

MARKER CODE			



STUDENT ENROLMENT NUMBER (SEN)									

SECONDARY ENTRANCE EXAMINATION 2023

MATHEMATICS

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 Hours

INSTRUCTIONS:

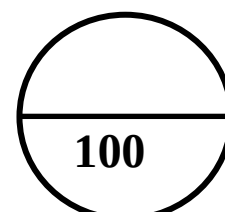
- This paper has **FOUR** Sections. ALL Sections are **COMPULSORY**.

SECTION	TOPICS	SCORES
I	NUMBERS	35
II	ALGEBRA	25
III	GEOMETRY	20
IV	STATISTICS	20
TOTAL COMPETENCY SCORES		100

- Write your **Student Enrolment Number (SEN)** on the top right hand corner of this page and on page 27.
- Answer **ALL** questions in the spaces provided.
- You are **not** allowed to use a calculator.
- Use a black or blue ball point pen for your written answers. Use a pencil **ONLY** for drawings.
- Write clearly and work neatly.
- Check that this booklet contains **27** pages in the correct order and that pages 24-26 have been deliberately left blank.
- If you need more spaces for answers, ask the supervisor for extra paper and write your SEN on the extra page(s).

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL SCORES



(35 SCORES)

It is for your best interest to **SHOW ALL YOUR WORKING**, as some scores are given for correct methods and partially correct answers.

5. Draw the prime factor tree of 100 and express your prime factors as product of index notation.

Answer in index notation: _____

Competency level 3	
3	
2	
1	
0	
NR	

6. Calculate $5 + 3^2 \times \sqrt{6 - 2}$

Answer: _____

Competency level 3	
3	
2	
1	
0	
NR	

PART II: FRACTIONS, DECIMALS AND INTEGERS (11 Scores)

7. Approximate 567 to the nearest tens.

Competency level 1	
1	
0	
NR	

8. State the value of the digit 5 in the number **16.154**

Competency level 1	
1	
0	
NR	

9. Express 645.3 in expanded form.

Competency level 2	
2	
1	
0	
NR	

10. Calculate:

a. $\left(\frac{1}{2}\right)^3$

Competency level 1	
1	
0	
NR	

b. $-5 - 4 - -10$

Competency level 2	
2	
1	
0	
NR	

11. Ane has \$40 to buy 3 cakes at \$4.95 each and 5½ kilograms of chicken legs at \$4.50 per kilogram. Does she has enough money to pay for her groceries?

[You must show all necessary calculations when answering this item]

Competency level 4	
4	
3	
2	
1	
0	
NR	

PART III: RATIOS, RATES AND PROPORTIONS (9 Scores)

12. In a class room there are 8 boys and 10 girls. Express this as an equivalent ratio of girls to boys.

Competency level 1	
1	
0	
NR	

13. Finau saved \$84 over 4 weeks. Calculate Finau’s rate of savings in dollars (\$) per day.

Competency level 2	
2	
1	
0	
NR	

14. A bus travels 180km in 4 hours. How far will it travel in 6 hours?

Competency level 2	
2	
1	
0	
NR	

15. Convert the decimal 0.05 to percentage.

Competency level 1	
1	
0	
NR	

16. Kalo wants to buy a TV set for Christmas. One of the TV brands shown below will be cheaper than the other after the discount is taken off. Calculate which TV brand is more affordable to buy.

TV BRAND A



TV BRAND B



[You must show all necessary calculations when answering this item]

Competency level 3	
3	
2	
1	
0	
NR	

PART IV: FINANCIAL LITERACY (4 Scores)

17. Write **TRUE** or **FALSE**

“Bartering is the oldest method of payment for goods and services.”

--

Competency level 1	
1	
0	
NR	

18. Moana is buying food from the school canteen. What method of payment she is more likely to use?

--

Competency level 1	
1	
0	
NR	

19. Taufa’s family’s total monthly income for the month of December is \$1000. The table below shows their expected expenses for the month of December.

EXPENSES	
Food	\$400
Utilities	\$350
Total Expenses	\$750

Work out their saving for this particular month.

--

Competency level 2	
2	
1	
0	
NR	

SECTION II:

ALGEBRA

(25 SCORES)

1. If
- $x = 2$
- , find the value of
- $x + 5$
- .

--	--

Competency level 1	
1	
0	
NR	

2. Identify the constant term in the expression
- $2a^3 - 4$
- .

--	--

Competency level 1	
1	
0	
NR	

3. Simplify:

a. $\frac{3x^2}{x}$

--	--

Competency level 1	
1	
0	
NR	

b. $c + 3d + 5d - 2c$

--	--

Competency level 2	
2	
1	
0	
NR	

4. Expand:
- $3(m + 2)$

--	--

Competency level 1	
1	
0	
NR	

5. Factorise completely: $4xy - 40x^2$

Competency level 2	
2	
1	
0	
NR	

6. Rearrange the formula $P = 2(l + w)$ to make w the subject.

Competency level 2	
2	
1	
0	
NR	

7. Solve for x : $\frac{x+3}{2} + 1 \geq 3$

Competency level 3	
3	
2	
1	
0	
NR	

8. Ane has 5 pencils less than Semisi. The total amount of pencils they have is 19. Work out the number of pencils that Semisi has.

Equation: _____

Number of pencils that Semisi has: _____

Competency level 4	
4	
3	
2	
1	
0	
NR	

9. The table below shows the linear relationship between x and y .

x	-2	-1	0	1	2
y	A	-4	-2	0	2

- a. State the missing value of **A**.

Competency level 1	
1	
0	
NR	

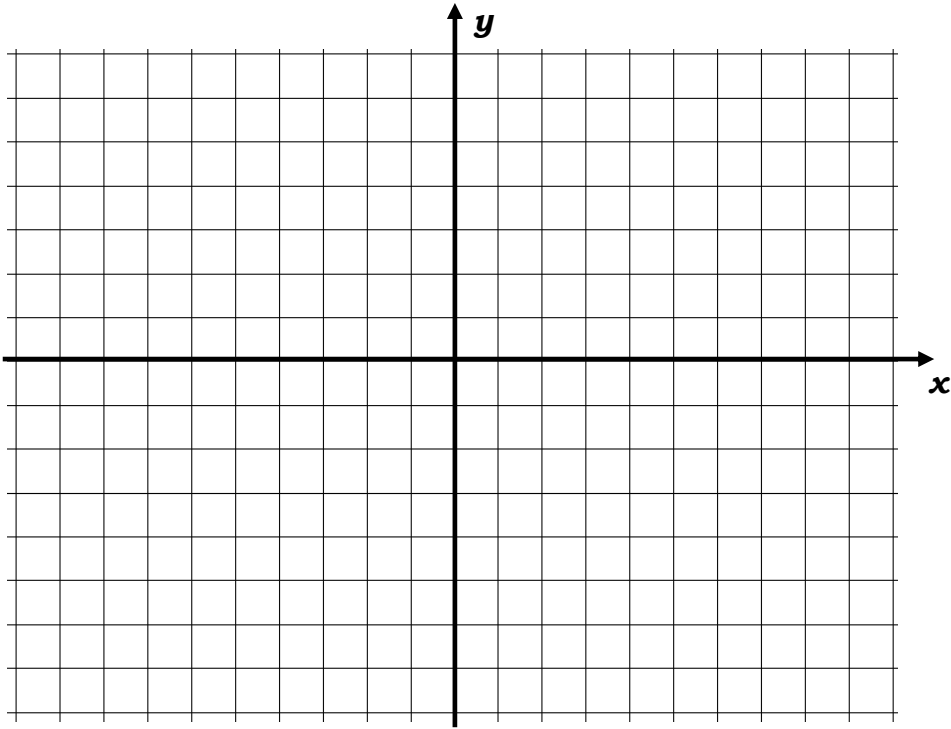
- b. Write a rule connecting x and y .

Competency level 2	
2	
1	
0	
NR	

10. Use this table to answer **a.**, **b.** and **c.**

a. Sketch the graph of the function connecting x and y on the grid.

x	-3	-2	-1	0	1
y	-8	-5	-2	1	4



Competency level 3	
3	
2	
1	
0	
NR	

b. What is the gradient?

Competency level 1	
1	
0	
NR	

c. State the y-intercept.

Competency level 1	
1	
0	
NR	

1. Insert the correct metric unit in the box.

5000 m = 5

Competency level 1	
1	
0	
NR	

2. Write “twenty past seven in the afternoon” in digital form.

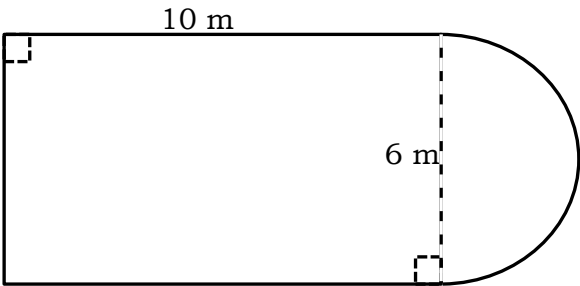
Competency level 1	
1	
0	
NR	

3. Calculate the time difference (time elapse) between 11:30 am and 5:10 pm on the same day.

Competency level 2	
2	
1	
0	
NR	

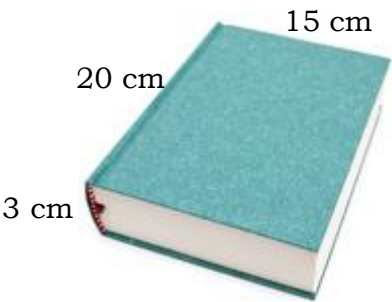
4. The shape (right) is made up of a rectangle and a semicircle. Calculate its perimeter.

Use $\pi = 3$



Competency level 3	
3	
2	
1	
0	
NR	

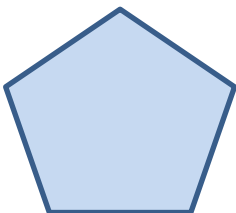
5. A book measurement is 20 cm long, 15 cm wide and 3 cm thick and is to be covered with plastic. What area of plastic is needed to cover 10 books?



[Hint: Three of the faces will not be covered with plastic as shown in the diagram]

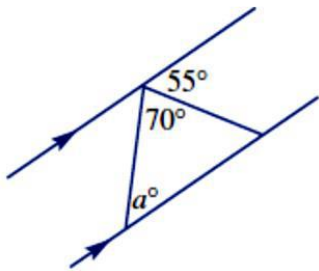
Competency level 4	
4	
3	
2	
1	
0	
NR	

6. State the number of lines of symmetry of a regular pentagon.



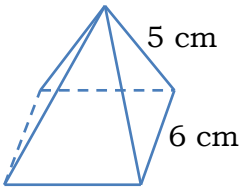
Competency level 1	
1	
0	
NR	

7. Calculate the value of angle a° .



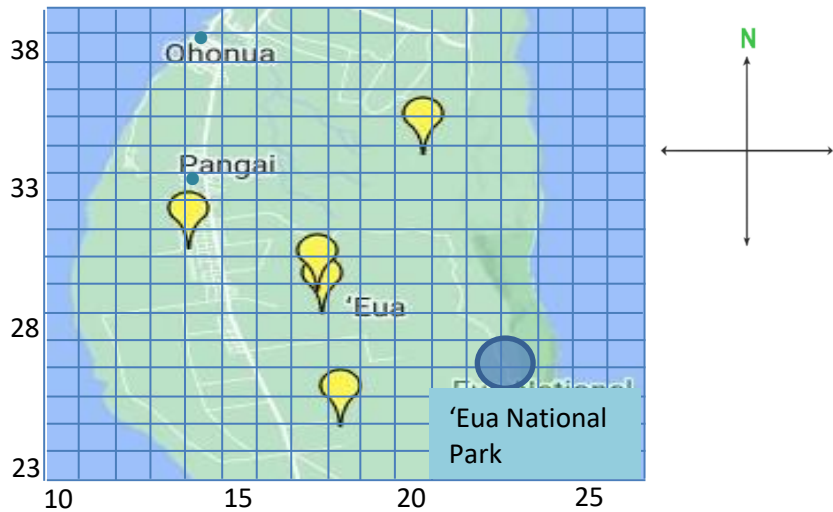
Competency level 2	
2	
1	
0	
NR	

8. Draw an accurate drawing of the net of the square-based pyramid shown below.



Competency level 2	
2	
1	
0	
NR	

9. The grid reference map below shows part of ‘Eua island. Use it to answer **a.** and **b.**



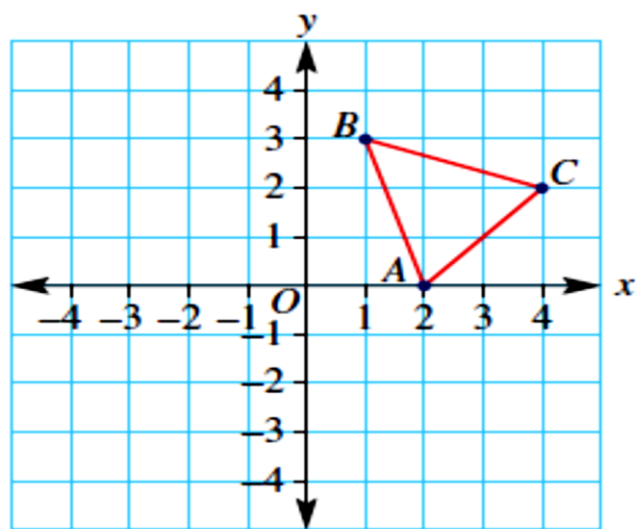
a. Estimate the grid reference of Pangai.

Competency level 1	
1	
0	
NR	

b. If you start at Pangai, and go north 5 squares. Where will you end up at?

Competency level 1	
1	
0	
NR	

10. Reflect triangle ABC on the x-axis. Label the image triangle as A'B'C'.



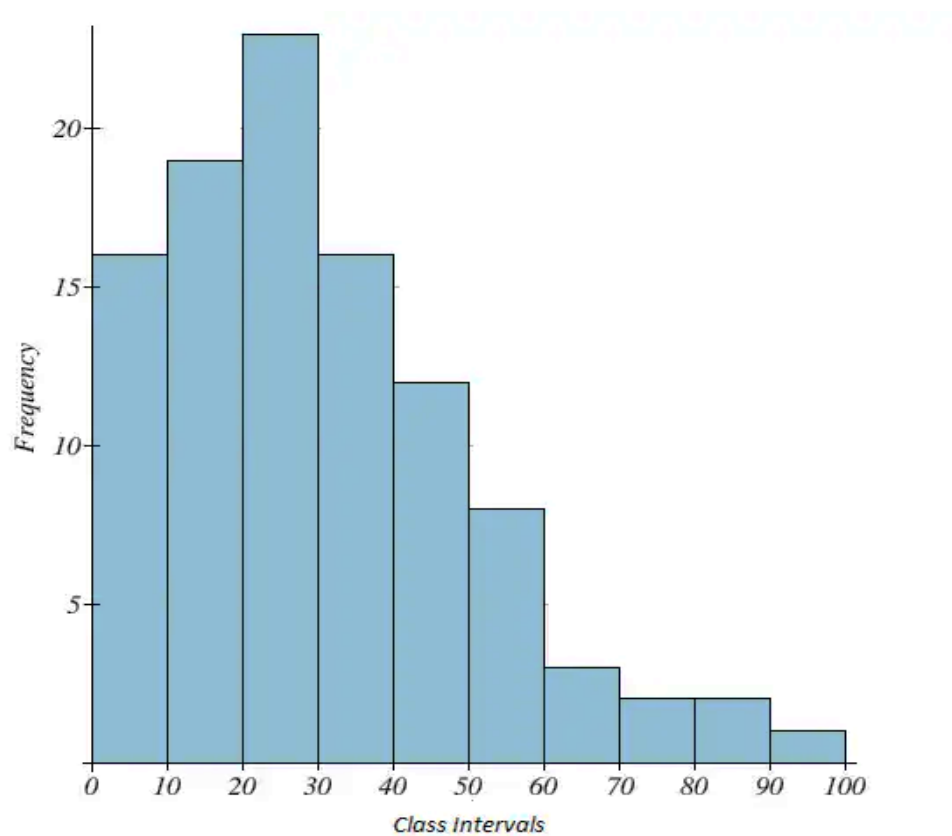
Competency level 2	
2	
1	
0	
NR	

1. State whether the variable below is qualitative or quantitative.

“The weight of a newborn baby.” _____

Competency level 1	
1	
0	
NR	

2. The graph below shows the Science final exam result for some Class 8 students.



Describe the skewness of the data shown by the graph above.

Competency level 2	
2	
1	
0	
NR	

3. Use this set of numbers 3, 4, 3, 5, 10, 5, 8, 2. to find the

a. Mean

Competency level 2	
2	
1	
0	
NR	

b. Median

Competency level 1	
1	
0	
NR	

4. The mark scored by Maths students of Class 10 are 11, 12, 13, 14, 14, 15, 17, 20, 24, 28, 29, 31, 32. Use this data to answer a. and b.

a. Calculate the range of the given data.

Competency level 1	
1	
0	
NR	

6. State whether the following events are **possible**, **impossible** or **certain** to happen.

a. Christmas is on the 25th of December.

Competency level 1	
1	
0	
NR	

b. It will rain tomorrow.

Competency level 1	
1	
0	
NR	

7. The table below shows the results of a fair dice rolling experiment.

Number	Occurrences
1	6
2	11
3	19
4	14
5	9
6	3

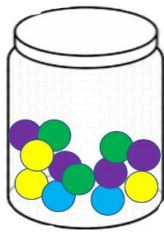
a. How many 4's were obtained?

Competency level 1	
1	
0	
NR	

b. Calculate the experimental probability of rolling a 1.

Competency level 2	
2	
1	
0	
NR	

8. The marble jar shown (below) contains 12 marbles: 4 purples, 2 blues, 3 yellows and 3 greens.



a. What is the probability of picking a red marble?

Competency level 1	
1	
0	
NR	

b. Calculate the probability of picking a blue **or** a yellow marble?

Competency level 2	
2	
1	
0	
NR	

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2023

MATHEMATICS

(For Scorers Use Only)

SECTION	SCORES	CHECK SCORES	TOTAL SCORES
I			35
II			25
III			20
IV			20
TOTAL SCORES			100