higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(Second Paper)
NQF LEVEL 2

NOVEMBER 2011

(10401012)

9 November (X-Paper)
09:00 – 12:00

Calculators may be used.

This question paper consists of 10 pages and 1 ANNEXURE.

TIME: 3 HOURS
MARKS: 100

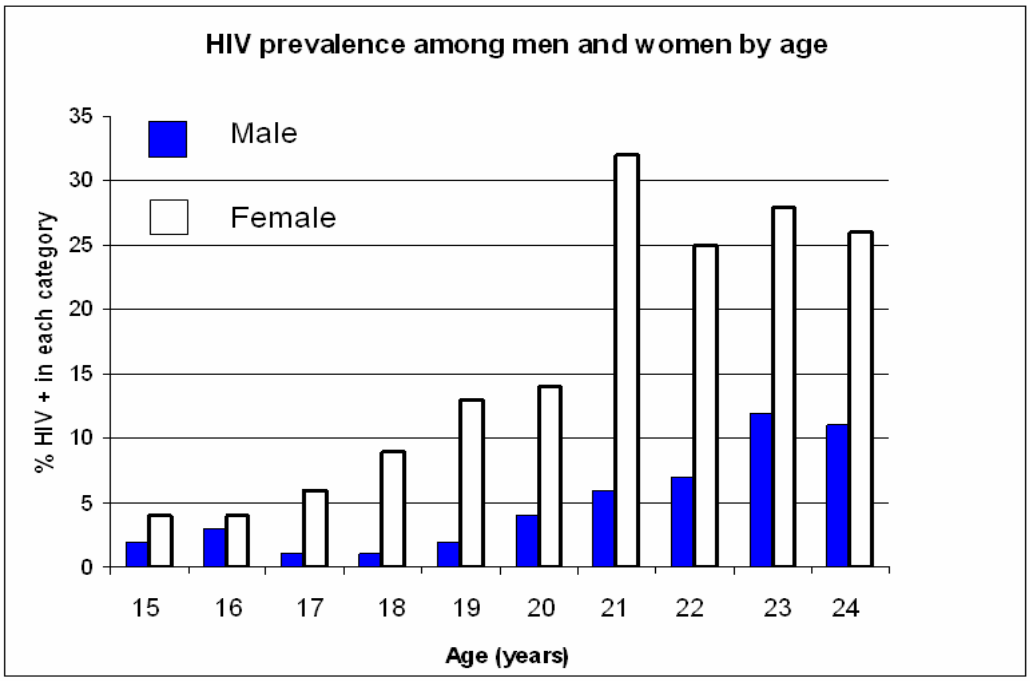
INSTRUCTIONS AND INFORMATION

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, etc you have used in determining the answers.
5. An approved calculator may be used, unless otherwise stated.
6. Drawing instruments including rulers, pairs of compasses and protractors may be used.
7. Diagrams are not necessarily drawn to scale.
8. Write neatly and legibly.

QUESTION 1

In the National HIV and Sexual Behaviour Survey of 15 – 24 year olds, done in 2003, 11 904 young people were interviewed and tested for HIV. The following chart shows the proportion of those that were found to be HIV positive in each age group.

(Graph extracted from the report on the National HIV and Sexual Behaviour Survey of 15-24 year olds in 2003)



1.1.1 In which gender and age group is the HIV prevalence 25%? (2)

1.1.2 At what age do the males show the same percentage as that of 17 year old females infected? (2)

1.1.3 Which age group show the highest prevalence of HIV? (2)

1.2 The advertisement below shows the price of the lawnmower that you want to buy. Study the information on the advertisement and answer the questions that follow.

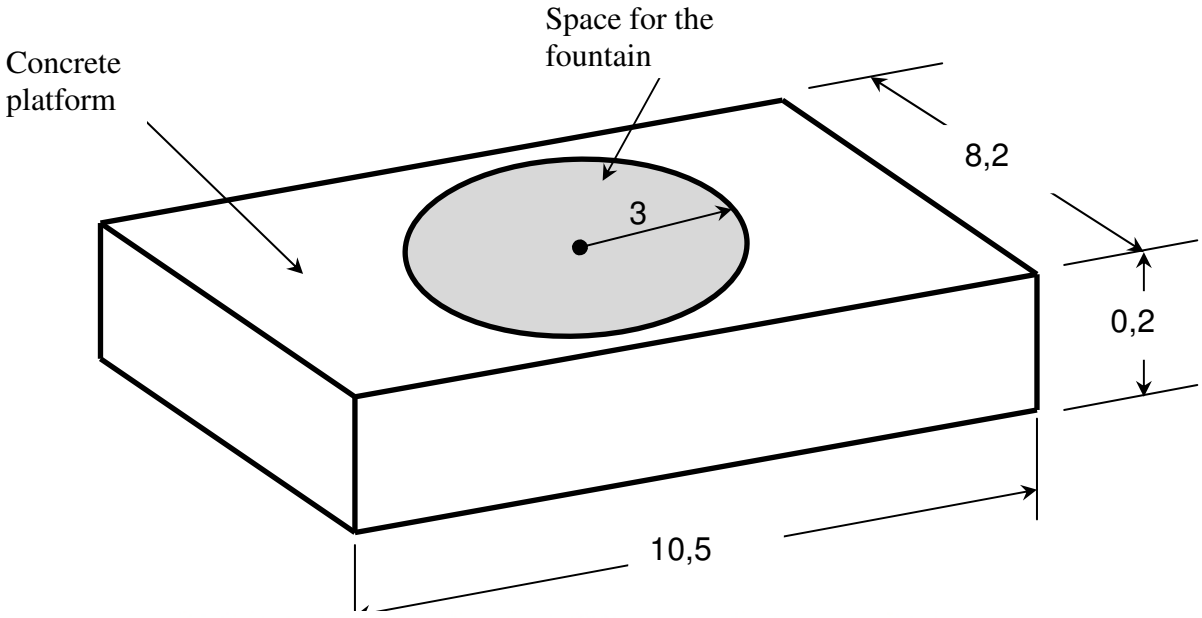
1.2.1 Calculate the minimum deposit you must pay if you choose to buy the lawnmower through hire purchase (option 2). (2)

1.2.2 Determine the total amount you would have paid for the lawnmower by the end of the 6 month period on hire purchase. (4)

1.2.3 Calculate the total interest you would have paid for the lawnmower by the end of the 6 month period on hire purchase. (2)

1.2.4 Show that the percentage interest added for hire purchase is 17%. (3)

1.3 Dumisani is given the job to build a circular fountain in the middle of a rectangular concrete platform as shown below. Study the diagram and answer the questions that follow. All dimensions are in metres (*m*).



1.3.1 The concrete platform is going to be 0,2 *m* high and the radius of the circular hole is 3 *m*. Calculate the volume of concrete that Dumisani will need to make the platform. Round off your final answer to one decimal place.

Volume of rectangular shape = $l \times b \times h$
Volume of circular hole = $\pi \times r^2 \times h$
where h = height, r = radius and $\pi = 3.14$

(6)

1.3.2 Dumisani's gets paid R 120 per hour for the job. He takes 6 hours to complete the job. How much does he get paid? (2)

1.4 Study the table below which shows the telephone charges at S'fiso Zondi's Spaza shop and answer the questions that follow:

S'fiso Zondi's Spaza Shop: Telephone Call Charges		
	Standard Time (per minute)	**Callmore time (per minute)**
Local (0 – 50 km)	38 cents	17 cents
Long distance (>50 km)	65 cents	33 cents

1.4.1 What is the cost per minute of a local call during "Callmore time"? (1)

1.4.2 What is the cost per minute of a long distance call during "Standard time"? (1)

1.4.3 How much will it cost Janet to make a local call during "Callmore Time", if the call lasts for 7 minutes? (2)

1.4.4 How much will the same call of 7 minutes cost during "Standard Time?" (2)

1.4.5 How much would Janet have saved if she made the same 7 minute call during "Callmore time "instead of "Standard time". (2)

1.4.6 How much longer could Janet have used the phone during "Callmore time" if she wanted to spend the same amount of money as using the phone for 7 minutes during "Standard time". (2)

[35]

QUESTION 2:

The table below shows the cost of pre-paid electricity and normal-rate electricity that your local municipality charges. Study the tables below and answer the questions that follow.

Cost Options	**Fixed Fee**	**Charge per kWh**
Pre - Paid	None	R0,80
Normal rate	R40, 00	R0, 30

Units in kWh used	0	10	20	30	**(b)**	50	60	70	80	90	100
Cost on Pre-paid	R0	R8	R16	R24	R32	R40	R48	R56	**(c)**	R72	R80
Cost on Normal rate	R40	**(a)**	R46	R49	R52	R55	R58	R61	R64	R67	R70

2.1 Calculate the values of (a), (b) and (c) in the table given abvove. (3)

2.2 Complete the following formulae used to calculate the monthly cost of electricity for each of the following:

2.2.1 Using pre-paid.

Cost = _____ × _____ (2)

2.2.2 Using normal rate.

Cost = _____ + _____ × _____ (3)

2.3 Calculate the cost of using 257,3 kWh of electricity at the normal rate. (3)

2.4 The graph on ANNEXURE A represents the line graph of the cost of electricity on the standard system. Draw a line graph from the table to represent the cost of electricity on the pre-paid cost system.
Use the graph paper supplied in ANNEXURE A. (5)

2.5 By making use of the graph drawn in QUESTION 2.4 ,which cost option would you recommend and also provide a reason for the option if the average electricity usage of a house per month is:

2.5.1 75 kWh (2)

2.5.2 125 kWh (2)
[20]

QUESTION 3

Nomonde has recently started a business called Ayoba Academy Florists. She buys fresh-cut flowers and sells them in bunches (oposies) and other flower arrangements. The business bank statement for January 2008 is shown below. Use the statement to answer the questions that follow:

Moneywise Bank

The Moneywise Bank
Registered Bank
Reg No 233233243

The Owner: Roses Etcetera
PO Box 541
Tecoma
5214

Account number: 1010 441231 **Statement number: 000015**

Date	Cheque no.	Description	Service fees	Debits	Credits	Balance
1/1/2008		Balance brought forward				12 576,12
2/1/2008		Cash deposit	34,50		3 450,00	16 026,12
8/1/2008	32	Freshest Flowers	48,75	2 500,00		13 526,12
9/1/2008		Cash deposit	18,50		1 850,00	15 376,12
14/1/2008	33	Ribbons 'n Bows	25,69	1 369,50		14 006,62
16/1/2008		Cash deposit	19,51		1 950,50	15 957,12
23/1/2008		Cash deposit	10,00		985,00	16 942,12
29/1/2008		M Rose salary	25,00	4 694,21		12 247,91
30/1/2008		Cash deposit	21,57		2 156,50	14 404,41
31/1/2008		Service fees		203,52		14 200,89
31/1/2008		Closing balance				14 200,89

3.1 What was the total amount she spent for the month on buying flowers? (2)

3.2 Nomonde made five deposits into her account during January 2008. The first deposit was the highest. Give a possible reason why this was the case. (2)

3.3 The service fee for a deposit is determined as follow:
R 0,01 for every Rand deposited.
Calculate the service fee if the amount R2 250,50 was deposited. (2)

3.4 The closing balance on this statement is R 14 200,89.

3.4.1 Determine the total debits (2)

3.4.2 Determine the total credits (2)

3.4.3 Use the formula:
Closing balance = Opening balance + Total credits – Total debits ,
to show that the closing balance of the statement is R 14 200,89 (2)

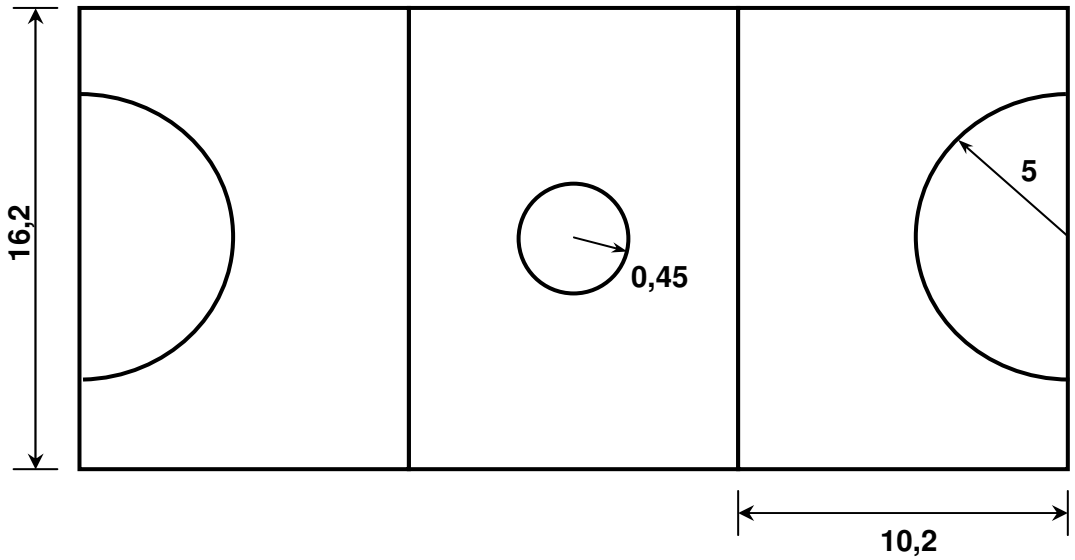
3.5 Do you agree with the statement: "Nomonde's profit for January 2008 is the sum of her bank deposits minus the money she paid her suppliers"? Motivate your answer. (3)
[15]

QUESTION 4

The diagram below shows the dimensions of a netball court.

- The court is surrounded by a "run-off space." This extra space around the side of the playing court is for players to have enough space to stop, if they run off the court.
- The playing court is also divided into **three equal segments**.

Use the diagram to answer the questions that follow: All dimensions are in metres (*m*).



4.1 The caretaker wants to repaint the playing court:

4.1.1 Calculate the length and then the surface area of the playing court.

Area of a rectangular shape = $l \times b$ (4)

4.1.2 If the paint that the caretaker will use has coverage of 4 m^2 per litre, calculate how many litres of paint the caretaker will need to paint the surface of the playing court. (3)

4.2 The caretaker also wants to repaint the lines on the playing court.
Calculate the length of all the lines that he needs to repaint.

HINT :
Calculate the length of all the :

- Vertical lines
- Horizontal lines
- Circles or semi-circles
- Add to get the total length.

Circumference of a Circle = $2 \times \pi \times r$,
Circumference of a semi circle = $\pi \times r$
where $\pi = 3{,}14$ and r = radius. (8)

[15]

QUESTION 5

Below is an extract from the report on the National HIV and Sexual Behaviour Survey of. A total of 11 904 people were surveyed in the study.

HIV testing and perceived risk of HIV among HIV-positive youth

Despite the high prevalence of HIV in this young age group, the vast majority of HIV-positive youth do not know that they are infected.

Of the youth involved in the survey, 67% reported that they had never been tested. It is, however, encouraging that many of the HIV-infected young people reported that they wanted to know their HIV status (56%), whereas 17% reported that they already knew their status. Of concern was that 27% of the HIV-infected youth said they did not want to know their status.

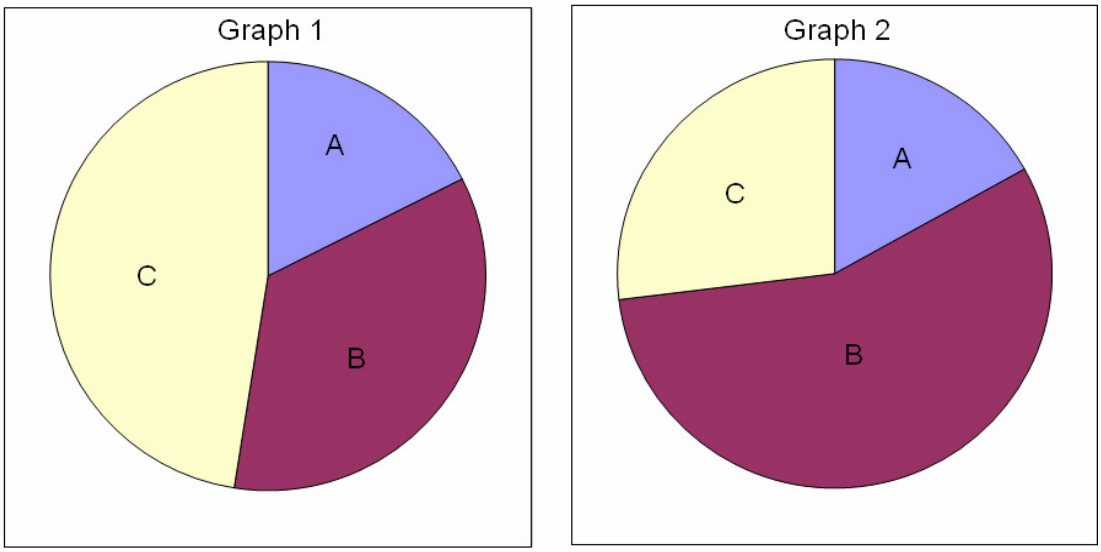
Despite many HIV-positive youth wanting to know their status, the majority do not see themselves at risk for contracting HIV, even though they are already infected. When asked 'What do you think your chances are of getting HIV/AIDS?', 62% of HIV-infected young people reported that they thought their chances were small or that they were at no risk of contracting HIV.

5.1 Of a total of 11 904 people surveyed, 10,2% were found to be HIV positive. Show by calculation that 1215 people in the survey were HIV positive? (2)

5.2 Of a total of 11 904 people surveyed, 67% reported they had never been tested. Calculate the number of people that have been tested. (3)

5.3 Out of the 1215 people infected, 56% of the people wanted to know their HIV status, 17 % reported that they already knew their status and 27% said that they do not want to know their status.

The two pie charts provided below show these relative proportions. Study these two charts and answer the questions that follow:



5.3.1 Choose the correct chart to match the corresponding percentages provided in the paragraph above the charts and write down which percentages A, B and C represents. (4)

5.3.2 Out of the 1215 people infected, calculate the number of people:

- wanting to know their HIV status (56%)
- already knowing their status (17%)
- not wanting to know their status (27%) (6)

[15]

TOTAL: 100

ANNEXURE A **EXAMINATION NUMBER:**

QUESTION 2.4