



MINISTRY OF EDUCATION AND CULTURE

STUDENT EDUCATION NUMBER									

Samoa Secondary Leaving Certificate

MATHEMATICS

2025

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 to the appropriate places in this booklet.

STRANDS		Pages	Time (min)	Weighting
STRAND 1	NUMBER & OPERATION	2-3	23	13
STRAND 2	ALGEBRA	4-7	40	22
STRAND 4	MEASUREMENTS	8-11	31	17
STRAND 5	GEOMETRY	12-16	27	15
STRAND 6	TRIGONOMETRY	17-20	25	14
STRAND 7	RATE OF CHANGE & CALCULUS	21-26	34	19
TOTAL			180	100

Check that this booklet contains pages 2 - 27 in the correct order and that none of these pages are blank.

HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Questions 1 and 2, choose and write the LETTER of the correct answer in the box provided.

1. State the kind of number a surd represents.

- A. Equation.
- B. Coefficient.
- C. Rational number.
- D. Irrational number.

SL 1

2. The simplest form of $\sqrt{128}$ is:

- A. $2\sqrt{8}$
- B. $8\sqrt{2}$
- C. $4\sqrt{6}$
- D. 11

SL 1

3. Express $\sqrt{12} + \sqrt{75}$ in the form $a\sqrt{b}$ where a and b are integers.

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SL 2

4. Simplify $\sqrt{18} \times \sqrt{14}$. Leave your answer in the form $a\sqrt{b}$.
(Do not use a calculator).

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SL 2

5. Rationalize $\frac{6}{1 + \sqrt{2}}$

SL 3

6. Given that $\frac{10 - \sqrt{32}}{\sqrt{2}} = a + b\sqrt{2}$ where a and b are integers.

Find the values of a and b .

SL 4

For Questions 7 and 8, choose and write the LETTER of the correct answer in the box provided.

7. Make n the subject of the formula:

$$\frac{p+n}{5} = 3x$$

- A. $n = 15x + p$
B. $n = 15x - p$
C. $n = 14x - p$
D. $n = 15x - 5p$

SL 1

8. Which of the following is **NOT** an equation of a straight line?

- A. $2x + y = 3$
B. $y = 6x + 4$
C. $y = 2x^2 + 4x$
D. $y = 2$

SL 1

9. Simplify $2 \log 2 + 2 \log 3$ by writing as the logarithm of a **single number**.

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SL 2

10. Express $64^{\frac{-1}{2}}$ as a fraction in its simplest form.

SL 2

11. Use the quadratic formula to solve: $4x^2 + 12x + 9 = 0$

(Hint: Use $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$)

SL 2

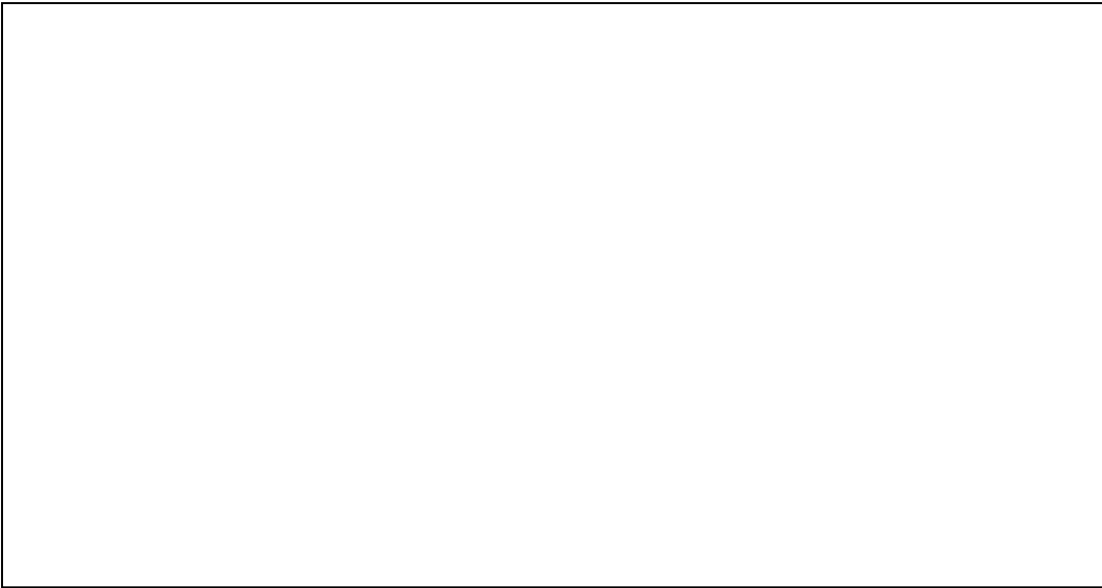
12. Find the value of k if $f(x) = (3x - 2)(x - k) - 8$ has a remainder of 4 when divided by $(x - 2)$.

SL 3

13. Solve the inequality:

$$5x + 16 \leq 9x + 4, \quad x \in R$$

and represent the solution on a number line.



SL 3

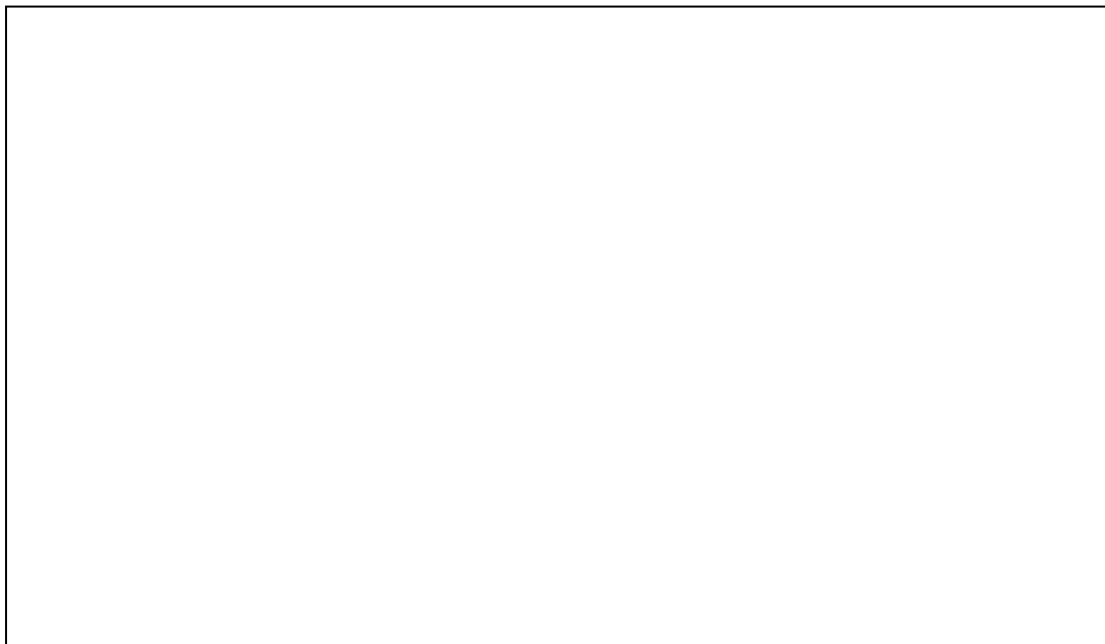
14. Use the information given below to form two linear equations.

(Let x = burgers and y = sausages)

4 burgers and 2 sausages cost \$4.00

3 burgers and 5 sausages cost \$6.00

Hence, find the cost of one burger and one sausage.



SL 4

15. A video posted on YouTube initially had 80 views. After it was uploaded, the total number of views increased exponentially according to the exponential growth function:

$$y = 80e^{0.12t}$$

where t represents time measured in days since the video was posted.
How many days will it take, until 2500 people have viewed this video?

SL 4

For Questions 16 to 18, choose and write the LETTER of the correct answer in the box provided.

16. Which of the following is a Geometric Sequence?

- A. 1, 2, 3, 4
- B. 1, 2, 4, 7
- C. 1, 2, 4, 8
- D. 1, 2, 3, 5

SL 1

17. Given the Arithmetic Sequence $\langle 2, 9, 16, \dots \rangle$. Find the 13th term.

- A. 72
- B. 79
- C. 93
- D. 86

SL 1

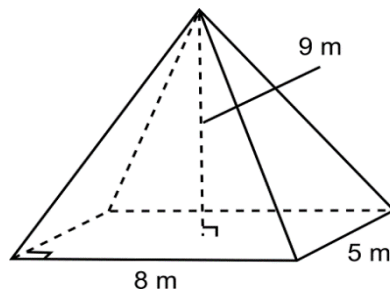
18. Identify the correct sigma notation for the series:

$$1 + 4 + 9 + \dots + 49$$

- A. $\sum_{k=1}^7 k^2$
- B. $\sum_{k=1}^8 k^2$
- C. $\sum_{k=1}^{49} k^2$
- D. $\sum_{k=1}^7 2k$

SL 1

19. A rectangular-based pyramid is shown below:



Calculate the volume of the pyramid.

SL 3

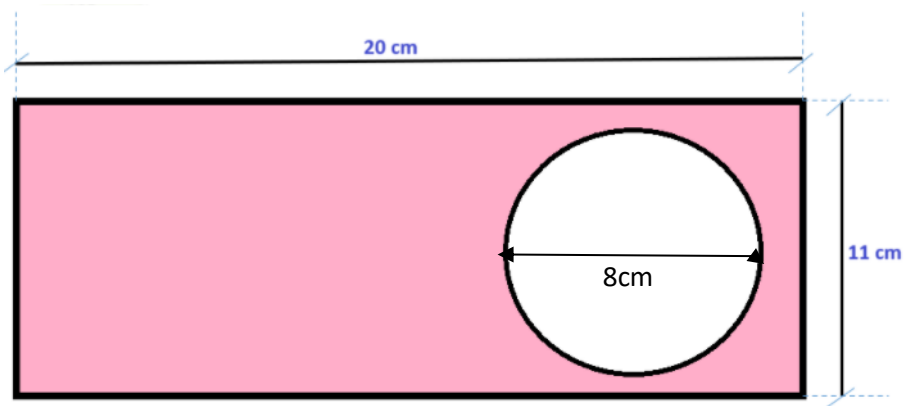
20. Given below is a conversion table for distances travelled by taxis in Upolu.

miles	kilometres
1	1.6
5	8
10	16
20	32

Convert 36 miles to kilometres.

SL 2

21. The diagram below shows a rectangle with a circle cut out from its interior.



Calculate the area of the shaded region.

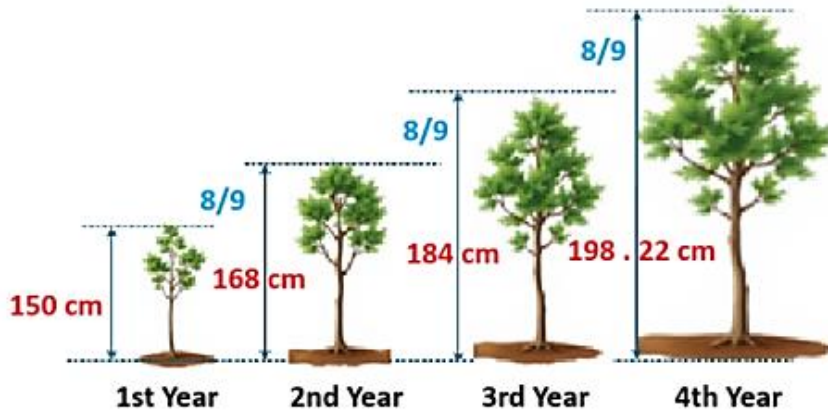
SL 2

22. Given the Geometric Series $< 3 + 1 + \frac{1}{3} + \dots >$

Calculate the sum to infinity of the series.

SL 3

23. Data regarding the growth of a **pine** tree shows that the tree grows to a height of 150 cm after one year, **then increases its height** by 18 cm the following year. In each successive year, the height increases by $\frac{8}{9}$ of the previous year's increase in height as **shown in the diagram below**.



A summary for the growth of the pine tree is shown in the table below:

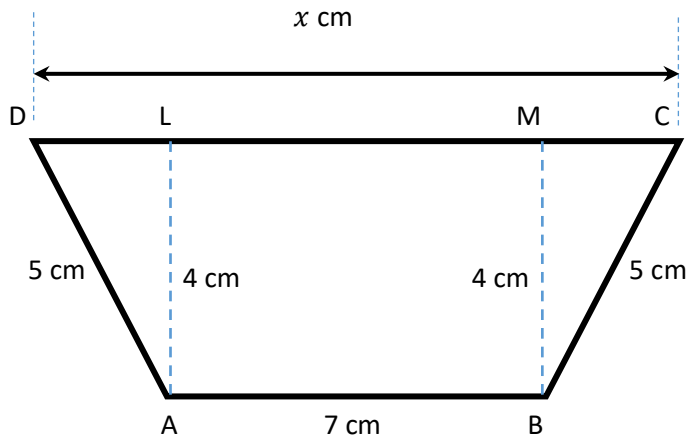
	First Year	Second Year	Third Year	Fourth Year
Tree height (cm)	150	168	184	$198\frac{2}{9}$
Growth (cm)	0	18	16	$14\frac{2}{9}$

Calculate the height of the tree after 10 years.

SL 4

For Question 24, choose and write the LETTER of the correct answer in the box provided.

24. A trapezium, ABCD, is given below with the following dimensions:

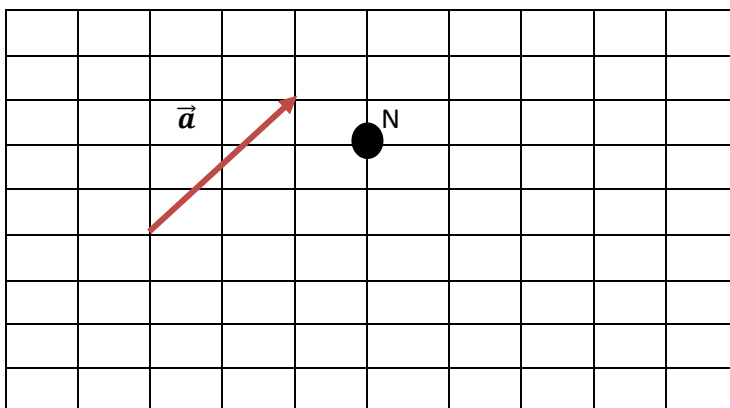


Find the value of x .

- A. 12 cm
- B. 13 cm
- C. 15 cm
- D. 17 cm

	SL 1

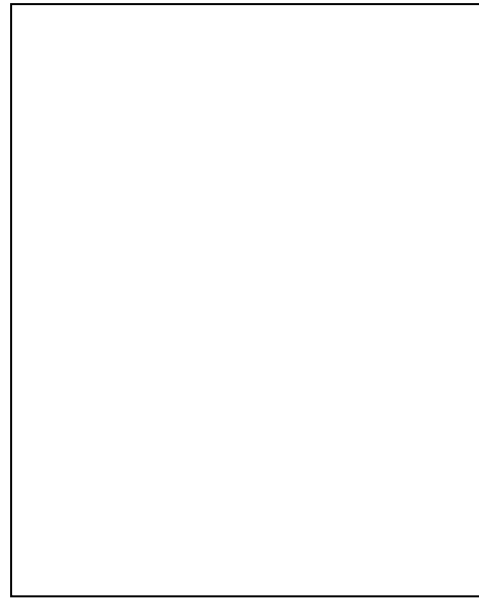
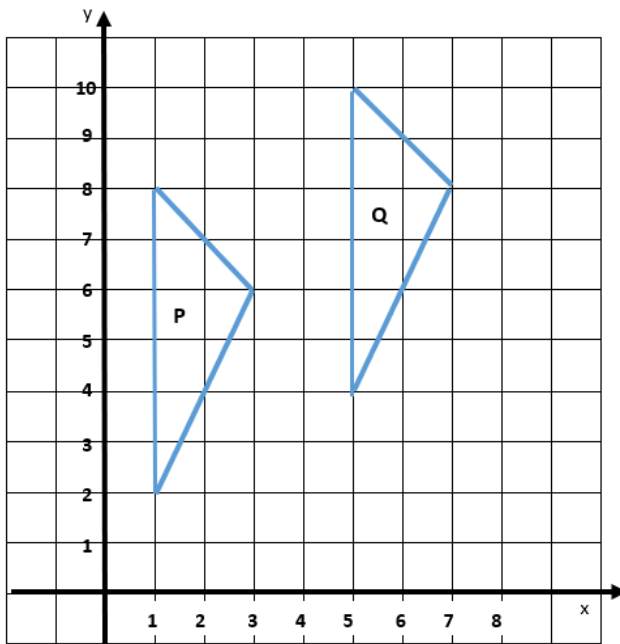
25. Vector \vec{a} is shown on the grid given below.



SL 1

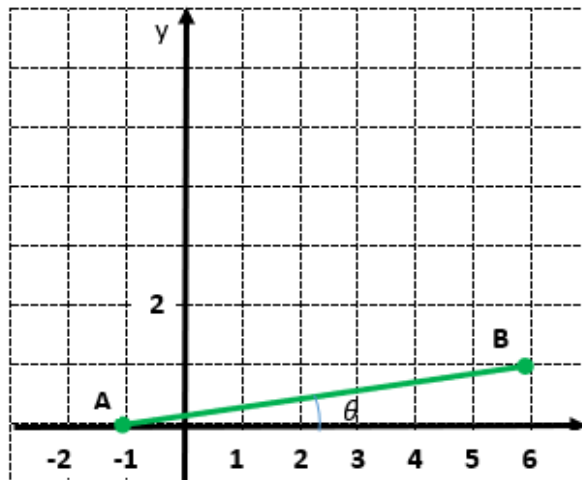
Draw on the grid and label vector $\overrightarrow{-2a}$ from point N.

26. Describe the translation of shape P to shape Q.



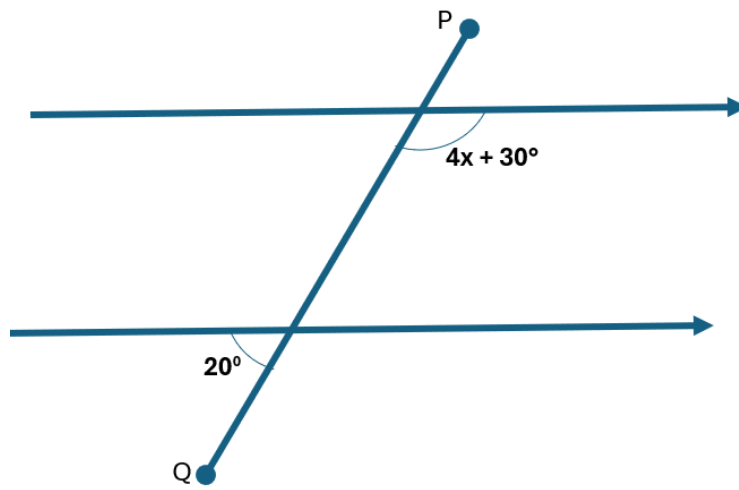
SL 2

27. Calculate the angle **line AB** makes with the x-axis.



SL 2

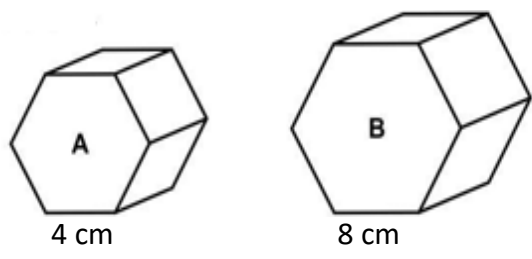
28. The diagram below shows two parallel lines intersected by line \overline{PQ} .



Find the value of the interior angle $4x + 30^\circ$.

SL 3

29. The diagram shows two similar solids, A and B.

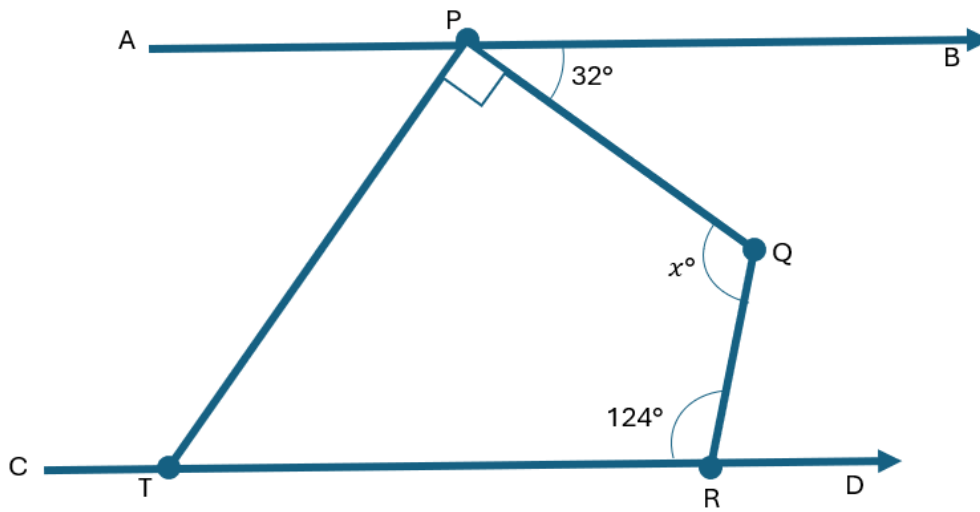


**NOT DRAWN
TO SCALE**

Solid A has a volume of 80 cm^3 . Work out the volume of Solid B.

SL 3

30. The diagram below shows two parallel lines \overline{AB} and \overline{CD} with a quadrilateral PQRT placed in between.



Find angle x . Show all your working.

SL 3

For Questions 31 to 33, choose and write the LETTER of the correct answer in the box provided.

31. Which variable represents **amplitude** in the function: $y = a \sin (bx - h) + k$

- A. h
 B. a
 C. b
 D. k

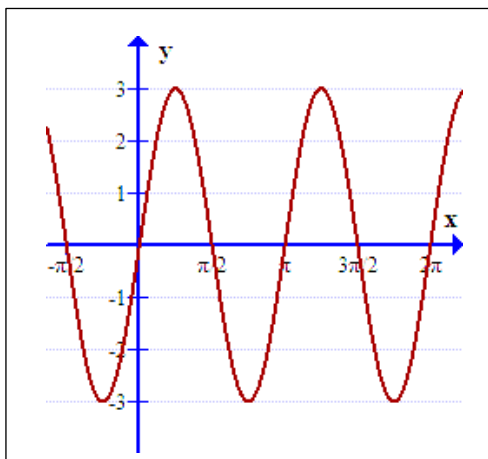
SL 1

32. Identify the period of the trigonometric function: $y = \cos (3x - \pi) - 5$

- A. $\frac{\pi}{3}$
 B. $\frac{\pi}{6}$
 C. $\frac{2\pi}{3}$
 D. $\frac{2\pi}{6}$

SL 1

33. State the equation of the trigonometric graph given below.



- A. $y = 3 \cos 2x$
 B. $y = 3 \sin 2x$
 C. $y = \sin 2x$
 D. $y = 2 \cos x$

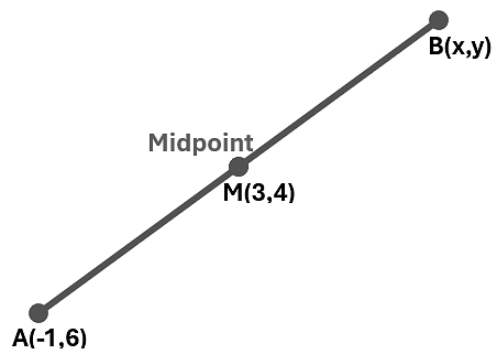
SL 1

34. Use trigonometric identities to prove that:

$$\operatorname{cosec} x \cdot \tan x = \sec x$$

SL 2

35. Point **M** (3,4) is the midpoint of line \overline{AB} , where point A is (-1,6).

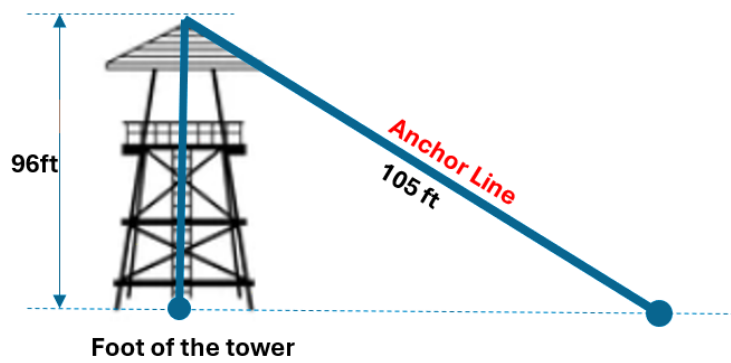


Find the **coordinates** for B.

Hint: Midpoint $\left(x = \frac{x_1 + x_2}{2}, y = \frac{y_1 + y_2}{2} \right)$

SL 2

36. An anchor line for a tower needs to be replaced. The tower is 96 feet tall and the anchor line is 150 feet long, as shown in the diagram below:

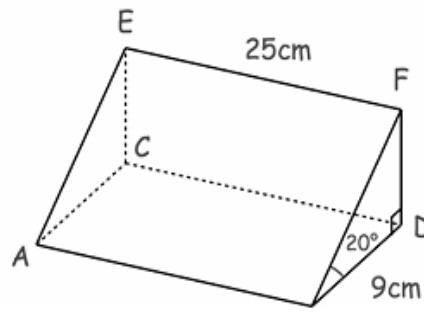


How far can the anchor line be placed away from the foot of the tower?
Leave your answer to 1 decimal place.

SL 3

37. ABCDEF is a triangular prism.
 $D = 9\text{cm}$, $EF = 25\text{cm}$,
 $\angle BDF = 90^\circ$ and $\angle DBF = 20^\circ$

Work out the size of angle CBE.



SL 4

For Question 38 to 41, choose and write the LETTER of the correct answer in the box provided.

38. If $f(x) = 3x^2$, then the derivative of $f(x)$, is:

- A. $6x$
- B. $3x^2$
- C. $5x$
- D. $9x$

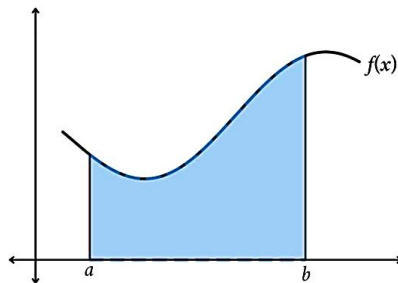
SL 1

39. If $\int f(x)dx = F(x) + C$ then $F(x)$ is:

- A. the definite integral of f
- B. a family of functions
- C. the antiderivative of f
- D. the derivative of f

SL 1

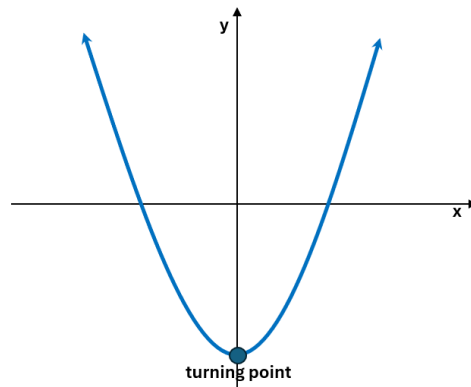
40. The area between the curve of $f(x)$ and the x -axis bounded by the vertical lines $x = b$ and $x = a$ is given by:



- A. $\int_b^a f(x)dx$
- B. $\int_b^a f'(x)dx$
- C. $\int_a^b f(x)dx$
- D. $\int_a^b f''(x)dx$

SL 1

41. The diagram of the function, $y = x^2 - 4$, is given below:



State the coordinates of the turning point.

- A. (0, 4)
- B. (0, -4)
- C. (-4, 0)
- D. (-2, 2)

SL 1

42. Given the function $f(x) = 2x^2 - 5x$, find the **gradient** of the tangent to the curve at $x = 2$.

SL 2

43. Use the first principles to differentiate $f(x) = 3x^2 + 5$

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

SL 3

44. Find the coordinates of the **stationary points** for the function:

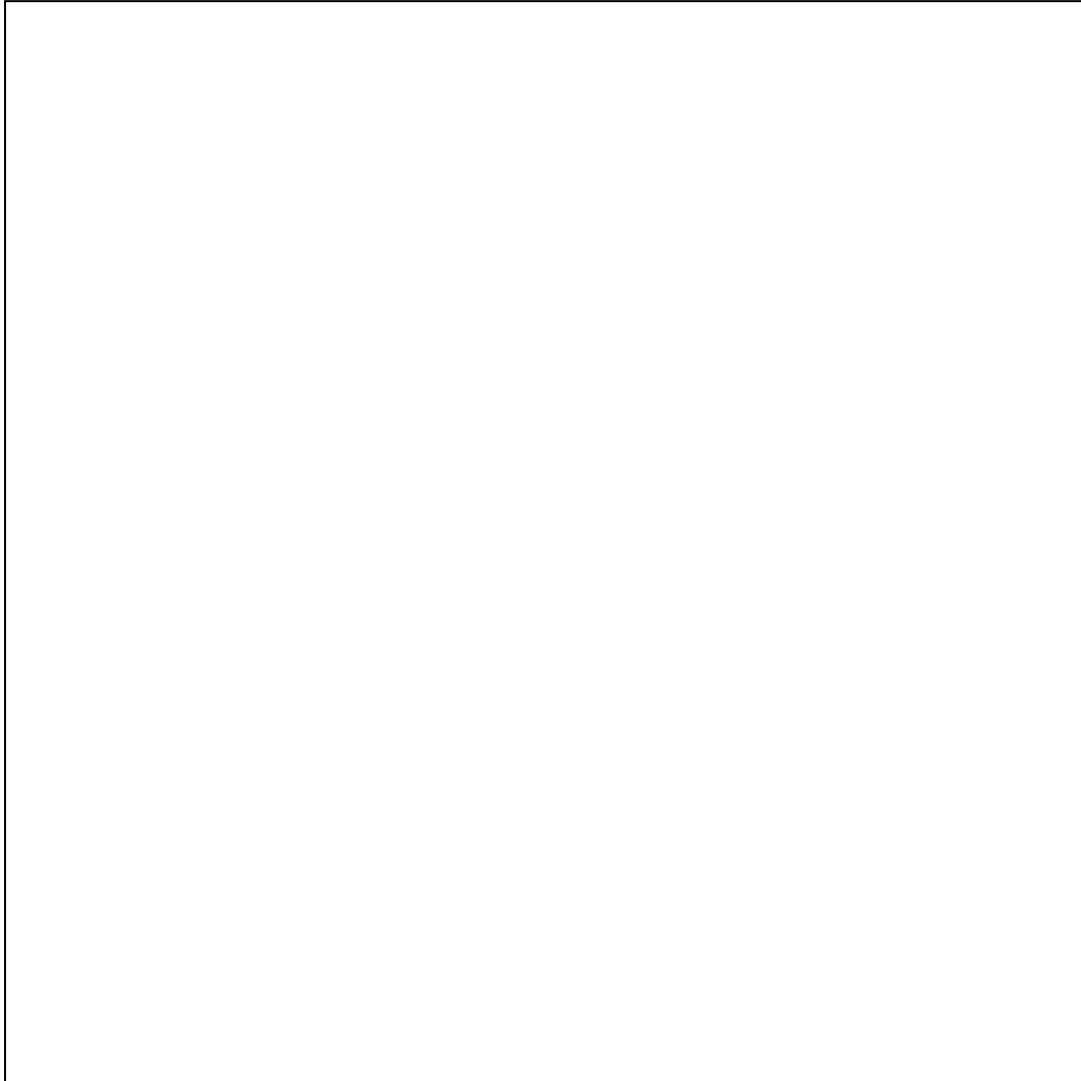
$$y = x^3 - 3x^2 + 1$$

SL 3

45. A body moves in a straight line so that its velocity, v , m/s , is given by the formula:

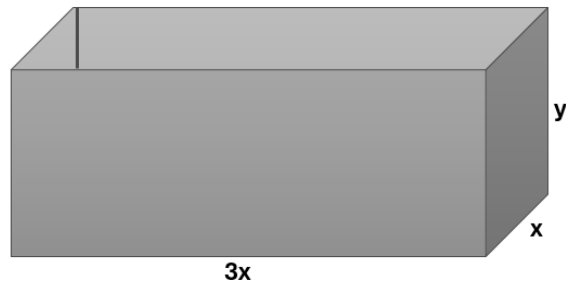
$$v = (6t^2 - 2t)dt$$

Evaluate: $\int_1^2 (6t^2 - 2t)dt$



SL 3

46. The dimensions of an OPEN rectangular box are shown below:

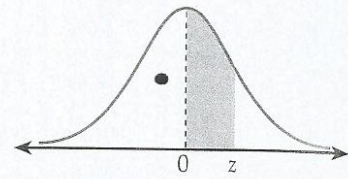


Given that the surface area of the box is 120cm^2 and $y = \frac{120-3x^2}{8x}$, find the value of x that will give the **maximum** volume.

SL 4

Normal distribution

Each entry gives the probability that the standardised normal random variable, Z , lies between 0 and z , shaded in the diagram.



Differences

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	1	2	3	4	5	6	7	8	9
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359	4	8	12	16	20	24	28	32	36
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0754	4	8	12	16	20	24	28	32	36
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141	4	8	12	15	19	22	27	31	35
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517	4	8	11	15	19	22	26	30	34
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879	4	7	11	14	18	22	25	29	32
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224	3	7	10	14	17	21	24	27	31
0.6	.2258	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549	3	6	10	13	16	19	23	26	29
0.7	.2580	.2612	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852	3	6	9	12	15	18	21	24	27
0.8	.2881	.2910	.2939	.2967	.2996	.3023	.3051	.3078	.3106	.3133	3	6	8	11	14	17	19	22	25
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389	3	5	8	10	13	15	18	20	23
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621	2	5	7	9	12	14	16	18	21
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830	2	4	6	8	10	12	14	16	19
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015	2	4	5	7	9	11	13	15	16
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177	2	3	5	6	8	10	11	13	14
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319	1	3	4	6	7	8	10	11	13
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441	1	2	4	5	6	7	8	10	11
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545	1	2	3	4	5	6	7	8	9
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633	1	2	3	3	4	5	6	7	8
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706	1	1	2	3	4	4	5	6	6
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767	1	1	2	2	3	4	4	5	5
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817	0	1	1	2	2	3	3	4	4
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857	0	1	1	2	2	2	3	3	4
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890	0	1	1	1	2	2	2	3	3
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916	0	0	1	1	1	2	2	2	2
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936	0	0	1	1	1	1	1	2	2
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952	0	0	0	1	1	1	1	1	1
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964	0	0	0	0	1	1	1	1	1
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974	0	0	0	0	0	1	1	1	1
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981	0	0	0	0	0	0	0	0	1
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986	0	0	0	0	0	0	0	0	1
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990	0	0	0	0	0	0	0	0	0
3.1	.4990	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993	0	0	0	0	0	0	0	0	0
3.2	.4993	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995	0	0	0	0	0	0	0	0	0
3.3	.4995	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997	0	0	0	0	0	0	0	0	0
3.4	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998	.4998	0	0	0	0	0	0	0	0	0
3.5	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	0	0	0	0	0	0	0	0	0
3.6	.4998	.4998	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	0	0	0	0	0	0	0	0	0
3.7	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	0	0	0	0	0	0	0	0	0
3.8	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.5000	.5000	0	0	0	0	0	0	0	0	0
3.9	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	0	0	0	0	0	0	0	0	0

STUDENT EDUCATION NUMBER									

SSLC MATHEMATICS

2025

(For Scorers only)

STRANDS		Weighting	Scores	Check Scorer	AED Check
STRAND 1	NUMBER AND OPERATION	13			
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TOTAL MARKS		100			