higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(Second paper)

NQF LEVEL 4

(10401034)

17 February 2025 (X-paper)
09:00–12:00

Non-programmable calculators and mathematical instruments may be used.

This question paper consists of 9 pages and 2 answer sheets.

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MATHEMATICAL LITERACY
NQF LEVEL 4
(Second paper)
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.
5. Round off answers to TWO decimal places, unless stated differently.
6. Use π = 3,14. Students will be penalised if any other value is used.
7. Diagrams are not drawn to scale.
8. Answer QUESTION 3.2.2 on ANSWER SHEET A (attached). Write your EXAMINATION NUMBER in the spaces provided. Detach the ANSWER SHEET from the question paper and hand it in with the ANSWER BOOK.
9. Answer QUESTION 4.1.8 on ANSWER SHEET B (attached). Write your EXAMINATION NUMBER in the spaces provided. Detach the ANSWER SHEET from the question paper and hand it in with the ANSWER BOOK.
10. Only use a black or blue pen.
11. Write neatly and legibly.

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QUESTION 1

1.1 Zara inherits R250 000 from her grandfather's estate. She plans to use $\frac{1}{5}$ of her inheritance money to redesign her bathroom. She receives a quotation of R34 700 excluding VAT.

Can she afford to accept this quotation after VAT (15%) has been added? Show all calculations. (5)

1.2 Zara invests R150 000 of her inheritance money in a Money Market account at an interest rate of 8,2% compounded annually for a period of two years.

Calculate, without the use of the formula, the total interest that will be earned on this investment. Show all calculations. (6)

1.3 Zara uses the rest of her inheritance money to start a small cupcake business. She supplies coffee shops in the surrounding area. Refer to Zara's income and expenditure statement for March 2023 below and answer the questions that follow.

INCOME & EXPENDITURE STATEMENT FOR MARCH 2023			
INCOME	**AMOUNT IN (R)**	**EXPENDITURE**	**AMOUNT IN (R)**
Cupcake sales	9 720,00	Cake flour	512,00
		Baking powder	68,25
		Icing sugar	450,50
		Butter	980,00
		Milk	170,00
		Eggs	620,00
		Cocoa	295,00
		Essence & flavourings	280,00
		Cupcake holders	1 200,00
		Cake boxes	620,00
		Water & electricity	1 680,00
TOTAL INCOME	**9 720,00**	**TOTAL EXPENDITURE**	**6 875,75**

1.3.1 How many dozen cupcakes did Zara sell in March 2023 if the selling price of one cupcake was R13,50? (4)

1.3.2 Zara increased the selling price of the cupcakes from R13,50 to R16,00 in April 2023. Calculate the percentage increase in the price. (3)

1.3.3 Calculate Zara's projected profit if her total expenditure increases by 5% and she sells 840 cupcakes at R16,00 each. (8)

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1.4 In March 2023 Zara used 650 kWh of electricity. Refer to the electricity tariff table below to calculate the charges, in rand, for her electricity usage in March 2023.

BLOCK	AMOUNT IN CENTS PER kWh (INCL.VAT)
Block 1 (0 ≤ 600 kWh)	262,84 c
Block 2 (above 600 kWh)	362,72 c

[Source: *https://resource.capetown.gov.za/documentcentre/Documents/Procedures*] (6)

1.5 Zara assists her husband, Reza, with his PAYE calculations. Study the tax table below and answer the questions that follow.

RATES OF TAX FOR INDIVIDUALS: 01 MARCH 2023 – 29 FEBRUARY 2024	
Taxable Income (R)	**Rates of Tax (R)**
1 – 237 100	18% of taxable income
237 101 – 370 500	42 678 + 26% of taxable income above 237 100
370 501 – 512 800	77 362 + 31% of taxable income above 370 500
512 801 – 673 000	121 475 + 36% of taxable income above 512 800
673 001 – 857 900	179 147 + 39% of taxable income above 673 000
857 901 – 1 817 000	251 258 + 41% of taxable income above 857 900
1 817 001 and above	644 489 + 45% of taxable income above 1 817 000

TAX REBATES: 01 MARCH 2023 – 29 FEBRUARY 2024	
Primary (Persons under 65)	R17 235
Secondary (Persons 65 and under 75)	R 9 444
Tertiary (Persons 75 and over)	R 3 145

[Source: *www.sars.gov.za*]

1.5.1 Reza is 48 years old and works as a medical doctor at a state hospital. His monthly taxable income is R41 280,90. His annual PAYE is R98 836,95. Is his annual PAYE amount, correct? Show all calculations. (7)

1.5.2 Name the tax certificate that is issued to employees at the end of every tax year? (1)

[40]

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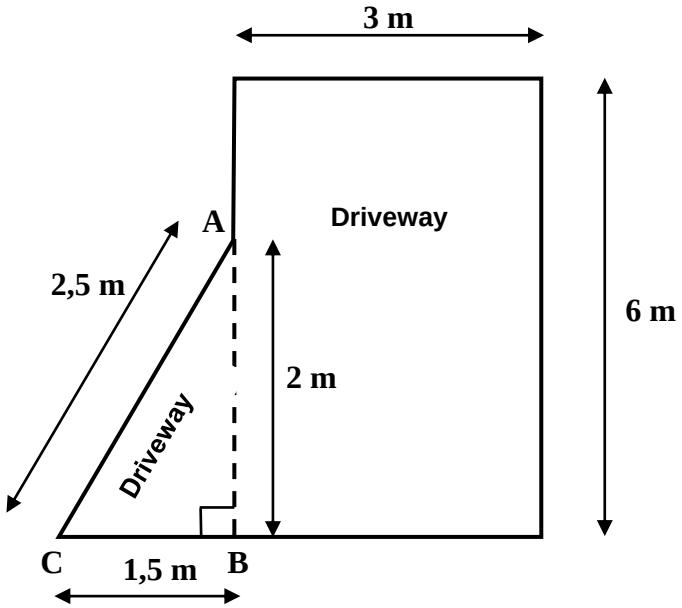
QUESTION 2

2.1 Study the diagram of Thandi's residential driveway below and answer the questions that follow.

The diagram is NOT drawn to scale.

Thandi's residential driveway



2.1.1 Prove, with calculations, that the length of AB is 2 m.

Theorem of Pythagoras: $AC^2 = AB^2 + BC^2$ (3)

2.1.2 Thandi stated that the total area of her driveway is 19,50 m^2. Use calculations to show whether her statement is correct.

Area of a rectangle: $A = L \times B$
Area of a triangle: $A = ½\ base \times h$ (5)

2.1.3 Thandi chooses a rectangular paving brick to pave her driveway. The area of the base of the rectangular paving brick is 0,02 m^2.

Calculate the number of rectangular paving bricks required for her driveway. Allow an extra 5% for cutting and wastage. (6)

2.1.4 The rectangular paving bricks are sold in pallets. One pallet contains 576 rectangular paving bricks and costs R950,00. Thandi has a budget of R1 900 for the rectangular paving bricks.

Will this amount be enough to purchase the rectangular paving bricks? Provide calculations to justify your answer. (4)

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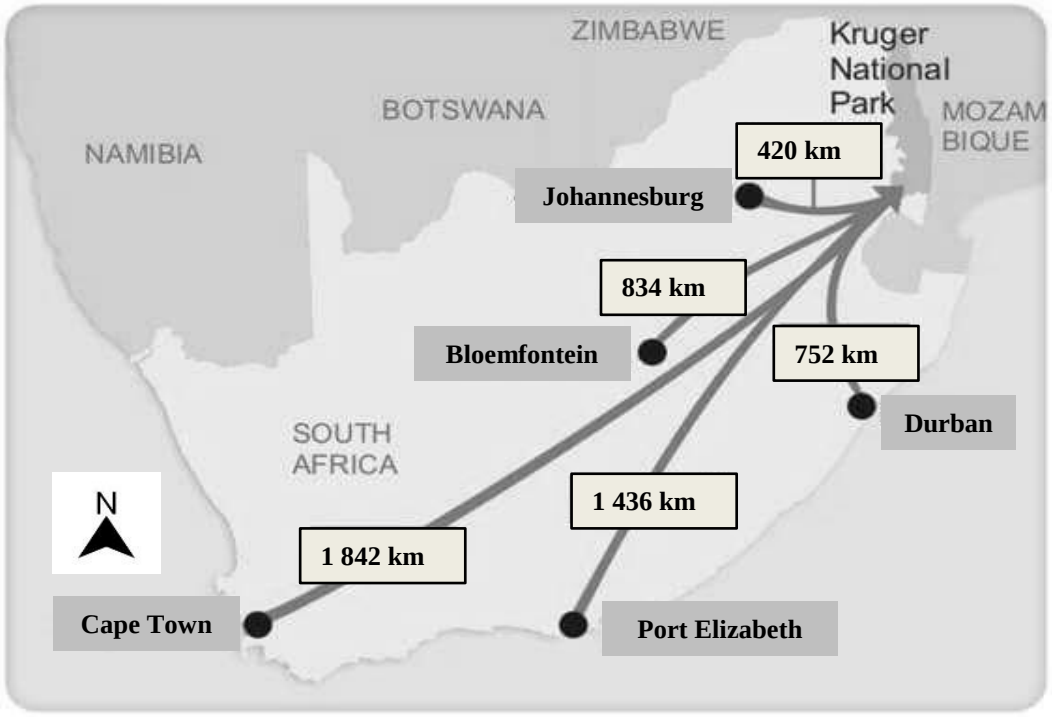
2.1.5 Building sand to a depth of 30 mm needs to be laid before placing the rectangular paving bricks on the driveway. The volume of the building sand required for the triangular section of the driveway is 0,05 m^3.

Calculate the total volume of building sand required for her entire driveway.
Volume: V = L × B × H (where height = depth) (7)

2.2 Refer to the map below and answer the questions that follow.

The map is NOT drawn to scale.



[Source:*https://www.google.com/search?q=maps+of+flight+distances+from+different+cities+to+the+kruger*]

2.2.1 In which direction does an aeroplane fly if flying from Cape Town to the Kruger National Park? (2)

2.2.2 An aeroplane flies from Cape Town to the Kruger National Park at an average speed of 700 km/h. Calculate the duration of the flight in hours and minutes.

Speed = Distance ÷ Time (6)

2.2.3 Determine the scale of the map if the measurement on the map from Johannesburg to Kruger National Park is 2 cm. Write the answer as a ratio scale in the form of 1: _____. (4)

2.2.4 Use the scale in Question 2.2.3 to determine the actual distance between two towns if they are 2,5 cm apart on the map. Give the answer in km. (4)

[41]

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QUESTION 3

3.1 Susan plans her 50th birthday function. She considers the cost options of two catering companies.

Company A: A non-refundable booking fee of R 2 500, to be paid in advance, plus R375 per person.

Company B: R400 per person.
10% discount offered for 250 people or more.

The table below shows the relationship between the number of people (n) and the catering cost (in rand) for Company A and Company B.

Number of people (n)	40	80	120	160	**B**
Company A Cost in rand	17 500	32 500	47 500	**A**	77 500
Company B Cost in rand	16 000	**C**	48 000	64 000	80 000

3.1.1 Is the number pattern for the cost of Company B a constant difference or a constant ratio pattern? Justify your answer. (3)

3.1.2 Calculate the missing values in the above table for:

A
B
C

(3 × 1) (3)

3.1.3 Write an equation for the catering cost (in rand) for Company A. (3)

3.1.4 Write an equation for the catering cost (in rand) for Company B. (2)

3.1.5 Which company would you advise Susan to choose if she invites 100 people? Give a reason for your answer. Show all calculations. (7)

3.1.6 Susan invites 300 people to her 50th birthday function and chooses Company B.

Calculate the total discount, in rand, that Susan receives and the total cost of the function after the total discount received. (6)

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3.2 The table below shows the relationship between the number of waiters (n) and the time (in hours) taken to set up a venue for a function.

No. of waiters (n)	2	4	6	8	12
Time (in hours)	6	3	2	1,5	1

3.2.1 Name the dependent variable. Give a reason for your answer. (2)

3.2.2 Draw a line graph on ANSWER SHEET A (attached) to show the relationship between the number of waiters and the time (in hours) taken to set up a venue for a function.

Label both axes and provide a suitable heading for the graph. (8)
[34]

QUESTION 4

4.1 The table below is a record of the minimum and maximum temperatures, in degrees Celsius, for a particular year, in Cape Town. Refer to the table and answer the questions that follow.

Minimum and maximum temperatures, in degrees Celsius, in Cape Town		
Month	**Min (°C)**	**Max (°C)**
January	17	28
February	16	28
March	15	27
April	12	25
May	10	22
June	8	19
July	7	19
August	8	19
September	9	21
October	11	23
November	13	25
December	15	27

[Source: *https://www.climatestotravel.com/climate/south-africa/cape-town#:~:text=*]

4.1.1 What is the sample size of each data set? (1)

4.1.2 Which month/s of the year had the highest maximum temperature? (2)

4.1.3 Calculate the range of the minimum temperatures. (2)

4.1.4 Identify the modal maximum temperature. (1)

4.1.5 Calculate the mean of the minimum and the maximum temperatures from January to December. (5)

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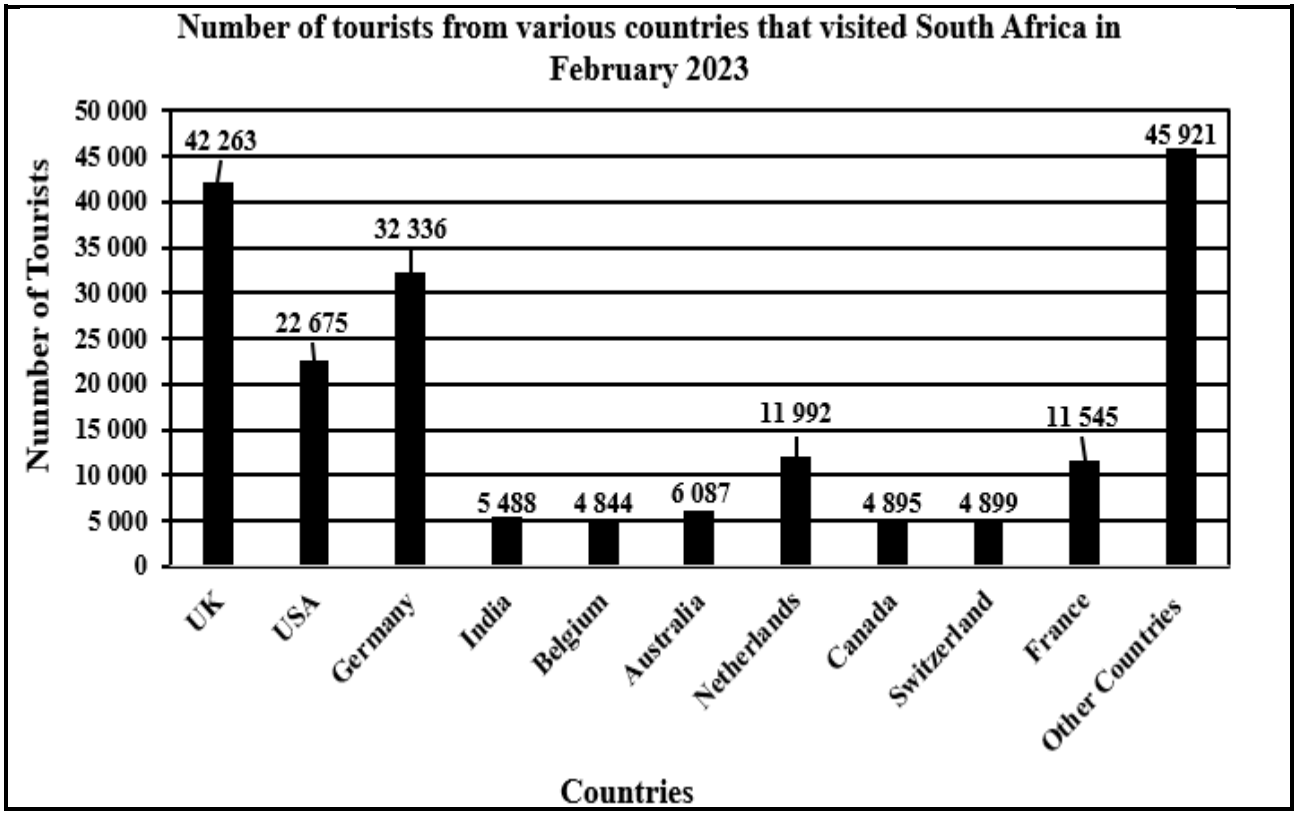
4.1.6 State whether the mean or the mode best reflects the average minimum and maximum temperature for the year. Give a reason for your answer. (2)

4.1.7 What is the general trend of the data from September to December? (2)

4.1.8 Draw a vertical double bar graph on ANSWER SHEET B (attached) to compare the minimum and maximum temperatures in Cape Town for September, October, November, and December.

Label both axes and provide a suitable heading for the graph. (8)

4.2 Refer to the graph below which shows the number of overseas tourists from various countries that visited South Africa in February 2023. Answer the questions that follow.



[Source: *https://www.statssa.gov.za/publications/P0351/P0351February2023*]

4.2.1 Calculate the total number of overseas tourists that visited South Africa in February 2023. (2)

4.2.2 Calculate the difference in the percentage of UK tourists and USA tourists that visited South Africa in February 2023. (5)

4.2.3 What impact do tourists have on our country? (2)

4.2.4 If a tourist is selected at random, what is the probability that the tourist will be from the France? Write the answer as a percentage. (3)

[35]

TOTAL: 150

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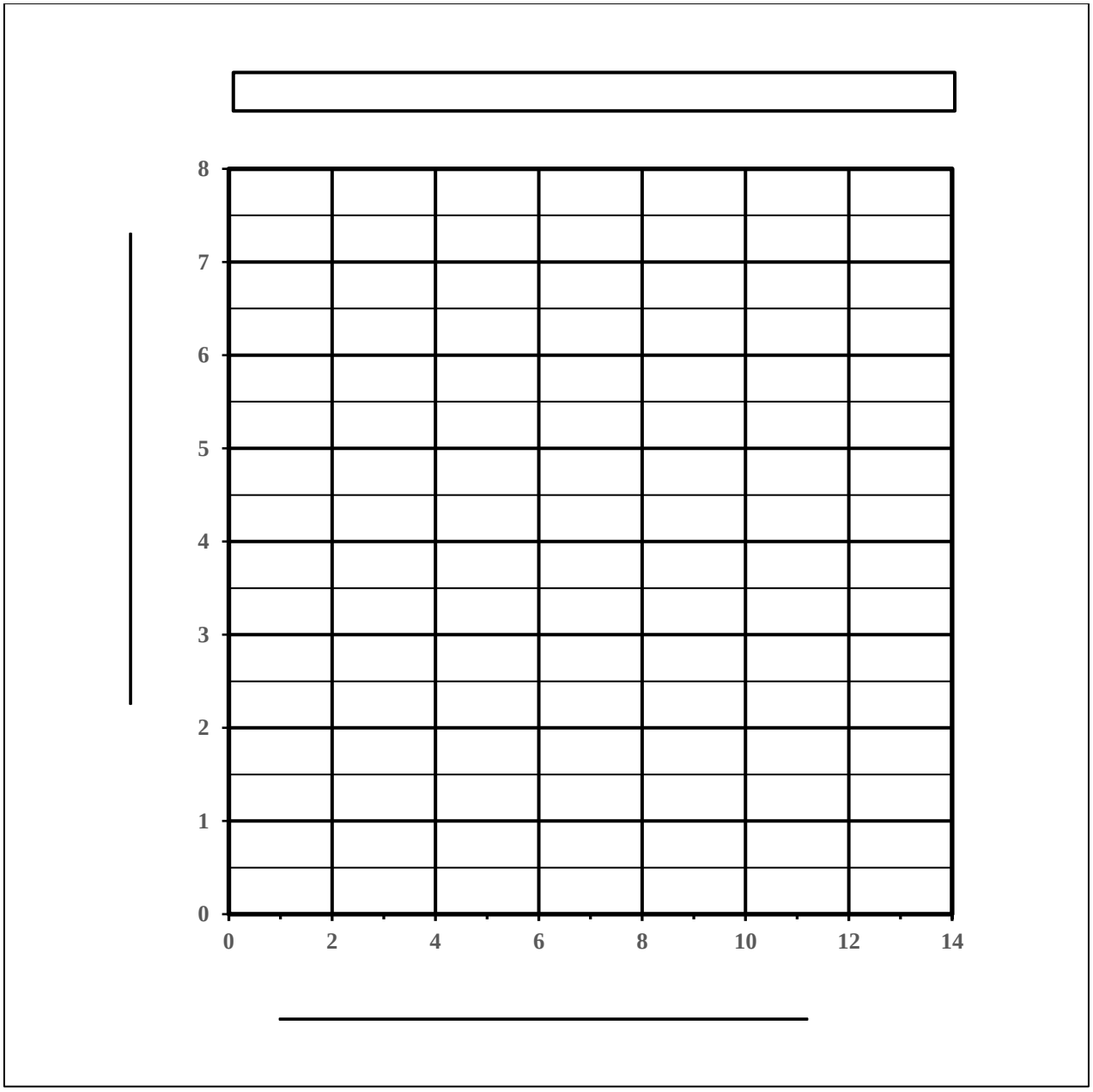
ANSWER SHEET A EXAMINATION NUMBER:

Hand in with the ANSWER BOOK.

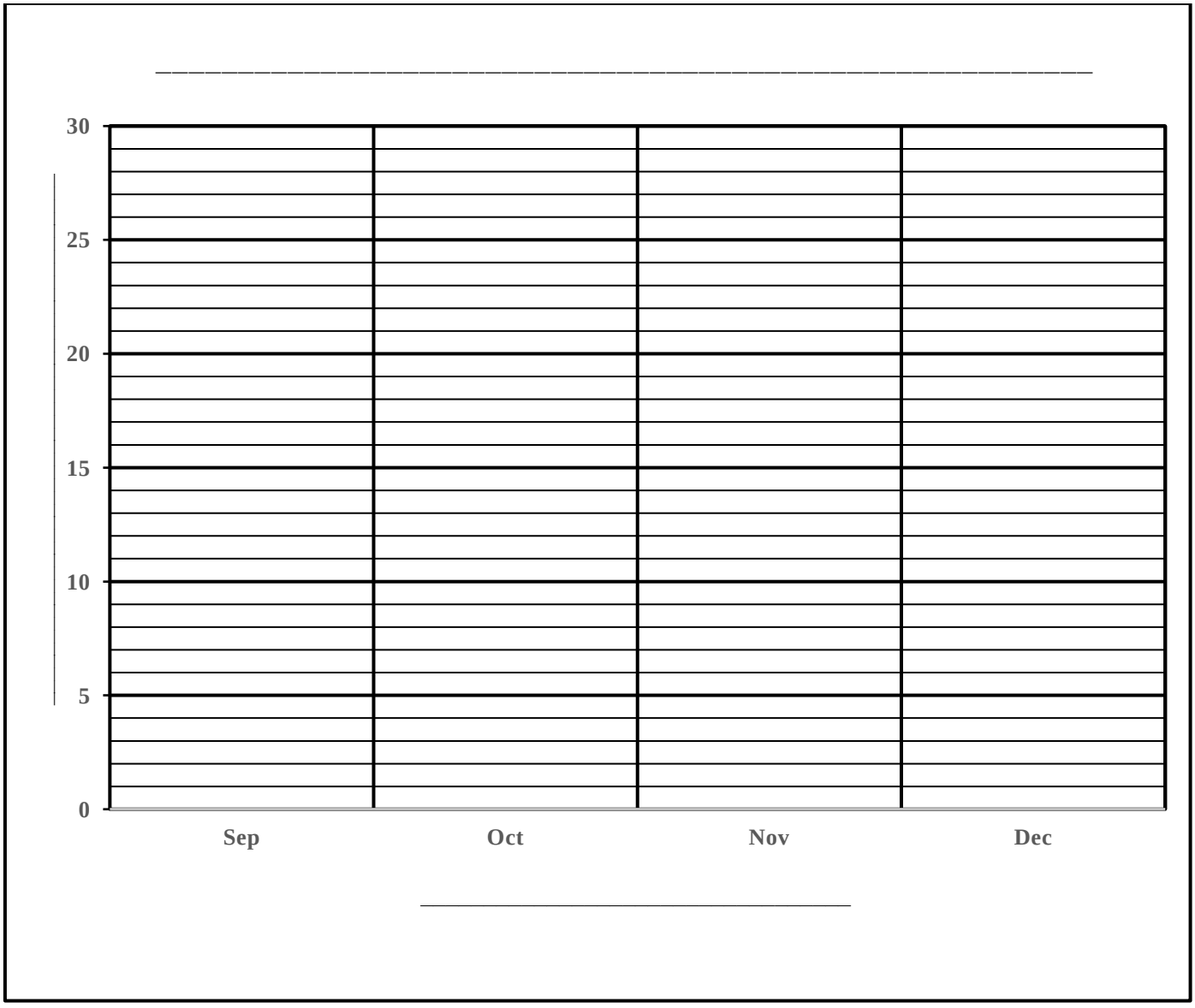
QUESTION 3.2.2



ANSWER SHEET B EXAMINATION NUMBER:

Hand in with the ANSWER BOOK.

QUESTION 4.1.8



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