higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(First paper)

NQF LEVEL 2

(10401012)

5 November 2024 (Y-paper)
13:00–16:00

Drawing instruments and non-programmable calculators may be used.

This question paper consists of 11 pages and 1 addendum.

011Q1N2405

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
MATHEMATICAL LITERACY
(First paper)
NQF LEVEL 2
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 stated differently.
6. Drawing instruments, including rulers, compasses and protractors may be used.
7. Diagrams are not necessarily drawn to scale.
8. Answer QUESTION 4.3.4 on the ADDENDUM (attached). Write your EXAMINATION NUMBER on the ADDENDUM, detach it from the question paper and hand it in with the ANSWER BOOK.
9. Use only a black or blue pen.
10. Write neatly and legibly.

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QUESTION 1

1.1 Calculate the following without using a calculator. Show all calculations.

1.1.1 $(8 + 18) – 52 \div 2$

1.1.2 $\sqrt{121} + 2^3$

1.1.3 ½ of 600 – (-250)

(3 × 2) (6)

1.2 Arrange the following numbers in descending order:

0; -35; 8; 24 (2)

1.3 There are 178 cats and dogs in an animal shelter. If 98 of the animals are dogs, what percentage of the animals are cats? Round off the answer to the nearest percentage. (3)

1.4 A washing machine costs R8 650. How much would you pay for the washing machine if a discount of 8 % is given? (3)

1.5 Convert 3,85 kilometres to metres. (2)

1.6 Divide R5 200 between Morgan and Lufefe in the ratio 2:3. (4)

1.7 A runner starts running at 14:08 and runs for 2 hours. During the 2 hours of running, a distance of 13,6 kilometres are covered.



1.7.1 Calculate the average speed of the runner during his run.

Use the formula: Speed = $\frac{Distance\ in\ km}{Time\ in\ hours}$

(3)

1.7.2 At what time did the runner finish his run? (2)

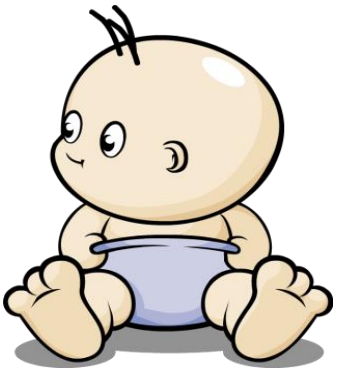
1.8 A mother wants to buy nappies for her baby. The following options are available:

Option 1: Mega Box (120 nappies) for R530.

Option 2: Carry bag (44 nappies) for R184.

Which option would be the most economical choice?

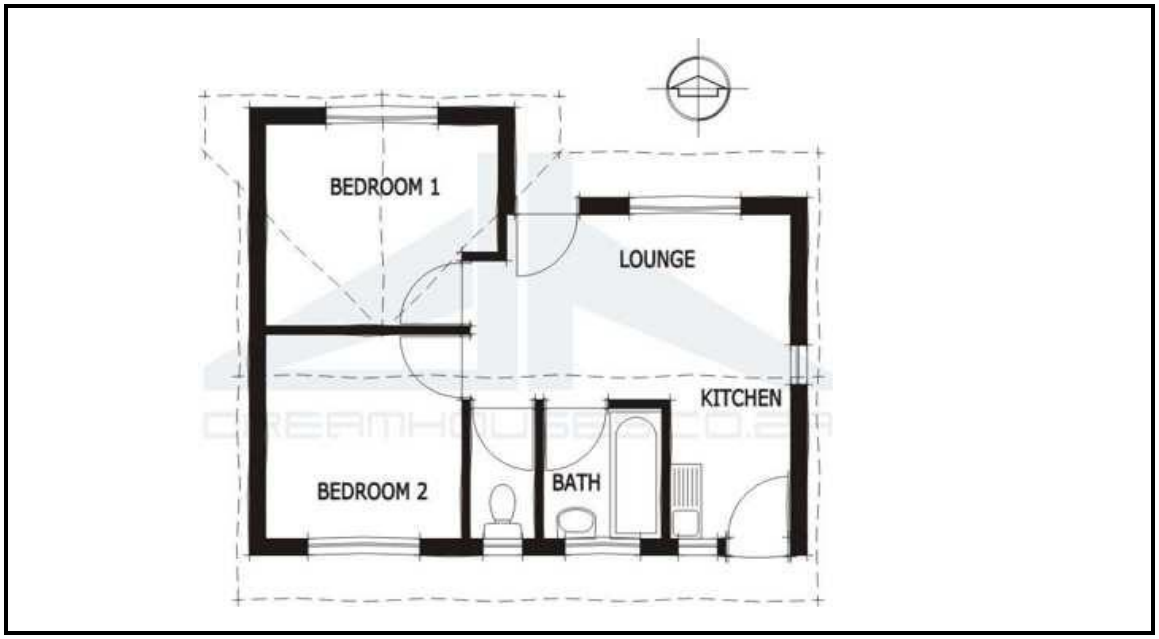
Show all calculations. (5)



[30]

QUESTION 2

2.1 A sketch of an RDP (Reconstruction and Development Programme) house is shown below. Study the sketch and answer the questions that follow.



[Source: *https://www.dreamhouses.co.za* and *https://www.esi-africa.com*]

2.1.1 How many windows does the RDP house have? (1)

2.1.2 Calculate the area of BEDROOM 2 if the width is 4,2 m and the length is 3,4 m.

Use the formula: Area = length × width. (3)

2.1.3 What is the two-dimensional shape of the BEDROOM 2 called? (1)

2.1.4 The RDP house is built on a cement slab. The dimensions of the cement slab are as follows:

Length = 8 m
Width = 7 m
Height = 10 cm

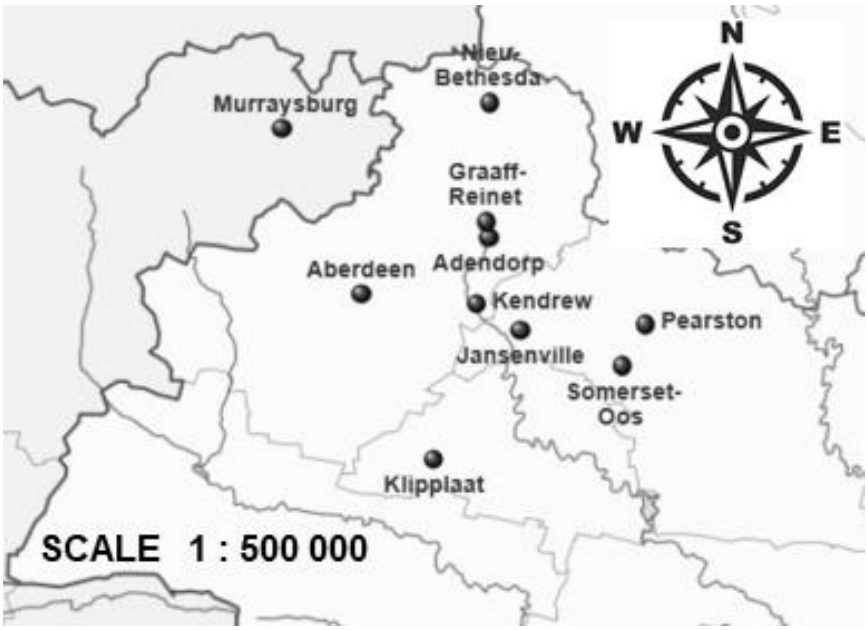
Calculate the volume of the cement slab in m^3.
Use the formula: Volume = length × width × height (4)

2.1.5 Is the toilet and the bath in the same space or separated? Give a reason for your answer. (2)

2.1.6 When the kitchen and the lounge is not separated by a wall, we say that it is an open-plan house. Is the RDP house in the sketch an open-plan house? (1)

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2.2 Below is a map of the Kamdeboo region in South Africa. Study the map and answer the questions that follow.



[Source: Adapted from *https://af.wikipedia.org/wiki/Kamdeboo*]

2.2.1 In which direction is Murraysburg from Jansenville? (2)

2.2.2 Name any TWO towns that are directly North from Kendrew. (2)

2.2.3 What is the scale of the map? (2)

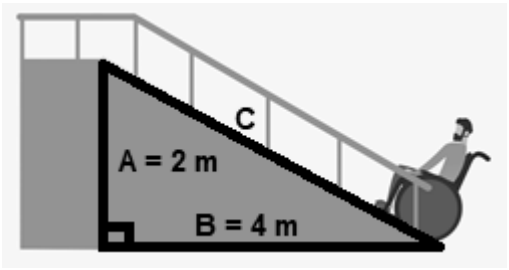
2.2.4 What is the meaning of the scale of the map? (2)

2.2.5 The distance between Jansenville and Pearston is 13,26 cm on the map.

Calculate the real distance (in km) between Jansenville and Pearston. (4)

2.3 A shop is planning to build a ramp to make the shop accessible for wheelchairs. The following dimensions apply:

A = 2 m
B = 4 m



2.3.1 Say whether the following statement is TRUE or FALSE and give a reason for your answer.

Statement: In triangle ABC, Side A is perpendicular to Side B. (2)

2.3.2 Calculate the value of side C. Use the formula $a^2 + b^2 = c^2$. (4)

[30]

QUESTION 3

3.1 Benny keeps a record of his income and expenses every month. Below is his income and expenditure statement for April to June 2024.

BENNY'S INCOME AND EXPENDITURE STATEMENT FOR APRIL TO JUNE 2024			
INCOME	**APRIL**	**MAY**	**JUNE**
Basic salary	6 000	6 000	6 000
Commission from sales	7 500	5 200	8 100
TOTAL INCOME	**13 500**	**11 200**	**A**
EXPENSES			
Rent	4 500	4 500	4 500
Car repayment	1 800	1 800	1 800
Insurance	900	900	900
Groceries	4 200	4 450	4 330
Cell phone	470	385	465
Entertainment	1 460	2 220	1 750
TOTAL EXPENSES	**13 330**	**14 255**	**13 745**
SURPLUS/DEFICIT	170	-3 055	**B**

3.1.1 Name ONE example of a variable income in the statement above. (1)

3.1.2 Name ONE example of a fixed expense in the statement above. (1)

3.1.3 Calculate the values for A and B on the income and expenditure statement. (2 × 2) (4)

3.1.4 Did Benny have a surplus or a deficit in April 2024? (1)

3.1.5 What advice would you give Benny on how, in the future, he can avoid a situation of where he had a deficit of R3 055 in May 2024. (1)

3.1.6 Benny pays a rate of R0,89 per minute for airtime. How many minutes of airtime did he buy in April 2024? Round off the answer to the nearest minute. (4)

3.1.7 Benny's employer deposits his basic salary into his bank account each month.

The transaction fee is calculated by using the following formula:

R70 + R1,50 per R100

Calculate the transaction fee for making the deposit. (3)

3.1.8 Benny earns commission from sales. He receives R50 per sale that he makes. How many sales did he make during May 2024? (3)

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3.2 Study the financial document below and answer the questions that follow:

INVOICE

DATE	INVOICE NO	Starburst Automotive
15 June 2024	V10435	18 Smuts Road
INVOICE TO		Smithville, 3201
Stanley Reddy		Phone: 089 654 2314
26 Anthony Crescent		Email: starburst@gmail.com
Smithville, 3201		

QUANTITY	DESCRIPTION	UNIT PRICE	LINE TOTAL
2	Brake Pad	R 385	R 770
3	Fan Belt	R 263	A

Subtotal	R1 559
15 % Tax	B
Total	C

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

3.2.2 What does it mean if a price is exclusive of VAT? (1)

3.2.3 Name the products that were purchased. (2)

3.2.4 On which date was the invoice issued? (1)

3.2.5 Calculate the value for A. (2)

3.2.6 Calculate the value for B. (3)

3.2.7 Calculate the value for C. (2)

[30]

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QUESTION 4

4.1 Study the following patterns and complete the missing numbers.

4.1.1 8; 16; 32; …; … .

4.1.2 9; 18; 27; … ; … .

4.1.3 Is the pattern in QUESTION 4.1.1 an example of a constant difference or a constant ratio? Give a reason for your answer.

(3 × 2) (6)

4.2 It is estimated that it will take one painter an average of 50 hours to paint a wall around the school. The table below shows the time it will take to paint the wall if there are more painters to help with the job.

Number of painters (x)	1	2	5	**B**	25
Time taken to paint in hours (y)	50	25	**A**	5	2

Use the formula: Number of painters × Time = 50

4.2.1 Calculate the values for A and B. (2 × 2) (4)

4.2.2 Name the independent variable. (1)

4.2.3 Name the dependent variable. (1)

4.2.4 Is the relationship between the variables in the table above an example of a direct or indirect relationship? Substantiate your answer. (2)

4.2.5 If the school principal wanted the job to be completed in 5 hours and the painters charged a total labour cost of R 25 000. Calculate the hourly rate charged per painter. (2)

4.3 Lebo is selling hand-crafted coffee mugs to help her save money to buy a laptop. The table below shows how much income Lebo can expect when she sells a certain number of coffee mugs.

Number of coffee mugs sold (x)	0	1	5	**C**	15	20
Income in rand (y)	0	100	500	1000	**D**	2 000

Formula: Income in rand = Number of coffee mugs sold × R100

4.3.1 What is the price of one coffee mug? (1)

4.3.2 How many coffee mugs must Lebo sell to have an income of R2 000? (1)

4.3.3 Calculate the values for C and D. (2 × 2) (4)

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4.3.4 Use the table to draw a straight line graph on the Addendum (attached). Provide the graph with a suitable heading and labels.
Write your examination number in the spaces provided and hand in the ADDENDUM with the ANSWER BOOK. (6)

4.3.5 Name the independent variable. (1)

4.3.6 Are the numbers in the table an example of an increasing or decreasing relationship? (1)

[30]

QUESTION 5

5.1 The library on campus did research on the genre of books learners like to read in their spare time. The librarian asked some learners on a specific day what type of books they preferred to read. The information obtained is shown in the table below.

Study the table below and answer the questions that follow.

TYPE OF BOOK	TALLY	FREQUENCY
BIOGRAPHY	𝍸	5
HISTORICAL NOVEL	𝍸 ||	**A**
ROMANCE	𝍸 𝍸 𝍸 𝍸 ||	22
MYSTERY	**C**	20
RELIGIOUS	𝍸 |||	**B**
POETRY	**D**	4
TOTAL		**E**

5.1.1 Did the librarian use an interview, questionnaire or observation to collect the data? Give a reason for your answer. (2)

5.1.2 Write down the values for A and B in the table. (2)

5.1.3 Write down the missing tally for the letters C and D in the table. (2)

5.1.4 Calculate the sample size (E). (2)

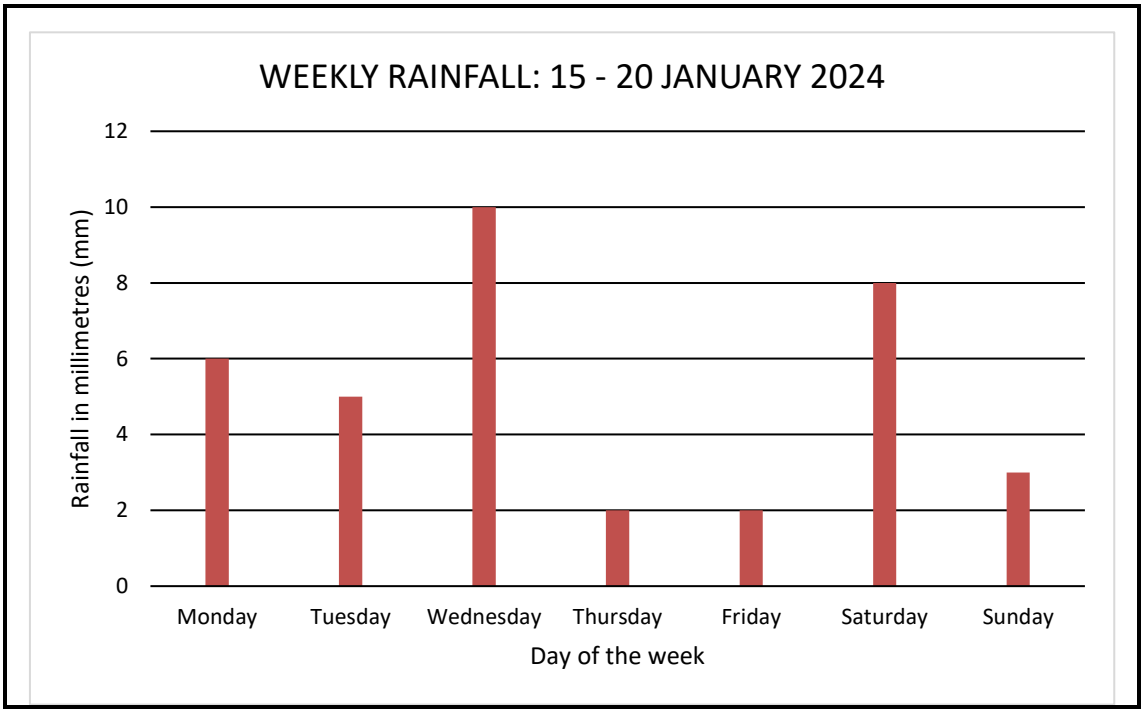
5.1.5 What was the most popular type of book? (1)

5.1.6 What percentage of the learners prefer reading mystery novels? Round off your answer to the nearest percentage. (4)

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5.2 A learner measures rainfall on a daily basis and compiles a graph for the rainfall for the week. Below is a graph that the learner drew up during January 2024.

Study the graph below and answer the questions that follow:



5.2.1 Was an observation, interview or a questionnaire used to collect data? (1)

5.2.2 On which dates were the data collected? (1)

5.2.3 Is the data collected based on fact or opinion? (1)

5.2.4 On which day was the highest rainfall measured? (1)

5.2.5 On which day/s were the lowest rainfall measured? (2)

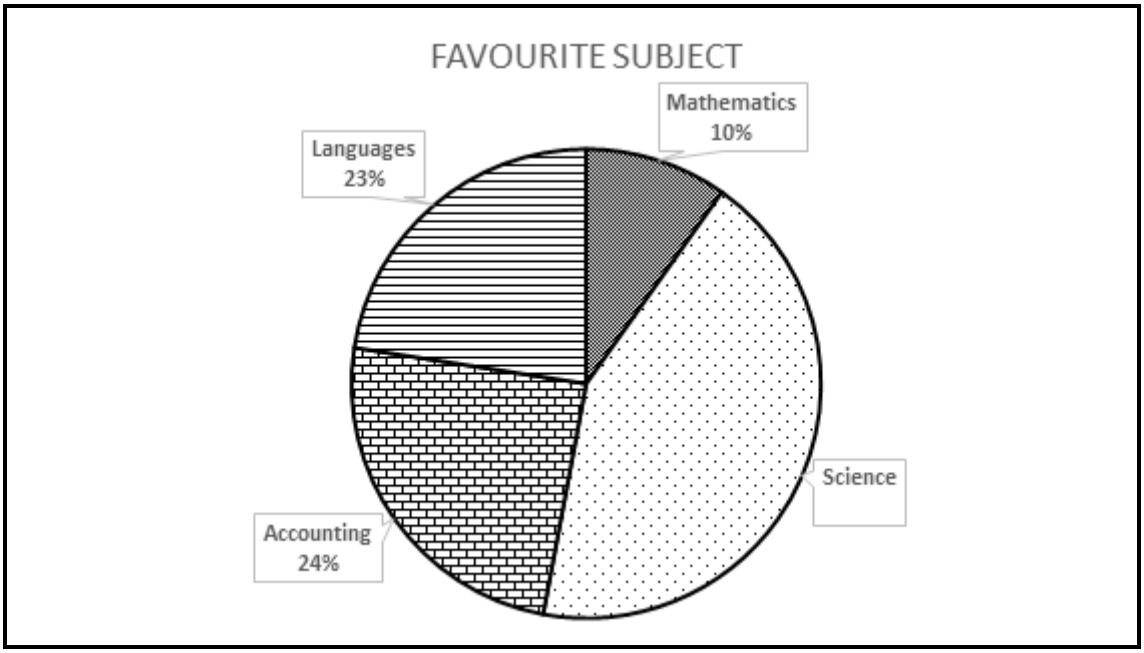
5.2.6 Calculate the range of the rainfall measured in the week. (2)

5.2.7 Calculate the daily average of rainfall measured in the week. (3)

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5.3 A group of learners were asked what their favourite subject was. After the data was collected, the following pie graph was drawn.

Study the pie chart and answer the following questions:



5.3.1 Which subject was the most popular? (1)

5.3.2 Calculate the percentage of learners who chose Science as their favourite subject. (2)

5.3.3 If 20 learners chose Mathematics as their favourite subject, how many learners took part in the survey? (3)

[30]

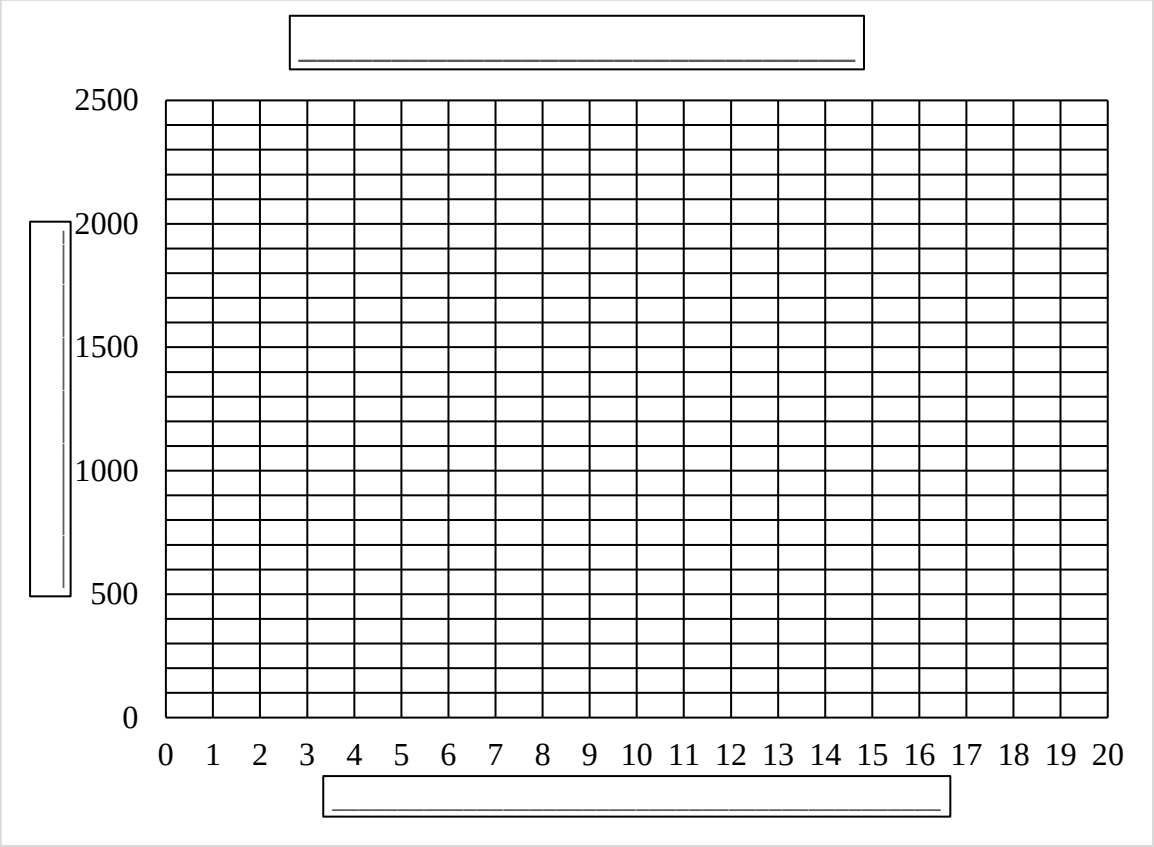
TOTAL: 150

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EXAMINATION NUMBER:

ADDENDUM

QUESTION 4.3.4



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