higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(First paper)

NQF LEVEL 2

(10401012)

23 November 2020 (Y-paper)
13:00–16:00

Drawing instruments and a nonprogrammable calculator may be used.

This question paper consists of 9 pages and 2 addenda.

023Q1N2023

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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 may be required in this question paper.
5. Round off the answers to TWO decimal places where necessary, unless otherwise stated.
6. Diagrams are not necessarily drawn to scale.
7. Write neatly and legibly.

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QUESTION 1

1.1 Calculate the following without using a calculator. Show ALL your calculations.

1.1.1 $\frac{1}{2}(9-1)+\sqrt{49}$

1.1.2 $4^2 \times 2 + 8$

(2 × 2) (4)

1.2 Convert 5 500 grams to kilograms. (2)

1.3 Mandla got $\frac{18}{35}$ for his Life Orientation test.

What percentage did he achieve? Round off the answer to the nearest percentage. (3)

1.4 The college day starts at 08:00 and ends at 2.30 pm.

1.4.1 Write 2.30 pm in 24-hour clock (digital time). (1)

1.4.2 What is the duration of the day at the college? Show all working. (3)

1.5 Read the following scenario and answer the questions.

Liso wants to paint her room yellow. Red and green paint are mixed together in the ratio 1 : 4 in order to get the shade of yellow paint she likes.	

1.5.1 How many litres of green paint is needed if Liso has 5 litres of red paint? (2)

1.5.2 How many litres of yellow paint will Liso have after she has mixed the 5 litre red and the green paint together? (2)

1.5.3 A 5 litre tin of paint costs R255. Calculate the cost of the paint per litre. (3)

1.6 Dino buys a bicycle that costs R3 550. He gets a 12% student discount on the cost price. How much will he pay for the bicycle? (3)

1.7 Write the following numbers in descending order:

-50 ; 25 ; 0 ; -3 (2)

1.8 Read the following scenario and answer the questions.

There are 100 marbles in a bag. Half (½) of the marbles are blue, $\frac{1}{10}$ of the marbles are red and the rest of them are yellow.	

1.8.1 How many marbles in the bag are red? (2)

1.8.2 How many marbles in the bag are yellow? (3)

[30]

QUESTION 2

2.1 Below is a sketch of the layout of the backyard of Sam Manduli's house.

Study the sketch below and answer the questions.

2.1.1 What is the shape of the deck? (1)

2.1.2 Name the three-dimensional shape of the swimming pool. (1)

2.1.3 Calculate side AC of the deck correct to 2 decimal places.

Use the formula $AC = \sqrt{AB^2 + BC^2}$ (3)

2.1.4 Calculate the area of the top of the garden table.

Use the formula: Area of a circle = πr^2 where $\pi = 3{,}14$ (4)

2.1.5 Calculate the volume of water in the swimming pool if the water is filled up to a depth of 1,5 m.

Use the formula: Volume = length x breadth x depth. (4)

2.1.6 Calculate the circumference of the flower bed.

Use the formula: Circumference = πd where $\pi = 3{,}14$ (2)

2.2 Emily is planning to visit her sister in America. Her sister lives in a city called Alexandria in the state of Louisiana.

Study the grid map below and answer the questions.

Scale: 1 cm = 50 km

[Source: *https://www.socialstudieslouisiana.com*]

2.2.1 The grid reference for Ruston is A2. What is the grid reference for Alexandria? (2)

2.2.2 Which city is in grid reference D3? (1)

2.2.3 In which direction is Lake Charles from Alexandria? (2)

2.2.4 Write down the scale of the map? (1)

2.2.5 Emily's sister wants to take her to see the sights at Lake Charles.

Calculate the actual distance in kilometres between the two cities if the distance on the map is 3,2 cm. (3)

2.2.6 Estimate which town is the closest to Ruston. (1)

2.3 When a trailer is hitched behind a vehicle, it is important to attach the plug from the trailer to the hitch of the vehicle. The plug from the trailer must be wired properly in order for the tail lights of the trailer to function correctly.

Study the sketch below and answer the questions:

[Source: *http://10.53.drk-ov-roden.de/schematics/*]

2.3.1 How many wires have to be connected in the plug? (1)

2.3.2 To which number in the plug should the stop lights be connected? (1)

2.3.3 What is the colour of the wire from the rear fog lights? (1)

2.3.4 Why is it important that the tail lights on the back of the trailer function properly? (2)

[30]

QUESTION 3

3.1

Lerato is planning to go on a cultural tour with her college. The tour is planned for the next year. The tour will take place over a period of 5 days. The college provided the following information as a guideline on the cost of the tour:	
Transport	R650
Accommodation	R1 350
Food	R100 per day
Spending money	R150 per day

Lerato's parents gave her R2 000 towards the tour.

3.1.1 Calculate the amount in rand Lerato will need for food during the 5 days. (2)

3.1.2 Calculate amount in rand Lerato will need for spending money during the 5 days. (2)

3.1.3 Draw up a budget for Lerato so that she can see what her financial situation is with regard to the tour. Use the budget template provide on ADDENDUM A (attached) to draw up the budget. (8)

3.1.4 Give Lerato ONE option of how she could increase her income, to allow her to afford the tour. (1)

3.2 Study the financial document below and answer the questions.

	Steers/Fishaways 137 Main Road Hermanus Tel: 028 313 1314	
Invoice Type:	Counter Take Away	Inv#: 12546
Date: 23 Jul 2019		Time: 20:38
Cashier: Ben Stevens		
2x	Cheesy Chips Large @ R30.90	R 61.80
2x	Xtra Large Bacon Bits @ R 14.90	R 29.80
1x	Iron Brew 500ml	R 17.90
1x	Cream Soda	R 17.90
TOTAL:		**R 127.40**
Total Excluding VAT (15%):		**A**
VAT Amount:		**B**
Amount Paid:		R 200.00
Change Due:		**C**

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

3.2.2 Who was the cashier for this transaction? (1)

3.2.3 The TOTAL R127,40 is VAT inclusive.

Calculate A, the total excluding VAT. (3)

3.2.4 Calculate B, the VAT amount. (2)

3.2.5 Calculate C, the change due to the customer. (2)

3.3 Danny West went to a branch of his bank on 25 June 2019. He deposited R1 400 cash into his savings account. His savings account number is 1652 1870.

3.3.1 Use the information given above to complete the savings deposit slip provided on ADDENDUM A (attached). (5)

3.3.2 The bank charges Danny a fee for depositing money at a branch.

The formula used to calculate the deposit fee is:

R8,07 + R1.82 per R100 or part thereof

Calculate the deposit fee for R1 400. (3)

[30]

QUESTION 4

4.1 Rambo will be celebrating his 16th birthday soon. He wants to take three friends with him for a morning of Go-Kart racing on his birthday.

He draws up a table to help him plan for the cost of taking his friends to the racing track. The cost of one ticket is R50 and will allow one person to race for 10 laps.

Study the table below and answer the questions.

Number of tickets	0	1	2	**C**	5	**D**
Cost in Rand	0	**A**	**B**	150	250	400

4.1.1 Calculate the values for A, B, C and D. Do not copy the table. Write only your calculation next to the letter (A–D) in the ANSWER BOOK.

You may use the formula: Cost in Rand = R50 x number of tickets (4 × 2) (8)

4.1.2 Calculate the amount in Rand that Rambo must pay for him and his three friends to have one race. (2)

4.1.3 Calculate the cost in Rand per lap for Go-Kart racing. (3)

4.1.4 How much would it cost Rambo for the morning of racing if he and his three friends were to participate in 5 races? (3)

4.1.5 Name the dependent and independent variables in the table. (2)

4.1.6 Are the values in the table an example of direct or indirect proportion? Justify the answer. (3)

4.1.7 Are the values for cost in Rand an example of a constant difference or a constant ratio pattern? (1)

4.1.8 Use the values in the table to draw a line graph on the grid found in ADDENDUM B (attached). Provide a suitable heading and labels for the graph. (8)
[30]

QUESTION 4

5.1 The speed limit in front of Mpondo Zankomo College entrance gate is 60 km/h. The SRC want speed humps to be built on the street to slow vehicles down. A traffic officer was requested to record the speed of vehicles on a Monday morning.

The speed, in kilometres per hour (km/h), of the first 14 vehicles are recorded below:

62; 57; 59; 5; 64; 70; 65; 64; 60; 50; 97; 56; 71; 65

5.1.1 Write down the two outliers in the data set. (2)

5.1.2 Arrange the speeds in descending order. (2)

5.1.3 Calculate the mean speed of the cars correct to 2 decimal places. (3)

5.1.4 Determine the median speed of the vehicles. (3)

5.1.5 Determine the modal speed/s of the vehicles. (2)

5.1.6 Calculate the range of speed of the vehicles. (3)

5.1.7 Which one of the above measures of central tendency is appropriate to describe the speed of the vehicles? Give a reason for the answer. (2)

5.1.8 Do you think the students' concern is genuine? Give a reason for the answer. (2)

5.2 A college organised a games day to raise funds for a local old-age home. The table below shows the amount of money each game and each stall raised.

Study the table and answer the questions:

Coin toss = R154	Pillow fight = R1 240	Throw the hoop = R605
Ghost tunnel = R678	Balance beam = R587	Beanbag toss = R469
Pin the tail on donkey = R795	Guess the number = R198	Fortune teller = R888
Tenpin bowling = R946	Face-painting = R1 128	Karaoke = R912
Fishing = R444	Funky hairspray = R309	Shoot the marble = R394

5.2.1 Complete the frequency table on ADDENDUM B (attached). (7)

5.2.2 Which game made the most money? (1)

5.2.3 Which game made the least money? (1)

5.2.4 How much money was raised altogether? (2)

[30]

TOTAL: 150

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ADDENDUM A **EXAMINATION NUMBER:** | | | | | | | | | | | | | |

QUESTION 3.1.3

BUDGET FOR LERATO'S SCHOOL TOUR				
INCOME	AMOUNT		EXPENSES	AMOUNT
TOTAL INCOME:			TOTAL EXPENSES:	
SURPLUS/DEFICIT:				

8

QUESTION 3.3.1

SAVINGS DEPOSIT

Date _____

Name _____

Account Number _____

CASH		
CHECKS		
Subtotal		
Less Cash		
TOTAL		

5

REMOVE THE ADDENDUM AND HAND IN WITH THE PAPER.

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ADDENDUM B **EXAMINATION NUMBER:**

QUESTION 4.1.8

8

QUESTION 5.2.1

INTERVAL IN RAND	TALLY	FREQUENCY
0–399	IIII	4
400–799		
800–1 199		
1 200–1 499		
	TOTAL	

7

REMOVE THE ADDENDUM AND HAND IN WITH THE PAPER.

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