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**higher education  
& training**

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

**NATIONAL CERTIFICATE (VOCATIONAL)**

**MATHEMATICAL LITERACY  
(First Paper)  
NQF LEVEL 3**

**NOVEMBER 2012**

**(10401023)**

**30 October (X-Paper)  
09:00 – 12:00**

**Drawing instruments may be used.**

**Calculators may be used.**

**This question paper consists of 10 pages and 2 annexure.**



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## NATIONAL CERTIFICATE (VOCATIONAL)

### MATHEMATICAL LITERACY (First Paper) WISKUNDIGE GELETTERDHEID (Eerste Vraestel) NQF LEVEL 3/NKR VLAK 3

NOVEMBER 2012

(10401023)

30 October (X-Paper)/30 Oktober (X-Vraestel)  
09:00 – 12:00

### ERRATA

#### QUESTION 1/VRAAG 1

1.1.2 Error! Objects cannot be created from editing field codes.

(2)

2 Express/Druk as a/uit as  
percentage/'n persentasie.  
Error! Objects cannot be created from editing field codes.

(2)

#### SHOULD READ AS:

1.1.2  $\frac{7}{3}(2,5+2) \div 6$

(2)

2 Express  $\frac{6}{13}$  as a percentage./ Druk  $\frac{6}{13}$  uit as 'n persentasie.

(2)



Higher Education  
& Training  
Department  
Higher Education and Training  
REPUBLIC OF SOUTH AFRICA



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**TIME: 3 HOURS**  
**MARKS: 150**

**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 used in determining the answers.
5. Convert all the numbers answers to TWO decimal places.
6. Diagrams are not necessarily drawn to scale.
7. Write neatly and legibly.



## QUESTION 1

- 1.1 Calculate each of the following:
- 1.1.1  $320 - 15 \times 5$  (2)
- 1.1.2 **Error! Objects cannot be created from editing field codes.** (2)
- 1.1.3 2,5 of R720 (2)
- 1.2 Express **Error! Objects cannot be created from editing field codes.** as a percentage. (2)
- 1.3 One loaf of bread can be prepared by mixing 3 cups of flour, 2 ml of salt and 250 ml of milk. How many cups of flour are needed to prepare 5 loaves of bread? (3)
- 1.4 Convert 3, 5 km to metres. (2)
- 1.5 Thabo, Thihe and Mpho have invested their monies in the ratio 3 : 2 : 1. Determine how much Thabo and Thihe will each get if the total amount they have invested is R7 900,00. (4)
- 1.6 The price of the bananas is R7,99 per kilogram. How much will you pay for 1, 5 kg of bananas? (2)
- 1.7 A computer is sold at R4 950, 00 excluding value added tax (VAT). Determine the total price of a computer including VAT. (3)
- 1.8 Increase R350 by 20%. (3)
- 1.9 Determine the perimeter of a rectangular storeroom with a length of 7,7 cm and a breadth of 6,2 cm. (2)
- 1.10 A bus leaves at 9:45 at night and arrives at its destination at 07:55 am the following day. How long did the bus journey last? (3)
- 1.11 Calculate the volume (V) of a cylinder with a radius ( $r$ ) of 25 cm and a height (h) of 80 cm. Use the formula  $V = \pi \times r^2 h$ ,  $\pi = 3,14$  (3)
- 1.12 The scale on the map is 1 : 50 000. The distance on the map from town A to town B is 23,7 cm, what is the actual distance from town A to town B? (2)

[35]



**QUESTION 2**

The following table was recorded by scientists in a laboratory. They were performing an experiment on how rats multiply so quickly. Study the table and answer the question.

Number of rats (x)	2	4	8	16	A	B	128	256
Period in months (y)	1	2	3	C	5	6	7	8

- 2.1 Complete the table by determining the values of:
- 2.1.1 A (2)
- 2.1.2 B (2)
- 2.1.3 C (1)
- 2.2 Determine the formula in terms of 'x' and 'y' to calculate the number of rats for a certain period. (3)
- 2.3 Use the formula to determine how many rats were there after 11 months. (2)
- 2.4 Which variable is independent? (2)
- 2.5 Use the grid provided in ANNEXURE A and draw a line graph for the first six months. (4)
- [16]**

**QUESTION 3**

Teddy owns a hair salon in town and has two assistants. During the month of December she managed to collect R27 600,00. Use the list of the expenditures from the hair salon below, to answer the questions.

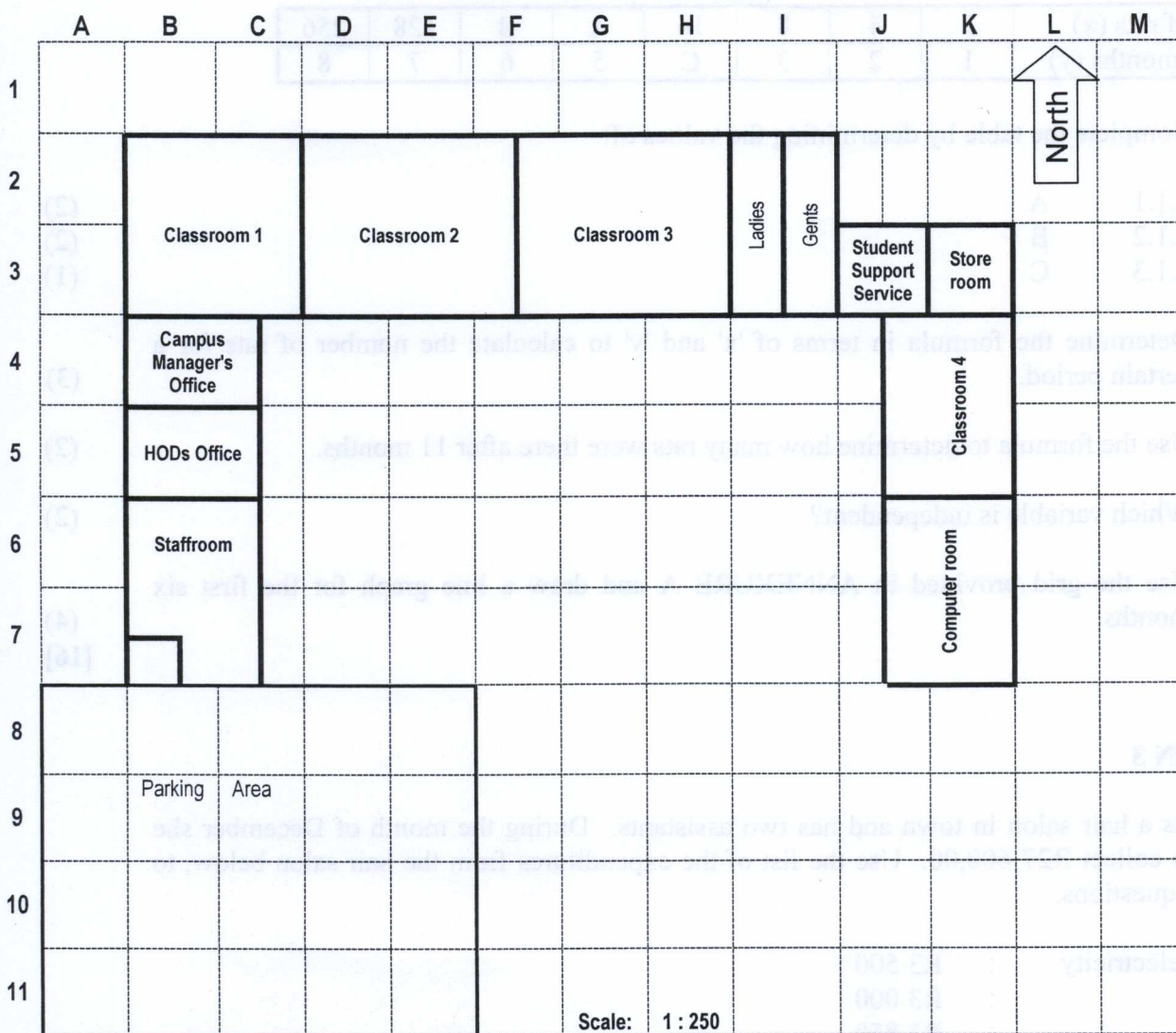
Water and electricity	:	R3 500
Rent	:	R3 000
Product	:	R1 850
Salaries	:	R10 000
Grocery	:	R600
Petty cash	:	R1 200

- 3.1 Complete the income and expenditure statement of Teddy's hair salon provided in ANNEXURE A. (6)
- 3.2 What amount of money will be available after all expenses? (1)
- 3.3 State whether the amount in QUESTION 3.2 is a surplus or deficit. (2)
- 3.4 Give TWO examples of Teddy's fixed expenses. (2)
- 3.5 Define *variable expenditure* and give TWO examples from Teddy's expenses. (3)
- [14]**



### QUESTION 4

The plan given below shows a small FET campus and its grounds. Study the plan and answer the questions.



- 4.1 Write down the actual scale of the plan. (1)
- 4.2 If the width of the gate is 12 mm on the plan. What will the actual width of the gate be? (2)
- 4.3 Write down the grid reference/s where HOD's office belongs. (2)
- 4.4 What is found in the grid reference K3? (1)
- 4.5 What is the compass direction of classroom 2 as seen from the staffroom? (1)
- 4.6 Estimate the actual length and width (breadth) of the parking area if 1 mm = 0,25 m. (4)
- 4.7 Calculate the area of classroom 1 in m<sup>2</sup> if 1mm = 0,25 m. (4)

[15]



**QUESTION 5**

5.1 Study the given information and answer the questions.

Given below is the number of sandwiches which Lesiba has sold per day in the last 20 days. During the busy days he could sell 105 sandwiches and during the quiet days he could sell 20 sandwiches.

40	44	45	64	49
45	55	73	88	45
105	36	88	20	36
79	54	39	91	45

- 5.1.1 Calculate the average number of sandwiches. (2)
- 5.1.2 Determine the median. (2)
- 5.1.3 Determine the mode. (1)
- 5.1.4 Calculate the range. (2)
- 5.1.5 Copy and complete the following frequency table: (4)

FREQUENCY TABLE	
CLASS INTERVAL	FREQUENCY
20-29	
30-39	
40-49	
50-59	
60-69	
70-79	
80-89	
90-99	
100-109	
<b>TOTAL</b>	

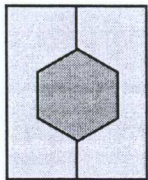
5.2 Use the frequency table in QUESTION 5.1.5 to draw a vertical bar graph on the grid provided in ANNEXURE B. (5)

**[16]**

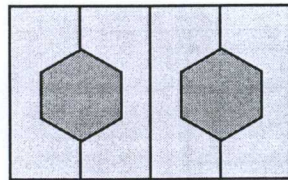
QUESTION 6

6.1 Study the tile pattern. Complete the table given below.

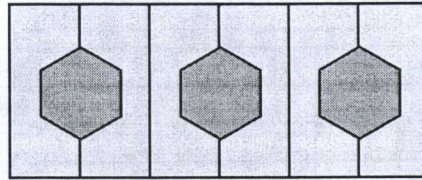
The drawing below shows a pattern for paving the parking area at your campus. Study the drawing carefully and answer the questions.



Pattern no. 1



Pattern no. 2



Pattern no. 3

Pattern number (n)	1	2	3	A	5	6	7
Number of dark grey tiles (x)	1	2	3	4	5	B	7
Number of light grey tiles (y)	2	4	6	8	10	12	C

Determine the value of the following:

- 6.1.1 Pattern no. A (1)
- 6.1.2 The number of dark grey tiles during pattern no. 6 (1)
- 6.1.3 The number of light grey tiles when 7 dark grey tiles were used (2)

6.2 Write down an equation/formula that can be used to determine:

- 6.2.1 The number of dark grey tiles (2)
- 6.2.2 The number of light grey tiles (2)

6.3 Use the formula in QUESTION 6.2.2 to determine the number of:

- 6.3.1 Light grey tiles during pattern no. 18 (1)
- 6.3.2 Light grey tiles during pattern no. 77 (2)

[11]



**QUESTION 7**

A company received the following monthly bank statement. Study the statement and answer the questions.

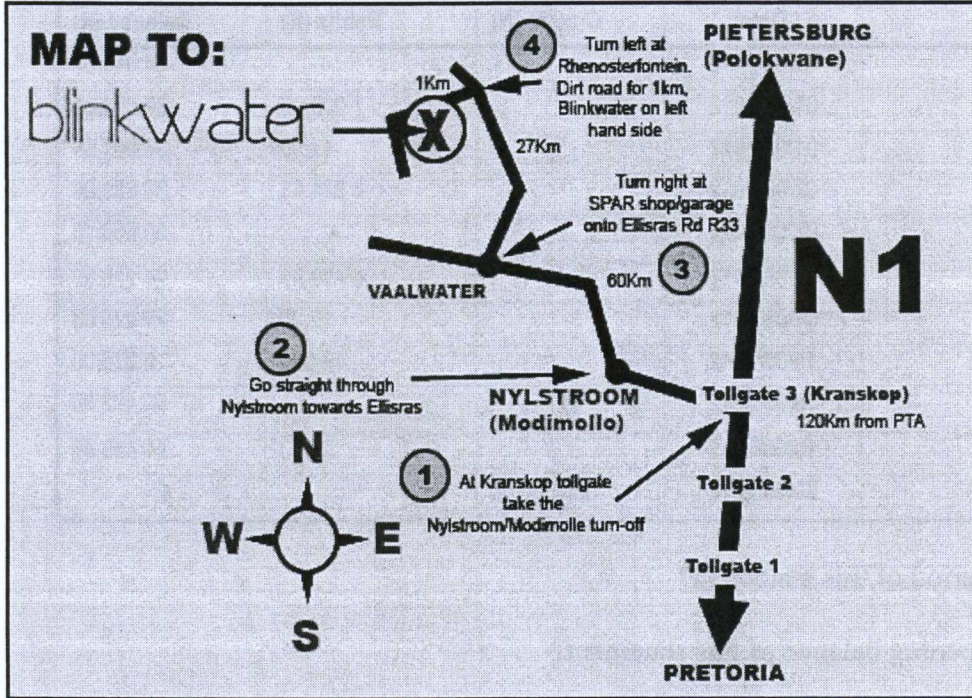
Transaction details	Date	Credits (R)	Debits (R)	Balance (R)
Balance	01/08/2012			44 014,01
Rent	01/08/2012		7 000,00	37 014,01
Bank fees	01/08/2012		12,50	37 001,51
MTN SA	02/08/2012		6 321,43	30 680,08
Bank fees	02/08/2012		A	30 668,18
Debit order EWC	06/08/2012		6 429,95	24 238,23
Bank fees	06/08/2012		12,20	24 226,03
Salaries Internet transfers	15/08/2012		19 000	5 226,03
Cell C	15/08/2012	B		41 472,86
Bank fees	15/08/2012		26,40	41 446,46
Transfer & Statement Balance	30/08/2012	55 080,00		C

- 7.1 What is the period of this statement? (1)
- 7.2 What is the opening balance of this statement? (1)
- 7.3 In your own words, explain what it means to debit an account by R7 000,00 (2)
- 7.4 Calculate the value of the following:
- 7.4.1 The bank fees on 2 August 2012 marked A (2)
- 7.4.2 Credit on 15 August 2012 marked B (2)
- 7.4.3 The closing balance marked C (2)
- 7.5 Calculate the total credits of this statement. (2)
- 7.6 The company employs two workers who shares a salary R19 000. One of these employees earns 55% of the total salary expenses.
- 7.6.1 Calculate the salary of the employee who earns 55% of the total salary. (2)
- 7.6.2 Calculate the salary of the remaining employee. (2)

**[16]**

QUESTION 8

8.1 The strip map given below shows the directions when travelling from Pretoria to Blinkwater game farm.



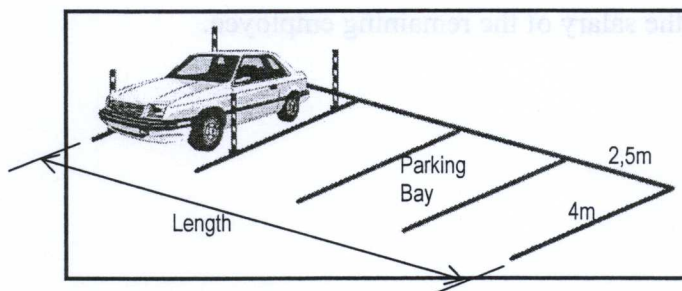
Study the strip map and answer the questions that follow:

8.1.1 Calculate the distance from Pretoria to Blinkwater. (3)

8.1.2 It took Thabo 75 minutes to travel from Pretoria to Kranskop tollgate. Calculate his average speed in km/h.

Formula :  $Speed = \frac{distance}{time}$  (3)

8.2 The drawing given below shows the parking area with 4 equal parking bays. Each parking bay is 4 m long and 2,5 m wide. Study the drawing and answer the questions that follow.



8.2.1 Determine the length of the parking area. Ignore the thickness of the painted lines. (2)



- 8.2.2 Calculate the area of a parking bay. (2)
- 8.2.3 Determine the length of the painted lines (3)
- [13]**

### QUESTION 9

The table given below shows the number of visitors per month who visited South Africa during the first 6 months in 2011. The table compares the visitors from USA and those from Tanzania.

	Jan	Feb	Mar	Apr	May	Jun
Tanzania	534	675	450	400	377	765
USA	255	431	300	711	612	551

Use the data given in the table above to answer the questions that follow:

- 9.1 During which month did the most Tanzanians visit South Africa? (1)
- 9.2 Determine the modal month for USA. (2)
- 9.3 Determine the range for visitors from:
- 9.3.1 USA (2)
- 9.3.2 Tanzania (2)
- 9.4 What is the median number of visitors per month from USA (4)
- 9.5 What is the probability to meet a visitor coming from Tanzania during March 2011? (3)
- [14]**

**TOTAL: 150**



- 8.2.2 Calculate the area of a parking bay.
- 8.2.3 Determine the length of the painted lines.

QUESTION 9

The table given below shows the number of visitors per month who visited South Africa during the first 6 months in 2011. The table compares the visitors from USA and those from Tanzania.

	Jan	Feb	Mar	Apr	May	Jun
Tanzania	534	672	450	400	377	702
USA	222	431	300	711	612	521

Use the data given in the table above to answer the questions that follow:

- 9.1 During which month did the most Tanzanians visit South Africa?
- 9.2 Determine the modal month for USA.
- 9.3 Determine the range for visitors from:
  - 9.3.1 USA
  - 9.3.2 Tanzania
- 9.4 What is the median number of visitors per month from USA?
- 9.5 What is the probability to meet a visitor coming from Tanzania during March 2011?

TOTAL: 130

