higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(First Paper)
NQF LEVEL 2

(10401012)

21 February 2018 (X-Paper)
09:00–12:00

Drawing instruments and non-programmable calculators may be used.

This question paper consists of 11 pages and 2 addenda.

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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, et cetera that will be used in this paper.
5. Round off the answers to TWO decimals where necessary, 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. Answer QUESTION 4.3.3 on the attached ADDENDUM A, and QUESTIONS 5.1.3 and 5.1.4 on the attached ADDENDUM B and hand this in with the ANSWER BOOK.
9. Work neatly.

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QUESTION 1

1.1 Calculate the following without using a calculator. Show ALL working.

1.1.1 $3 + 4 \times 2$ (2)

1.1.2 $(81 \div 9) - \sqrt{81}$ (3)

1.1.3 $\frac{1}{4}$ of $186 - 39{,}25$ (3)

1.2 Arrange the following numbers in ascending order:

–3; 0,25; –12; 0 (2)

1.3 On a specific day the minimum and maximum temperatures were – 4 ºC and 16 ºC.

Calculate the difference between the minimum and maximum temperatures for that day. (2)

1.4 A group of 186 students have to be transported on a field trip. ONE taxi can transport a maximum of 15 people.

How many taxis must be hired? (3)

1.5 How much does 10 kilograms of sausage cost if 1 kilogram of sausage costs R64,98? (2)

1.6 Calculate the duration of a training course starting at 08:15 and ending at 15:45. (3)

1.7 Ben and Peter share R6 520 in the ratio 2 : 3.

How much money will each of them receive? (4)

1.8 A computer costs R14 925. If you pay cash you will receive 8% discount.

How much discount (in rands) will you receive? (3)

1.9 The sugar prices for the following bags are as follows:

10 kg = R159,95
12,5 kg = R196,95

Would it be more economical to buy the 10 kg or the 12,5 kg bag of sugar? Show your calculations. (3)

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QUESTION 2

2.1 Choose an answer from COLUMN B that matches a picture in COLUMN A. Write only the letter (A–G) next to the question number (2.1.1–2.1.5) in the ANSWER BOOK.

COLUMN A	COLUMN B
2.1.1	A cube B rectangular prism C diameter D perpendicular E pyramid F cylinder G parallel
2.1.2	
2.1.3	
2.1.4	
2.1.5	

(5 × 2) (10)

2.2 A bicycle wheel has a diameter of 660 mm.

2.2.1 Convert the diameter of the wheel to centimetres. (1)

2.2.2 Calculate the radius of the wheel in centimetres. (2)

2.2.3 Calculate the circumference of the wheel. Round off the answer to the nearest cm.

FORMULA: $C = 2\pi r$, where $\pi = 3{,}14$ (3)

2.2.4 Calculate the distance the bicycle will travel if the wheel rotates 50 times. Give the answer in metres. (4)

2.3 Study the grid map below and answer the questions.

Scale: 1 mm = 20 m

[Source: *http://australiancurriculum.edu.au*]

2.3.1 Which building is in the grid reference E6? (1)

2.3.2 What is the grid reference of the school? (1)

2.3.3 What is the compass direction of the school from the town hall? (1)

2.3.4 What is the scale of the map? (1)

2.3.5 Calculate the actual distance from the school to the court house if the distance on the map is 19 mm. (3)

2.4 Below is a sketch of part of an instruction manual to assemble a simple bench. Study the sketch and answer the questions.

[*Source: http://how2assemble.com*]

2.4.1 How many leg frames are shown in the sketch? (1)

2.4.2 How many bolts are needed to secure the leg frames to the platform? (1)

2.4.3 What tool is used to tighten the bolts that are needed to secure the leg frames to the platform? (1)

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QUESTION 3

3.1 Copy the table below in the ANSWER BOOK and answer the question.

FIXED EXPENSES	VARIABLE EXPENSES

Sort the following list of expenses in the correct columns in the table:

- Groceries
- Car insurance
- Telephone
- Rent
- Transport (5)

3.2 Vusi received the financial document below after buying items at McDonalds.

Welcome to McDonald's East London

Tel# 043 727 0778. Vat# 4220257911

Crew ID 26 – Nyati B

TAX INVOICE
ORD #19 06/03/2017 15:08:38

QTY	ITEM	TOTAL
2	Oreo McFlurry	44,00
	Subtotal	44,00
	Take-Out Total (incl VAT)	44,00
	Cash Tendered	100,00
	Change	56,00
	TOTAL INCLUDES VAT OF 14%	5,41

Thank you for visiting McDonald's
www.mcdonalds.co.za
Careline 0860000040

3.2.1 What type of financial document is shown above? (1)

3.2.2 On what date did this transaction take place? (1)

3.2.3 How many Oreo McFlurry's did Vusi order? (1)

3.2.4 Calculate the price of ONE Oreo McFlurry (2)

3.2.5 What type of payment was made to pay for the order? (1)

3.2.6 Calculate the VAT exclusive amount of the subtotal. (3)

3.3 Study the credit card statement and answer the questions.

ABC CREDIT

Primary account number	4301 3256 2103 7814
Statement date	28 September 2017
Payment due date	22 October 2017
Total amount owing	R 4 896,78
Minimum payment due	R 245,00
Overdue amount	R 0
Cash back this month	R 0
Cash back last 12 months	R 0
Credit limit	R 6 500,00
ACCOUNT SUMMARY	**AMOUNT**
Opening balance	R 1 225,64
Available balance	R 1 182,00
Purchases	R 12 122,15
Interest	R 0,01 Cr
Fees	R 49,00
Payments received	R 8 500,00 Cr
Closing balance	R 4 896,78

3.3.1 What is the opening balance of this statement? (1)

3.3.2 What is the closing balance of this statement? (1)

3.3.3 What is the minimum payment due and by when should it be paid? (2)

3.3.4 How is a credit amount indicated on this statement? (1)

3.3.5 If you use your credit card to make an international withdrawal the following fees are applicable:

Flat fee of R60,00 plus R1,85 for every R100 withdrawn.

Calculate the fee that you would pay if you make an international withdrawal of R1 500,00. (4)

3.4 Abdul and Enzo are planning a trip to Cape Town to attend a live music concert. The following costs are applicable:

Concert ticket per person: R850,00

Accommodation per person per night: R540,00

Flight (return) per person: R3 137,00

3.4.1 Calculate the combined cost of the trip if they need accommodation for 2 nights. (4)

3.4.2 Cheapo Travel is offering a package deal to attend the music concert in Cape Town. The cost is R4 875,00 per person and includes airfare, accommodation for two nights and concert tickets.

Would it be cheaper for Abdul and Enzo to take the package deal from Cheapo travels? Show your calculations. (3)

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QUESTION 4

4.1 Write down the missing TWO numbers in each of the following patterns:

4.1.1 –3; 0; 3; …; … (2)

4.1.2 12; 36; 108; …; … (2)

4.2 The table below represents the number of painters needed to complete a job within a specific number of days:

Number of painters	1	2	3	5	10
Number of days	60	30	20	12	6

4.2.1 Name the independent variable. (1)

4.2.2 Name the dependent variable. (1)

4.2.3 Is the table an example of direct or indirect proportion? Give a reason for the answer. (2)

4.2.4 How many painters are needed to complete the job in 15 days? (3)

4.3 The table below represents income from the sale of tickets:

Number of tickets (n)	0	1	10	20	**A**	60
Income (in rands)	0	50	500	1 000	1 500	**B**

4.3.1 What is the cost of ONE ticket? (1)

4.3.2 Calculate the values **A** and **B**. (4)

4.3.3 Use the table to draw a line graph on the grid on ADDENDUM A (attached). Label the horizontal and vertical axes of the graph. (5)

4.3.4 Use the graph to determine the number of tickets that were sold to have made an income of R2 000,00. (2)

4.3.5 Does the graph represent a direct or indirect relationship? (1)

4.4 Wally participated in a 120 km marathon. The marathon has a checkpoint at the 60 km mark. The graph shows Wally's progress during the race.

[Source: *http://mathsteacher.com.au*]

4.4.1 At what time did the marathon begin? (1)

4.4.2 At what time did Wally arrive at the checkpoint? (1)

4.4.3 Wally took 9 hours to complete the 120 km marathon.

Calculate his average speed during the race.

HINT: Speed = Distance ÷ time (3)

4.4.4 From 10 am to 11 am and from 2 pm to 3 pm there was no increase in the graph.

Name ONE possible reason for this occurance. (1)

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QUESTION 5

5.1 Tsepo completed a Mathematical Literacy assignment during the holidays. He observed the colour of cars that drove past a road in one hour. The following table represents his findings:

Blue	Yellow	White	White	Silver	Black	Blue
Red	White	Pink	Black	White	White	Red
White	Blue	White	Black	Silver	White	Red
Red	White	Blue	Red	Red	Yellow	White

5.1.1 Choose the correct word from those in brackets to complete the sentence. Write only the correct word in the ANSWER BOOK.

Tshepo used an (interview/observation/questionnaire) to conduct his research. (1)

5.1.2 How many cars did Tshepo observe during ONE hour? (2)

5.1.3 Use the information in the table to complete the tally and frequency table on ADDENDUM B (attached). (8)

5.1.4 Use the tally and frequency table to draw a bar graph on the grid on ADDENDUM B (attached). Label the axes. (5)

5.1.5 Which car colour was the most frequent according to Tshepo's research? (1)

5.1.6 What percentage of cars were red according to Tshepo's research? Round the answer to the nearest percent. (3)

5.1.7 Give ONE reason why a questionnaire would not have been a suitable method of collecting the data needed for Tshepo's research. (1)

5.2 In a recent fundraiser activity 11 students took part in a challenge to eat as many pancakes as they could in one minute. The results were as follows:

4	5	8	6	5	4
4	8	5	7	6	

5.2.1 Calculate the mode(s) of the pancakes eaten in ONE minute. (2)

5.2.2 Calculate the mean of the pancakes that were eaten in ONE minute. (2)

5.2.3 Calculate the median of the pancakes that were eaten in ONE minute. (3)

5.2.4 Calculate the range of the pancakes that were eaten in ONE minute. (2)

[30]

TOTAL: 150

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ADDENDUM A **EXAMINATION NUMBER:**

QUESTION 4.3.3

(5)

ADDENDUM B **EXAMINATION NUMBER:**

QUESTION 5.1.3

ITEM	TALLY	FREQUENCY
BLUE	||||	4
RED		
WHITE		
BLACK		
OTHER		
TOTAL		**28**

(8)

QUESTION 5.1.4

(5)

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