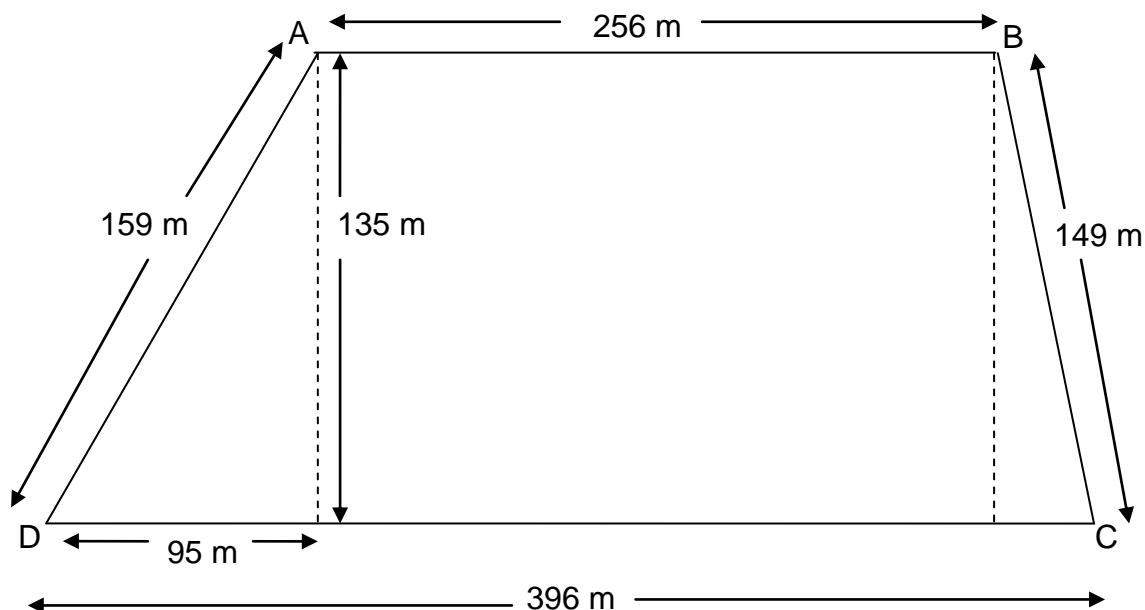
Percentage infected with HIV		
Age (years)	Male	Female
2 – 14	5	6
15 – 19	4	7
20 – 24	8	17
25 – 29	22	32
30 – 34	24	24
35 – 39	18	14
40 – 44	12	19
45 – 49	12	11
50 – 55	5	8
55+	7	7
Average	9,5	12,8

- 3.1 What are the chances of a male in the 25 – 29 year age group being infected with HIV? (1)
- 3.2 In general, are more males or females infected with HIV? (1)
- 3.3 If the population of South Africa was 45 million in 2004, what percentage of the population was infected with HIV? (3)
- 3.4 In what age group are females at more risk of becoming HIV-positive? (1)
- 3.5 Draw a compound bar graph showing the information given in the table above Use ANNEXURE C to draw your graph. (5)
- 3.6 What is the average infection rate in males between the ages of 20 – 49? (2)
- 3.7 Calculate the average infection rate for females between the ages of 20 – 49. (3)
- 3.8 If a company employs 45 females and 55 males between the ages of 20 – 49 years old, calculate the number of people that could be infected with HIV. (5)
- 3.9 Suggest TWO ways how can this company assist its HIV-infected employees. (2)

[23]

QUESTION 4

Mr. Hintsa recently bought a plot of land out of town. He decided to grow vegetables so as to supplement the family income and ensure that his family has fresh vegetables to eat; even with the cost of living increasing all the time.

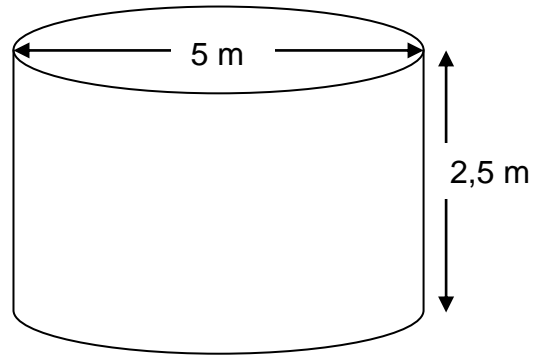


The land needs to be fenced off before any work or planting can be done.

- 4.1 Calculate the perimeter of the plot of land. (3)
- 4.2 Mr. Hintsa needs to put in fence posts every 2,5 m. Calculate how many fence posts will he need to buy. (3)
- 4.3 If the fence posts cost R12,65 each, how much will he pay for the fence posts? (2)
- 4.4 Mr. Hintsa needs to fence the property with chicken wire to stop rabbits, etc. from coming in and eating his crops.
 - 4.4.1 How much chicken wire must Mr. Hintsa buy? (1)
 - 4.4.2 If the chicken wire costs R18,75 per metre, how much will this cost him? (2)
- 4.5 Calculate the area of the plot ABCD in m^2 , using the formula:

$$\left(\frac{AB + DC}{2} \right) \times \text{height}$$
 (4)
- 4.6 How many hectares is the plot? (Remember 1 ha = 100 m x 100 m) (2)
- 4.7 If Mr. Hintsa can plant 9 cabbage plants per m^2 , how many cabbage plants can he plant on the plot? (3)

- 4.8 Mr. Hintsa decides to build a reservoir so that he can store water for irrigating his vegetables. He builds a circular reservoir with a diameter of 5 metres and a height of 2,5 meters.



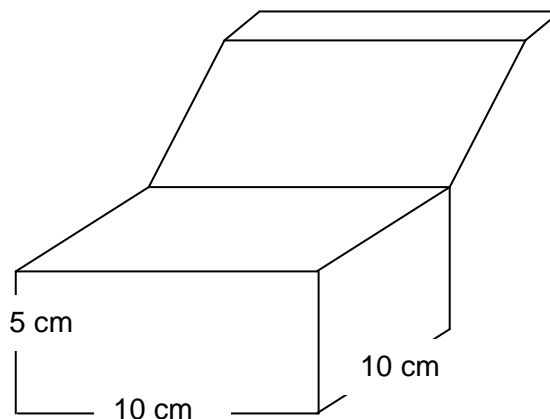
- 4.8.1 Calculate the volume of water the reservoir can hold. Use the formula: $V = \pi r^2 h$ (let $\pi = 3,14$) (3)
- 4.8.2 How many kilolitres can the reservoir hold? (1)
- [24]

QUESTION 5

Your school held a Food Fair last term to raise funds for the new netball court. Each class was given a theme to work with. Your class was given the “sugar” table. After a meeting with the class it was decided that the class would sell cakes, fudge, packets of sweets, candy floss and chocolate. The work and costs were fairly distributed so that everybody did something and brought something for the Food Fair.

- 5.1 You have been put in charge of making and packing the boxes for the fudge. The boxes you made have the following dimensions:

Height = 5 cm
Length = 10 cm
Width = 10 cm



The fudge has been made and cut into squares measuring 5 cm x 5 cm x 1 cm

Calculate how many squares of fudge you can pack into the box. (4)

- 5.2 During the Food Fair Mpho keeps a record of all the items brought, and how many were sold of each, so that we would know exactly how much money we made at the end of the Food Fair. He recorded everything in the table as seen below.

SALES						
	Cakes	Fudge	Sweets	Candy floss	Chocolates	Total
No. of items sold	15	25	150	70	120	380
Total money received	R 525	R 750	R 375	R 105	R 240	(A)

- 5.2.1 Calculate the total amount of money taken in sales by our class (A). (2)
- 5.2.2 Calculate how much each box of fudge was sold for. (2)
- 5.2.3 Calculate the probability (in %) of a person coming to our table at the beginning of the Food Fair and buying a box of fudge. (2)

[10]

TOTAL: 100

ANNEXURE A**QUESTION 2.2****NAME:** _____**GRADE:** _____

QUALITY CAR HIRE					
Kilometres travelled	100	200	500	1000	1500
Basic Charge	350	350	350	350	(a)
Total Cost	R475	R600	(b)	(c)	(d)

(4)

STARR CAR HIRE					
Kilometres travelled	100	200	500	1000	1500
Basic Charge	200	200	200	(e)	200
Total Cost	R355	(f)	R975	(g)	(h)

(4)

ANNEXURE B

QUESTION 2.3

NAME: _____

GRADE: _____

Car Hire Costs

Cost of Car Hire

Kilometres Travelled

ANNEXURE C

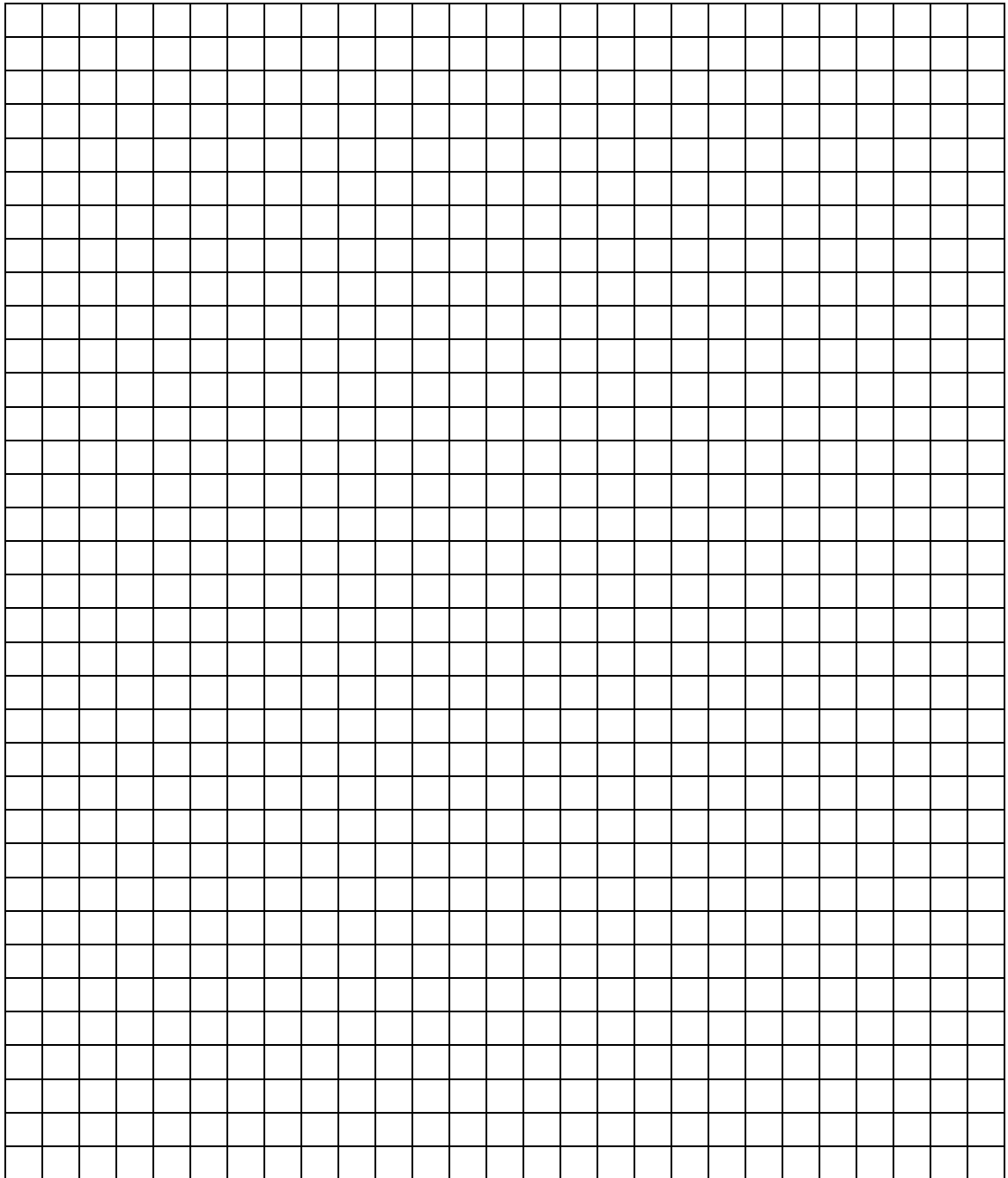
QUESTION 3.5

NAME: _____

GRADE: _____

HIV-infection in South Africa

Percentage infection



Male and Female Age Groups (years)