

STUDENT EDUCATION NUMBER								

Samoa National Junior Secondary Certificate

GENERAL MATHEMATICS 2024

QUESTION and ANSWER BOOKLET

Time allowed: 3 Hours & 10 minutes

INSTRUCTIONS

- 1. You have 10 minutes to read **before** you start the exam.
- 2. Write your **Student Education Number (SEN)** in the space provided on the top right-hand corner of this page.
- 3. Answer ALL QUESTIONS. Write your answers in the spaces provided in this booklet.
- 4. If you need more paper to write your answers, ask the Supervisor for extra paper. Write your SEN on all extra sheets used and clearly number the questions. Attach the extra sheets at the appropriate places in this booklet.

	STRANDS			Weighting
STRAND 1	NUMBERS & OPERATIONS	2	15	10
STRAND 2	ALGEBRA	3-5	35	21
STRAND 3	STATISTICS & PROBABILITY	6-8	25	14
STRAND 4	MEASUREMENTS	9-11	30	19
STRAND 5	GEOMETRY	12-15	25	12
STRAND 6	TRIGONOMETRY	16-17	15	7
STRAND 7	RATES OF CHANGE	18-21	35	17
	180	100		

Check that this booklet contains pages 2-22 in the correct order and that none of these pages are blank. HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

STRAND 1

1. Write the Index Form of $\sqrt[3]{8^2}$.

2. Convert 0.16 to a fraction in its simplest form.

3. Eleanor works in a restaurant downtown. She is paid a wage of \$3.75 per hour. If she always works for 20 hours per week, calculate her fortnightly earnings.

4. The shopkeeper at the Frankie supermarket bought 50 oranges and 75 ripe bananas. Later, she found that 10% of oranges and 24% of bananas were rotten. Find the total number of good fruits.

SL 2

SL 4

2





For Questions 5 to 6, choose and write the LETTER of the correct answer in the box provided.

ALGEBRA

- Simplify the expression $h^2 k^0 imes h^{-5} k^3$ 5.
 - $h^{-7}k^{3}$ Α.
 - h^3k^0 Β.
 - $h^{-3}k^{3}$ C.
 - $h^{-3}k^{0}$ D.

Another form of the algebraic fraction $\left(\frac{a}{b}\right)^{-1}$ is: 6.

- $\frac{a}{b}$ Α. ab Β. C. b a
- ba D.
- There is **ONE** mistake in the algebraic expansion : -6(2x 3) = -12x 18. 7. Write the correction for that mistake.

Draw the graph of $y = x^2 - 3$, onto the cartesian plane given. 8.



]	SL 1









WEIGHTING 21

9 Below are equations of 3 straight lines.

Line A y = 4x - 2Line B 2y = 8x + 1Line C y + 3x = 4

Two of the lines are Parallel. Write down the **TWO** parallel lines.



10. Solve the inequality and graph its solution. $-x + 5 < -12, x \in R$



11. Write the algebraic expression of the statement below. **"Two times a number is increased by five, then subtracted from the same number"**. Let *x* be the unknown number.

SL 3



4

12. A farmer bought 8 hens and 8 roosters for \$112 and 3 hens and 4 roosters for \$51. Find the price for a hen and a rooster.

SL 4

13. Find the coordinates of the midpoint of the line segment shown below.





5

STRAND 3

For Questions 14 and 15, choose and write the LETTER of the correct answer in the box provided.

14. An experiment of tossing a coin was completed and the number of Tails is recorded in the frequency table shown below:

Number of		Relative
Tails	Frequency	Frequency
0	5	19.2%
1	12	46.2%
2	9	

Find the relative frequency of getting 2 Tails.

- A. 36.4%
- B. 34.6%
- C. 19.69%
- D. 46.5%
- 15. There were 75 randomly chosen students who were asked of the number of movies they watch each week. If there are 1,050 students in the school, what is the number of students in the school who watch two or more movies each week?
 - A. 294 students
 - B. 420 students
 - C. 336 students
 - D. 1050 students





6

16. State how the random sampling method is applied in a lottery game.



 SL 1

17. A die is rolled, and a coin is tossed. List the sample space.



18. State the **TWO** types of Numerical Data.



19. State **TWO Strengths** and **ONE Weakness** of using a Bar Graph for displaying data. Example of a Bar Graph is given below.





7

20. The data set represents the marks that 20 students achieved in a Maths Test.

 67
 66
 53
 55
 71
 59
 54
 44
 57
 61

 88
 70
 60
 49
 48
 55
 56
 81
 65
 59

Construct a Stem and Leaf diagram to represent the data.

For Questions 21 and 22, choose and write the LETTER of the correct answer in the box provided.

- 21. Convert 6,000ml to litres.
 - A. 600 litres
 - B. 0.006 litres
 - C. 0.06 litres
 - D. 6 litres
- 22. The diagram shows the speed a car is travelling.

30

10

0

20

What speed is the car travelling?

- A. 64 km/hr
- B. 65 km/hr
- C. 62.5 km/hr
- D. 67.5 km/hr
- 23. Shape *A* is enlarged by a scale factor to give shape *B*. Identify the scale factor used.

10

50

		 Scale factor is	-	SL 1
A	В			



24. A circular mirror has a diameter of 1.3m. Work out the circumference of the mirror.



25. Triangle ABC is a right triangle with an area of $15cm^2$. The base length of the triangle is 5cm. Find the perpendicular height of the triangle.

Formula: $Area = \frac{1}{2}bh$



26. Work out the volume of the prism shown.



27. Find the Surface Area of the rectangular prism shown. Areas of 3 faces are given.



28. Apply Pythagoras Theorem to find the value of *x* in 1 decimal place.



29. Two rectangles have the same area. The first rectangle with dimensions 15cm by 3cm and the other rectangle with dimensions 9cm by 5cm.

Calculate the Perimeter of each rectangle.

SL 3

STRAND 5	GEOMETRY	WEIGHTING 12

30. State whether the two triangles are similar. Give a reason to support your answer.





31. ABC is an equilateral triangle. AD is perpendicular to CB.

Give 2 reasons to prove that ΔACD is congruent to $\Delta \text{ABD}.$



32. The sketch of a house shown has not been drawn to scale. Draw a scaled drawing of the house using a scale of *1cm: 6ft.*





33. As shown in the diagram below, the order of transformation is indicated by the 3 red arrows. NAME the type of transformation that results in image where the arrow is pointing.





34. PQRS is a quadrilateral inscribed in a circle. Calculate the value of *x*.





SL 1

SL 1

For Questions 35 and 36, choose and write the LETTER of the correct answer in the box provided.

- 35. Find the approximation for angle $35^{0}68'70''$.
 - A. 35[°]68'70"
 - B. 36[°]68'10"
 - C. 36⁰9'10"
 - D. 35⁰9'10"
- 36. The sides of a right-angled triangle are labelled with respect to the marked angle.What are the names for side a, side b and side c?



- A. Hypotenuse, Opposite, Adjacent
- B. Adjacent, Opposite, Hypotenuse
- C. Opposite, Hypotenuse, Adjacent
- D. Adjacent, Hypotenuse, Opposite





38. Find the angle θ between line PQ and the *x*-axis, using the right-angled triangle formed with the two points marked on the coordinate plane.





STRAND 7

RATES OF CHANGE

For Questions 39 to 41, choose and write the LETTER of the correct answer in the box provided.

39. Which graph represents a function?



40. Here are the first terms of a Linear number sequence:

7, 1, 15, 19, 23,

Give the n^{th} term of the sequence.

- A. 4*n* + 3
- B. 4n + 1
- C. 4*n* + 2
- D. 3*n* + 3

41. Which of the following terms is closely related to a geometric sequence?

- A. Common ratio
- B. Common difference
- C. Both A and B
- D. None of the above
- 42. Write the domain and range of the function *f*, using interval notation.



Domain:	[]	
Range:	[]	



_	SL 1



43. State 2 main differences between Arithmetic and Geometric sequences.

SL 2

44. On day one, 6 youths registered for the Star Search competition. There were 13 youths who registered on day two, 20 youths on day three, and so on in an Arithmetic sequence.

How many youths registered on the 7th day?

45. Peter and Steven had to train hard for the running race. The following graph illustrates the number of miles they ran in 4 consecutive weeks.



State the meaning of gradient for the blue line graph from:

- Week 1 to Week 2 ______
- Week 2 to Week 3 ______
- Week 3 to Week 4 _______
- 46. Shirley had a plan of the venue decorations for her sister's wedding. She offered to blow up five balloons per minute. The relationship between the number of balloons inflated and the time that has passed is given by the equation y = 5x, where x is the number of minutes passed and y is the number of balloons inflated. Complete the table of the relations.

Minutes		2		8.5
Number of inflated balloons	1		30	



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SNJSC GENERAL MATHEMATICS

2023

(For Scorers only)

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STRAND 1	NUMBERS & OPERATIONS	10			
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