

MARKER CODE			



STUDENT ENROLMENT NUMBER (SEN)									

SECONDARY ENTRANCE EXAMINATION

2024

MATHEMATICS

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 Hours + 10 minutes reading

INSTRUCTIONS:

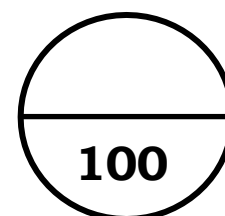
1. Write your **Student Enrolment Number (SEN)** on the top right-hand corner of this page and on page **23**.
2. This paper has **FOUR QUESTIONS**. Answer **ALL QUESTIONS** in the spaces provided.

QUESTION	TOPIC	SCORES	STUDENTS' SCORES
I	NUMBERS	35	
II	ALGEBRA	25	
III	GEOMETRY	20	
IV	STATISTICS	20	
TOTAL COMPETENCY SCORES		100	

3. You are **NOT** allowed to use a calculator.
4. Use either a black or blue ball point pen for your written answer. Use a pencil **ONLY** for drawings
5. If you need more spaces for answers, ask the supervisor for extra paper. Write your **Student Enrolment Number (SEN)** on the extra papers used.
6. Check that this booklet contains pages **2 - 23** in the correct order and that page **22** has been deliberately left blank.

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

TOTAL SCORES



For each question, write your answer in the space provided. **SHOW ALL YOUR WORKING**, as some marks will be awarded for your methods and partially correct answers.

PART I: WHOLE NUMBERS

1. Identify a common factor of 11 and 13

Competency level 1	
1	
0	
NR	

2. Fill in the correct missing number.

$$7 \times 4 + 7 \times 1 = \underline{\hspace{2cm}} \times (4 + 1)$$

Competency level 1	
1	
0	
NR	

3. This year, 2024 is a leap year. Find the next leap year.
(Circle the letter of the **BEST** choice)

- A. 2025
B. 2026
C. 2027
D. 2028

Competency level 1	
1	
0	
NR	

4. Find a number that is greater than 1, is a factor of 15, and can multiply to give 20.

Competency level 2	
2	
1	
0	
NR	

5. Write 63 as a product of prime factors. Write your answer in index form

Competency level 2	
2	
1	
0	
NR	

6. Tuna divided 70 oranges into two piles, A and B, with the same number of oranges in each pile. He found out that pile B was 50g heavier than pile A. If each orange in pile A weighs 100g, give the total weight of pile B.

[You must show all workings when answering this item]

Competency level 3	
3	
2	
1	
0	
NR	

PART II: FRACTIONS, DECIMALS AND INTEGERS

7. Simplify $\frac{42}{49}$

Competency level 1	
1	
0	
NR	

8. Write **“True”** if the following statement is correct or **“False”** if it is not:
 $0.1101011 > 1101101$

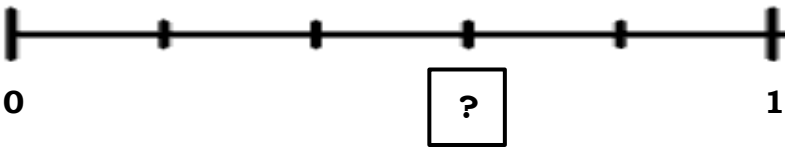
Competency level 1	
1	
0	
NR	

9. Compare -4 and -6. Use $<$ or $>$ to fill in the box:

-4 -6

Competency level 1	
1	
0	
NR	

10. Find the missing **decimal** that should be placed inside the box.



Competency level 2	
2	
1	
0	
NR	

11. The freezer's temperature went from 10°C to -20°C. Show how many degrees did the temperature drop.

Competency level 2	
2	
1	
0	
NR	

12. A bottle was originally $\frac{3}{4}$ full. Half of the water spilled on the table. Neti drank $\frac{1}{3}$ of what was left. Show what fraction of the water that was left in the bottle. Write your final answer in the simplest form.

[You must show all workings when answering this item]

Competency level 4	
4	
3	
2	
1	
0	
NR	

PART III: RATIOS, RATES AND PROPORTIONS

13. Express $\frac{2}{3}$ as ratio using the colon (:) notation.

Competency level 1	
1	
0	
NR	

14. Convert the decimal 0.003 to fraction.

Competency level 1	
1	
0	
NR	

15. If 10 tray of eggs cost \$287, state how much one tray would cost.

Competency level 1	
1	
0	
NR	

16. Increase \$75 by 40%.

Competency level 2	
2	
1	
0	
NR	

17. A water tank can hold 500 litres of water. Now, it has 150 litres only. Calculate the percentage of the tank that is still empty.

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

Competency level 3	
3	
2	
1	
0	
NR	

PART IV: FINANCIAL LITERACY

18. The payment method where a mat is directly exchanged for a basket of yams without using money is called _____.

Competency level 1	
1	
0	
NR	

19. Identify whether a **mobile phone** is classified as a "service" or a "good".

Competency level 1	
1	
0	
NR	

20. Explain **ONE (1)** disadvantage of using a *debit card* to pay for goods and services here in Tonga

Competency level 2	
2	
1	
0	
NR	

21. The table shows Nunia's Family Weekly budget.

Nunia's Family Weekly budget			
Income	\$	Expenses	\$
Weekly Wages	500	Groceries	\$200
.		Electricity	\$150
		Clothes	\$50
		Total Expenses	

Calculate how much Nunia saves every week

Competency level 2	
2	
1	
0	
NR	

1. Identify the **like term** for $3x^2$

(Circle the letter of the **BEST** choice)

- A. $3x$
 B. $3x^3$
 C. x^2
 D. $3y^2$

Competency level 1	
1	
0	
NR	

2. If $x = 3$, find the value of y in the expression: $y = 5x$

Competency level 1	
1	
0	
NR	

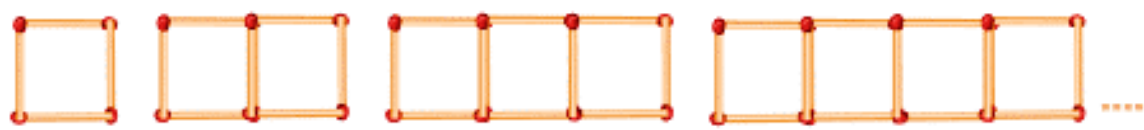
3. State whether the function, $y = 2x - 3$ is *linear* or *non-linear*

Competency level 1	
1	
0	
NR	

4. Write an equation to represent this puzzle.
 A number, x , is doubled and the result is 14

Competency level 1	
1	
0	
NR	

5. Koli plays with some matchsticks to build rectangles as shown below.



a. Fill in the missing number.

Competency level 1				
x (number of rectangles)	1	2	3	4
y (number of matchsticks)	4	7	_____	13

b. Write a rule that describes the linear relationship between x and y

Competency level 2	
2	
1	
0	
NR	

6. Simplify the following expression.

a. $3a^2 - 2b - a^2 + 2b$

Competency level 2	
2	
1	
0	
NR	

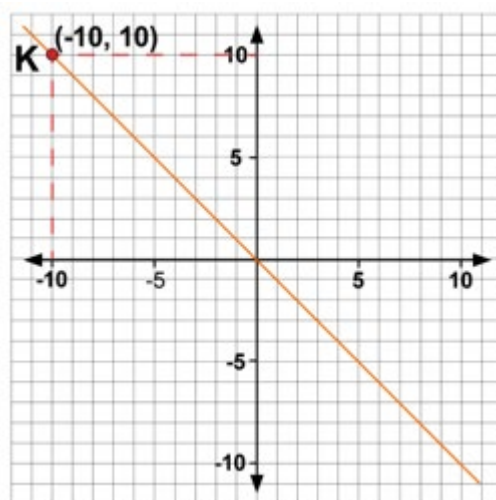
b. $\frac{6x^2y^2}{2xy}$

Competency level 2	
2	
1	
0	
NR	

7. Factorise $4xy + 12x^2y$ completely

Competency level 2	
2	
1	
0	
NR	

8. Calculate the gradient of the line at point K.



Competency level 2	
2	
1	
0	
NR	

9. Solve for x : $\frac{4x-4}{5} \leq 4$

Competency level 3	
3	
2	
1	
0	
NR	

QUESTION III:

GEOMETRY

(20 SCORES)

1. Give the metric unit that is best for measuring the length of a piece of cloth.

(Circle the letter of the **BEST** choice)

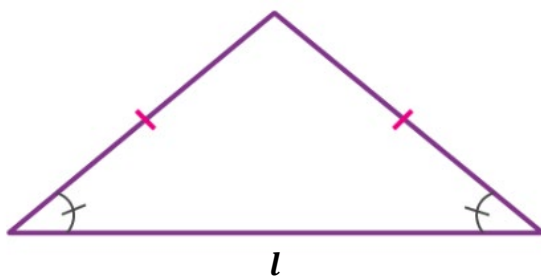
- A. Hectometer
B. Metre
C. Millimeter
D. Centimeter

Competency level 1	
1	
0	
NR	

2. You have 1.5 liters of juice. If you pour it into 500 milliliter cups, calculate how many full cups you can fill.

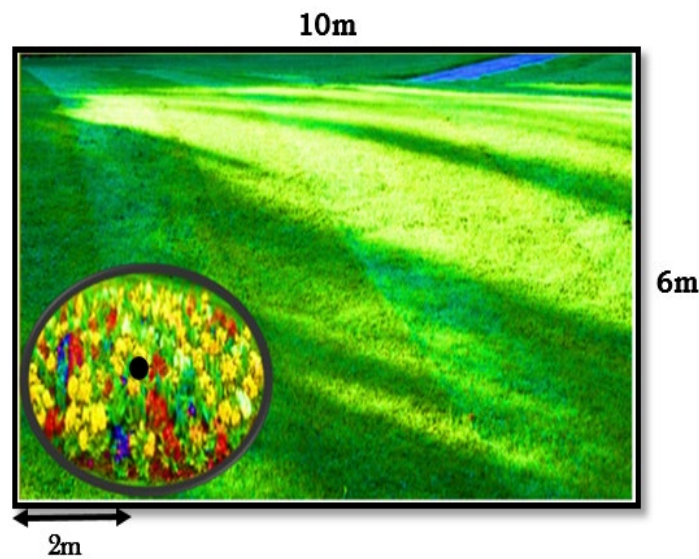
Competency level 2	
2	
1	
0	
NR	

3. The perimeter (P) of the triangle is 30cm. Find length, l .



Competency level 1	
1	
0	
NR	

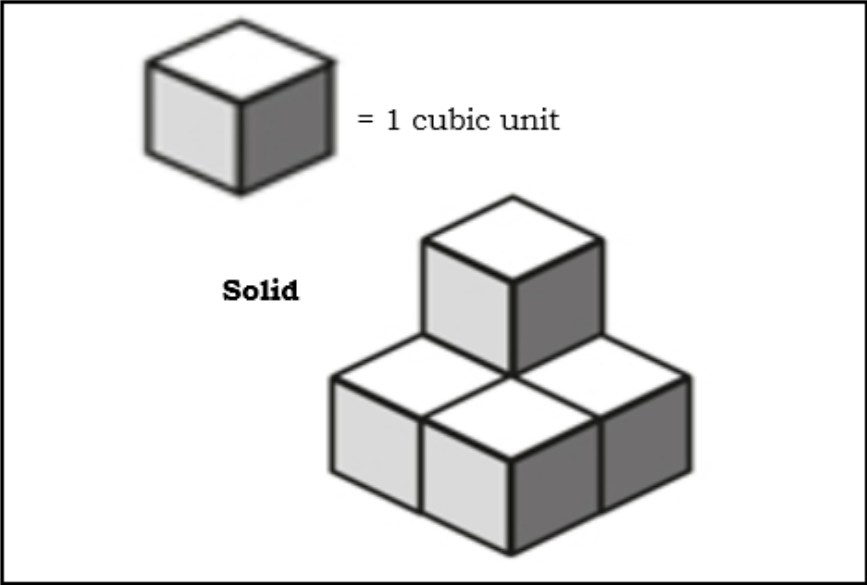
4. A rectangular garden measures 10m by 6m. There is a circular flower bed with a radius of 2 meters in one corner of the garden, as shown below.



Calculate the area of the garden that is **NOT** covered by the flower bed.
Use $\pi = 3$

Competency level 3	
3	
2	
1	
0	
NR	

5. Find the volume of the solid. One cube is equivalent to 1 cubic unit



Volume = _____ cubic unit (unit ³)

Competency level 1	
1	
0	
NR	

6. Write the digital time shown on the clock face.



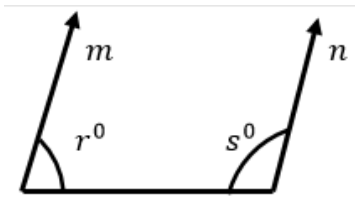
Time = _____

Competency level 1	
1	
0	
NR	

7. Siu started her homework at 10:15pm and finished it at 1:10am the next day. Calculate how long did it take Siu to finish her homework.

Competency level 2	
2	
1	
0	
NR	

8. Line m is parallel to line n.



- a. r° and s° are known as a pair of _____ angles.
- b. Angle $r = 30^\circ$. Calculate the value of s° .

Competency level 1	
1	
0	
NR	

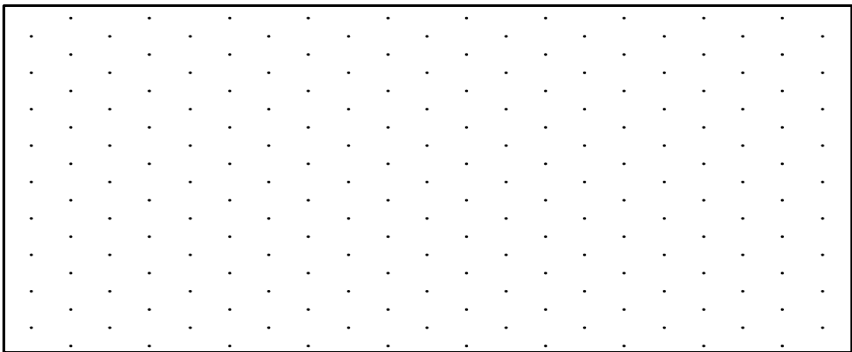
Competency level 2	
2	
1	
0	
NR	

9. Identify the order of rotational symmetry of this circle.



Competency level 1	
1	
0	
NR	

10. Draw a cuboid with a base measuring 3 unit by 4 unit and a height of 2 unit on the isometric paper.



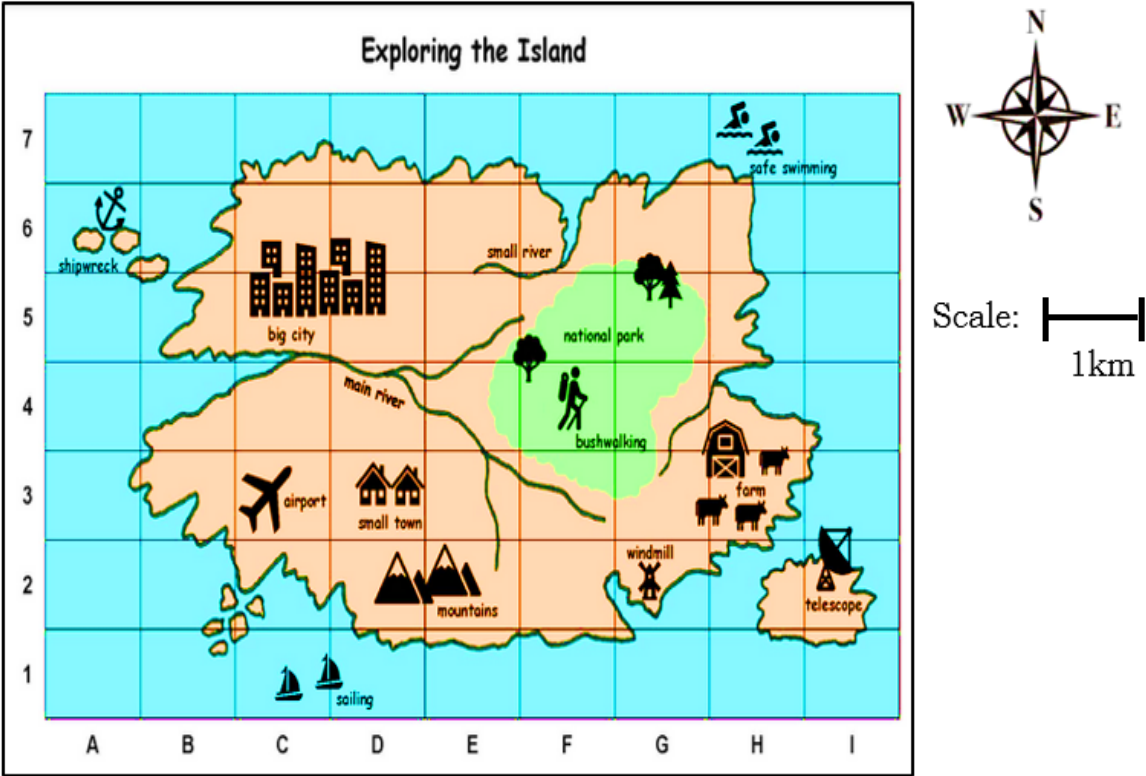
Competency level 1	
1	
0	
NR	

11. Identify **ONE (1)** invariant point of enlargement in a transformation

Competency level 1	
1	
0	
NR	

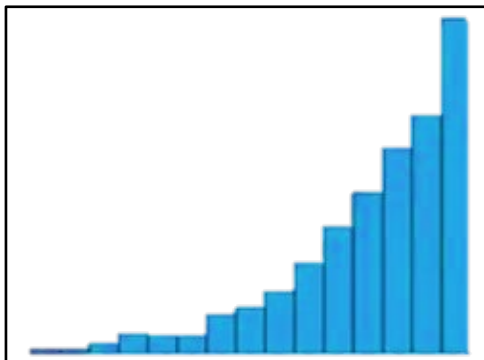
12. A tourist in *Big City* needs help getting to the airport. Use the grid, compass directions, and distances to give him directions.

- (i) Show the airport on the grid.
- (ii) Give the direction of the airport from *Big City*.
- (iii) Calculate how far it is from *Big City* to the airport using the scale.



Competency level 3	
3	
2	
1	
0	
NR	

1. Identify the type of skewness the diagram below shows.



(Circle the letter of the **BEST** choice)

- A. Symmetric skewed
- B. Negatively skewed
- C. Positively skewed
- D. Half skewed.

Competency level 1	
1	
0	
NR	

2. The ages of five students in a class are 14, 15, 14, 16, and 15. Find the mode of the data.

Competency level 1	
1	
0	
NR	

3. Test scores of five students are shown below. The **mean** score of these students was **7**.

Scores: 6, 9, 4, 5, **Q**

Find the value of the score **Q**.

Competency level 3	
3	
2	
1	
0	
NR	

4. The data shows below sale figures in Litres for diesel from a gas station

17, 18, 18, 21, 23, 25, 27

- a. Find the median of the data

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Competency level 1	
1	
0	
NR	

- b. Create an ordered stem-and-leaf plot to display the data.

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Competency level 2	
2	
1	
0	
NR	

5. A shopkeeper asked some customers about their favourite flavour of ice-cream. The table below shows the result.

Flavour	Number of customers
Hockey-pokey	13
Orange-choc	12
Vanilla	11
Total	36

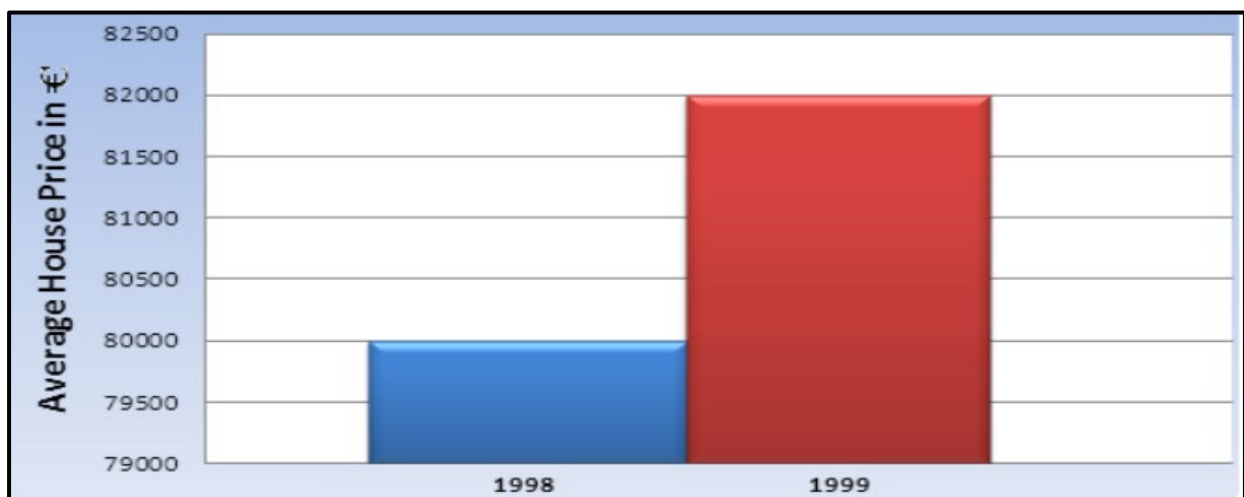
Draw a pie chart to find the percentage of customers where their favourite flavor is Orange-choc.

Pie Chart

Percentage of customers:

Competency level 4	
4	
3	
2	
1	
0	
NR	

6. The histogram below shows the massive increase in house price for the year 1988 and 1989.



- a. Describe **TWO (2)** misleading features of the graph.

Competency level 2	
2	
1	
0	
NR	

- b. State how you would correct **ONE (1)** of the misleading features you have given in a. above.

Competency level 1	
1	
0	
NR	

7. A coin was tossed 12 times and 7 times the tail turned up

- a. State the ***theoretical probability*** of getting a tail when a coin is tossed

Competency level 1	
1	
0	
NR	

- b. Calculate the ***experimental probability*** of a head being turned up.

Competency level 2	
2	
1	
0	
NR	

8. A letter is chosen at random from the letters in the word **“S T U D E N T S”**.
Find the probability that the letter will be either an **U** or an **E**.

P (**U** or **E**): _____

Competency level 2	
2	
1	
0	
NR	

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SECONDARY ENTRANCE EXAMINATION

2024

MATHEMATICS

(For Scorers Use Only)

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