GOVERNMENT OF SAMOA
MINISTRY OF EDUCATION, SPORTS AND CULTURE

Samoa School Certificate

MATHEMATICS

2019

QUESTION and ANSWER BOOKLET

Time allowed: 3 hours &10 minutes

INSTRUCTIONS:

1. You have 10 minutes to read **before** you start writing.
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 space for 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	Page Number	Time (minutes)	Weighting
1. Algebra	2	80	43
2. Measurements	10	28	15
3. Trigonometry	14	36	21
4. Geometry	18	36	21
TOTAL		**180**	**100**

CHECK! This booklet contains pages 2-23 in the right order.
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

1.   If $L = 0.25$ and $B = 1.7$, find the value of P in $P = 2L + 2B$.

SL 1

2.   Simplify $\dfrac{2w}{5} - \dfrac{3w}{4}$

SL 2

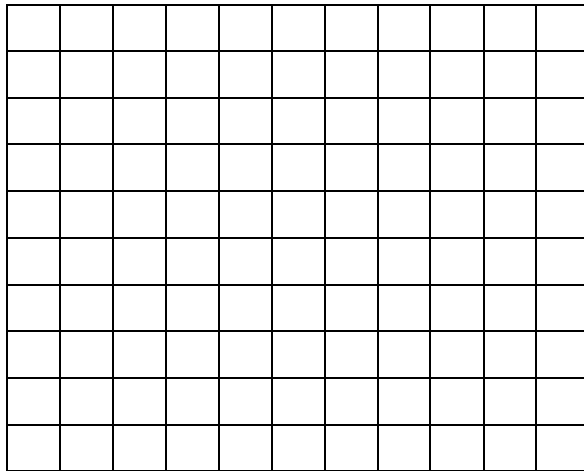**Use the information given below to answer Numbers 3 – 6.**

For the equation $4y - 8 = -12x$, the x-intercept is $\dfrac{2}{3}$ and the y-intercept is 2.

3.   **Clearly show the process** of finding the x-intercept $\dfrac{2}{3}$ and the y-intercept 2.

SL 2

4.   On the grid given below, draw and label the x and y axes.

5.   Mark the x - intercept and the y - intercept on the Cartesian plane.

6.   Join the points with a line segment.

7.   Define linear equation

8.   Graph the solution of $-2x \prec -10, x \in I$, on the number line given below.

9. Describe the process of solving linear in-equations of the form $ax + b \leq 0$
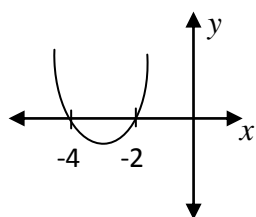
10. Define Quadratic expression.

11. Solve the quadratic equation $12x^2 = -x + 6$

12. Give the equation of the line symmetry for the given graph.

**(Not drawn to scale)**

Equation of the line symmetry _____

13. Santosh lives with his family of five not far from Apia. He decided to build a swimming pool and he knew that for some reason the swimming pool must have an enclosed area of 65m^2. He also wants the width of the swimming pool to be 8meters longer than the length. What are the dimensions of the swimming pool?
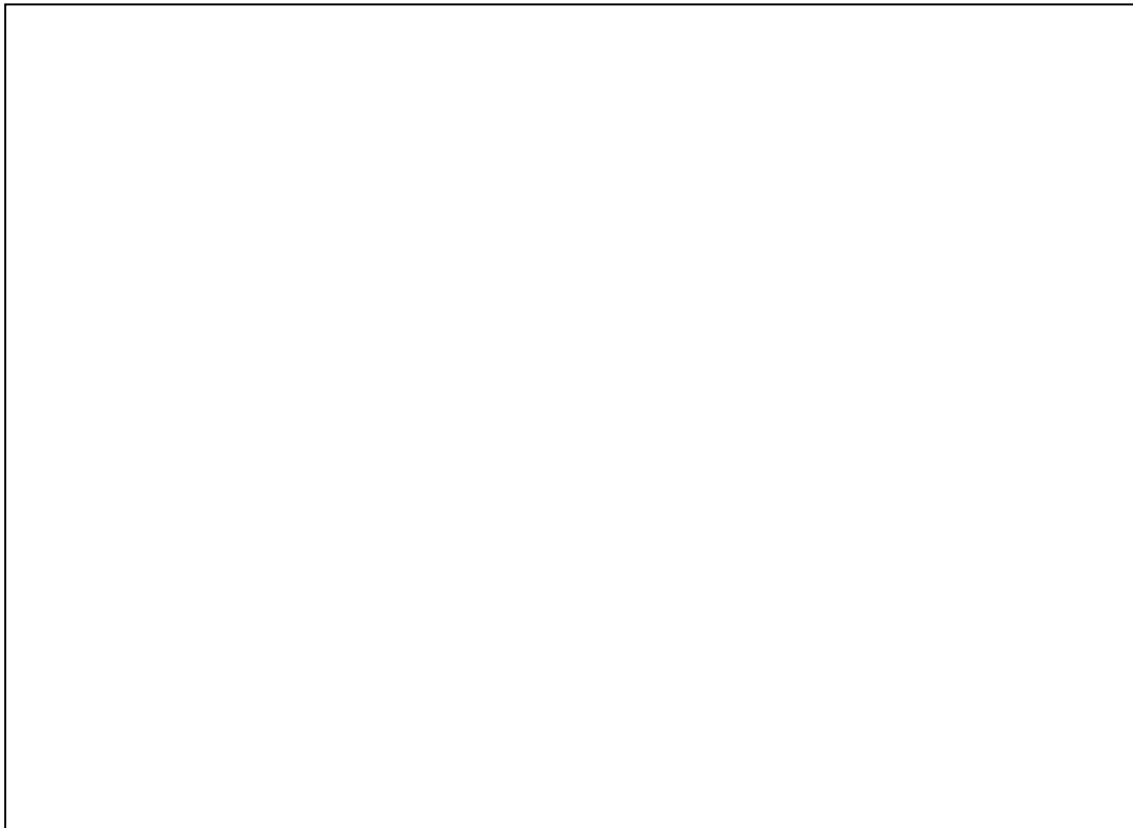
14. Sketch the graph of $4x - 5y + 10 = 0$, using the gradient-intercept method.
Use the grid given below.
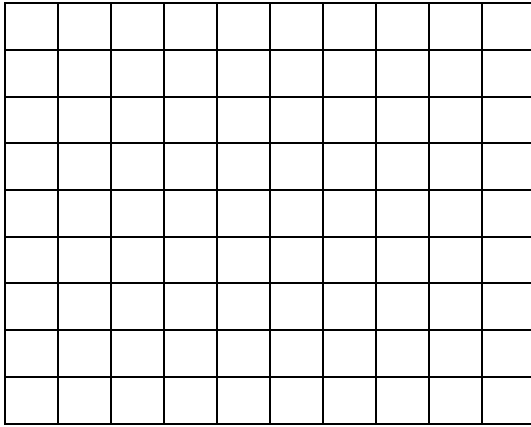
15. Solve this pair of simultaneous equations using the **Elimination Method.**

$$-3x + 2y = 5$$
$$5y + 4x = 2$$

16. If $f(x) = \dfrac{3}{4}x - 1$, find $f(-2)$

17. What is the name of this function? $y = 3^x$

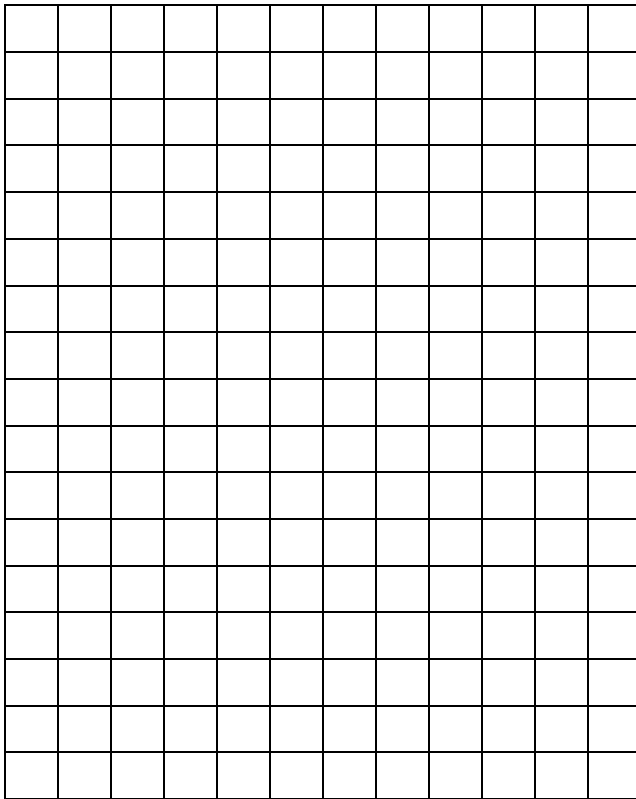**18.** The general equation of a circle centered at (0, 0) is?

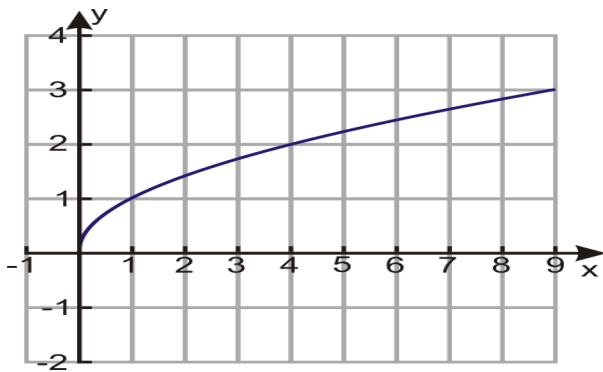**19.** A polynomial function with degree 3 is called a?

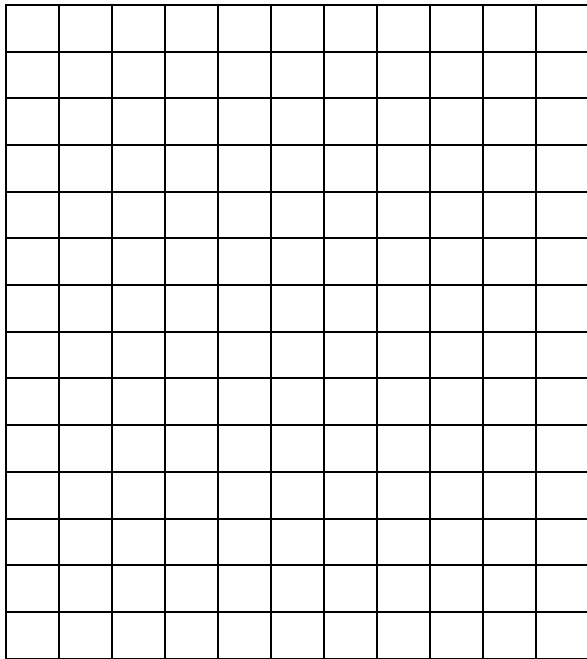**20.** On the grid given below, draw the graph of $y = (3 - x)(x - 1)^2$

21. Give the name of the function shown below.

Function name is _____

8|SSC

22. On the grid given below, draw the graph of $y = \dfrac{4}{x} + 3$
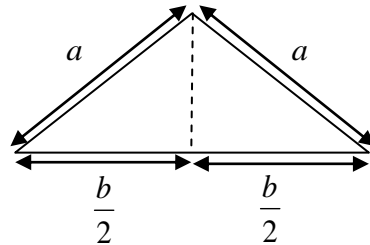
23. Give the asymptote equation of $y = \dfrac{4}{x} + 3$

24. What is the name of the function given in Number 22?

25. State the formula for calculating the Perimeter of the given triangle.
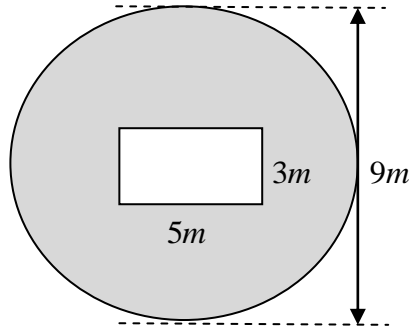

	SL 1

26. A hamper was on sale for $35 last Friday at the flea market. A 10% discount was awarded just before closing times. Determine the final cost of the hamper.

	SL 3

Use the information given below to answer Numbers 27 – 29.

Sam has a sty as shown in the diagram (not to scale). In the middle of the sty is a 5m by 3m rectangular pond.

27.   State the formula for calculating the shaded area of the sty.

SL 1

28.   Calculate the area of the shaded part of the sty. (Use $\pi \approx 3.14$)

SL 2

**29.** Calculate the perimeter of the circular sty. (Use $\pi \approx 3.14$)

30. _____ on the 12 hour clock is the same as 1950 hours on the 24 hour clock.

31. Christian entered a 100m race, which started at exactly 11:15am.
He crossed the finish line at 11 minutes and 60 seconds.
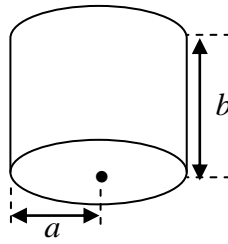At what time did he finish the race?

32. The scale that is shown below indicates the number of grams an object weighs.
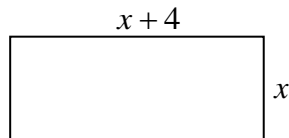The pointer stops as shown. Estimate the weight of the object.

0   1   2   3
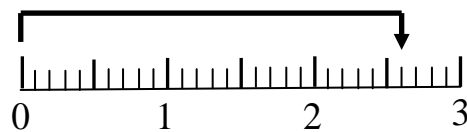
33. State the formula for finding the Volume of the figure, in terms of a and b.

34. The length of a rectangular garden is 4 feet longer than the width. If the perimeter is 192 feet, what is the area of the garden?
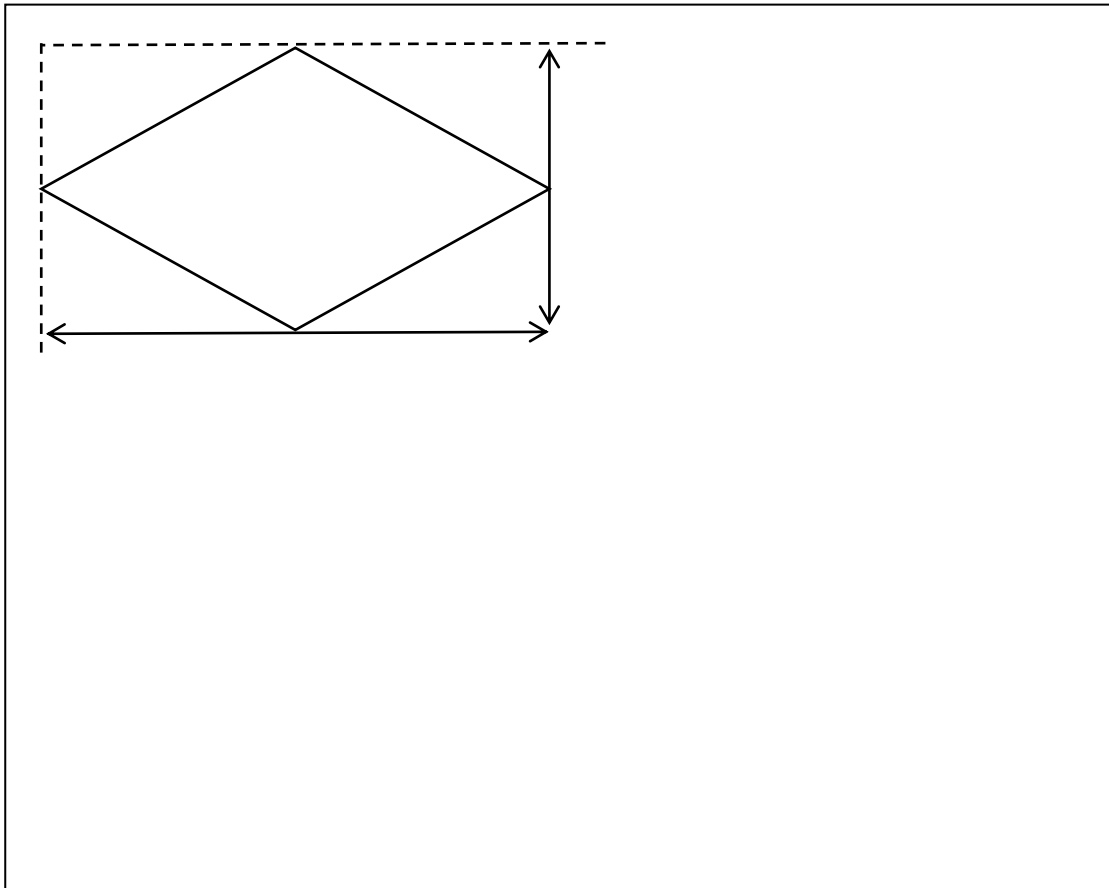Diagram (not drawn to scale) is given for clarification.
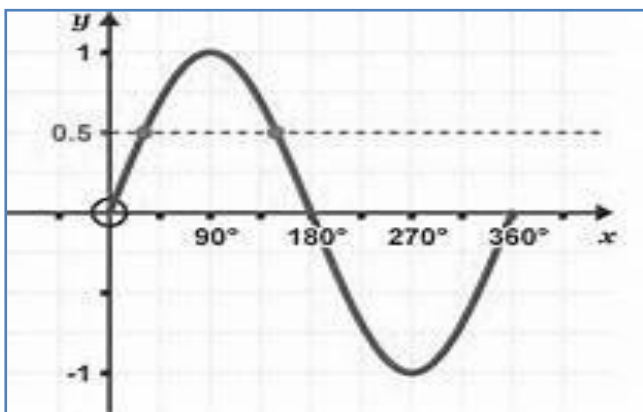
35. State the Pythagoras Theorem.

| |
| SL 1 |

36. Calculate the perimeter of the rhombus if its height and width measures are 16cm and 12cm, respectively.

| |
| SL 3 |

Use the diagram below to answer Numbers 37 – 38.

37. Circle the correct function that best represents the graph shown above.

$y = Sin\ x$ OR $y = Cos\ x$ OR $y = Tan\ x$

SL 1

38. Determine the coordinates of the turning point(s) of the graph shown.

SL 2

39. On the grid given below, draw the graph of $y = Tan\ x; 0^0 \le x \le 360^0$

SL 3

40. A building company has to fence off a triangular piece of waste ground. The plan of the ground is shown below. All measurements are in meters. If the fence costs $19.50 per meter, find side length x, so that the total cost of fencing can be calculated.

16m

x

56⁰

30m
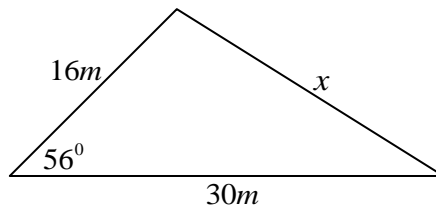
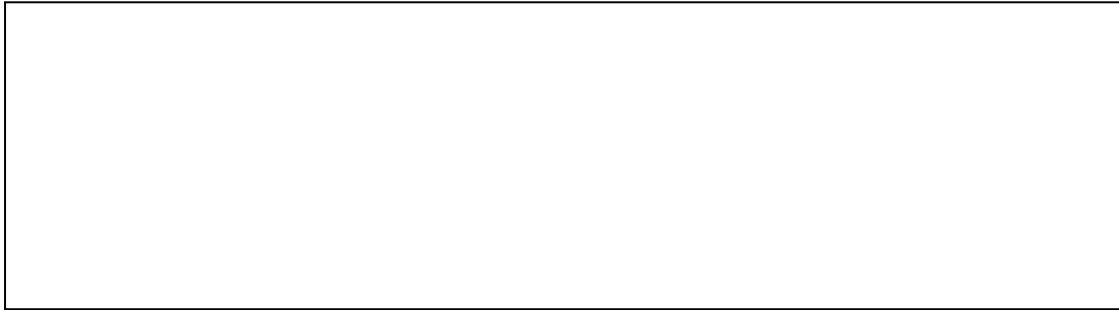**Use the trigonometric function below to answer Numbers 41 – 42.**

$$y = 3Cos(2x)$$

41. Determine the period of the trigonometric function given.

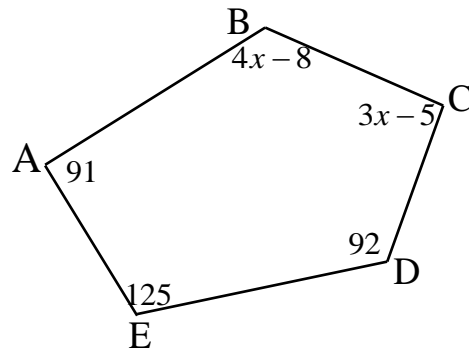**42.** Determine the amplitude of the trigonometric function given.

43. An orienteering participant runs 650m North and then turns and runs 1.4km East. How far from the starting point is the runner? Clearly draw a simple diagram to illustrate the participant's track.
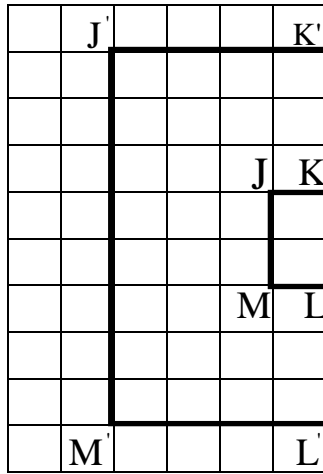
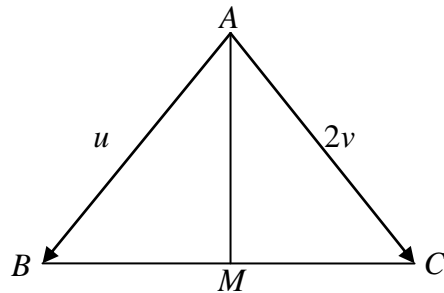**44.** Find the measures of angles B and C.

45. Define scale factor.

46. Calculate the scale factor for enlargement of length given the object JKLM and its image J'K'L'M'
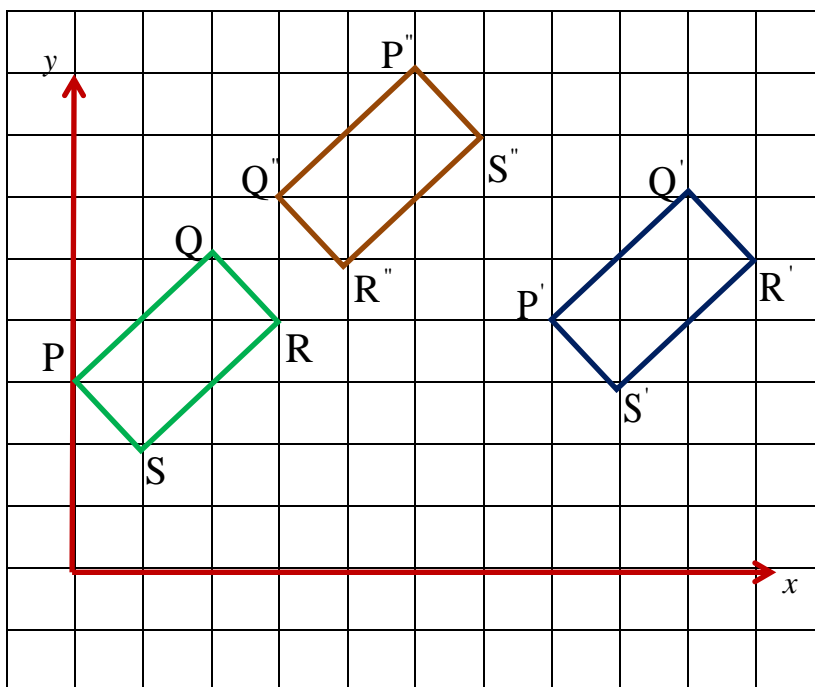
47. In the following diagram, $\overrightarrow{AB} = u$, $\overrightarrow{AC} = 2v$ and M is the midpoint of BC. Find $\overrightarrow{BC}$ in terms of u and v.

Use the diagram below to answer Number 48 – 50.

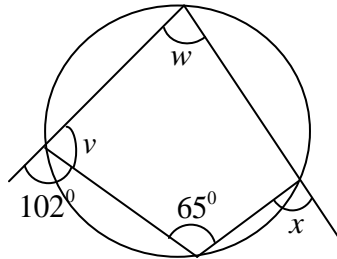**48.** Use vector to describe the translation rule for figure PQRS to figure P'Q'R'S'

SL 2

49. Define the mirror line.

SL 1

50. Draw the mirror line M, that matches figure PQRS to figure P''Q''R''S''.

SL 1

51. The sum of angles around a point is _____.

52. Find the values of angles v, w and x.

53. There is half of a carrot cake left. Sandy wants to eat twice what her brother Tom eats but she also needs to save a slice for her mom. Sandy cuts her mom a slice that is 60^0.

What is the measure of Sandy's piece of carrot cake in degrees?

<table>
<tr><td>SL 4</td></tr>
<tr><td></td></tr>
</table>

MATHEMATICS

2019

For scorers use only

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STRAND 1: Algebra		43
STRAND 2: Measurements		15
STRAND 3: Trigonometry		21
STRAND 4: Geometry		21
TOTAL		**100**