REGENT SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2025
SECONDARY TWO (G3)

NAME: _____ INDEX NUMBER: _____

CLASS: _____

MATHEMATICS

PAPER 1 **26 SEPTEMBER 2025**

1 hour 15 minutes

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your class, index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
The number of marks is given in brackets [ ] at the end of each question or part question.

If working is needed for any question it must be shown with the answer.
Omission of essential working will result in loss of marks.
The total of the marks for this paper is 50.

The use of an approved scientific calculator is expected, where appropriate.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give your answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

	TARGET
50	

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1 Solve the simultaneous equations.

$$4x-3y=-7,$$
$$15x-2y=20.$$

Answer $x =$ .....

$y =$ ..... [3]

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2 **(a)** Solve the inequality $2x+5>8$.

Answer ..... [1]

(b) Hence write down the smallest integer value of x.

Answer $x =$ ..... [1]

3 Expand and simplify.

$2(3p-5q)^2$

Answer ..... [2]

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4 Factorise.

(a) x^2-81y^2

Answer ..... [1]

(b) $x^2-5x-14$

Answer ..... [1]

(c) $3xy-2y^2-6y+9x$

Answer ..... [2]

5 y is inversely proportional to the square of x.
It is known that $y = 12$ for a particular value of x.
When x is increased by 100%, find

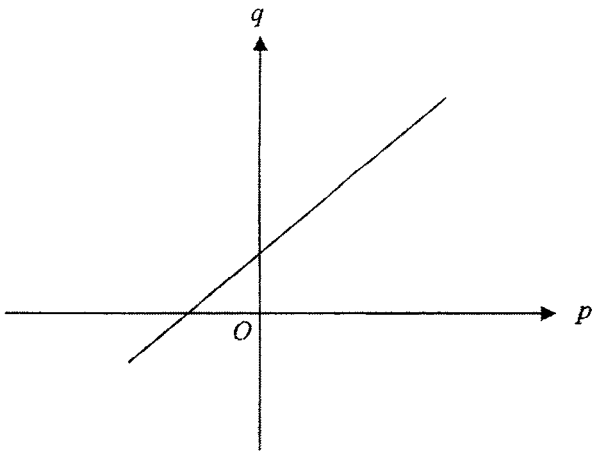
(a) the value of y.

Answer ..... [2]

(b) the percentage decrease in the value of y.

Answer .....% [2]

(c) The graph below shows the relationship between two variables p and q.



Dan claims that q is directly proportional to p. Do you agree? Explain your answer with reference to the graph.
Answer I agree/disagree with Dan

because .....

.....[1]

6 Simplify

(a) $\dfrac{9p^2y^2}{7a^4} \div \dfrac{3p^3}{2a^8y}$

Answer ..... [2]

(b) $\dfrac{3x}{(x-5)(x+1)} + \dfrac{1}{5-x}$

Answer ..... [3]

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7 Solve the equation $\dfrac{20}{x+1} = 2x+5$.

Answer $x =$ ..... or ..... [3]

8

$$a = \frac{4b + 3c}{2 - b}$$

(a) Evaluate a when $b = -6$ and $c = -2$.

Answer ..... [1]

(b) Express b in terms of a and c.

Answer ..... [3]

9 A bag contains 5 blue balls, 8 green balls and 3 yellow balls.

(a) A ball is drawn at random. Find the probability of getting a green ball.

Answer ..... [1]

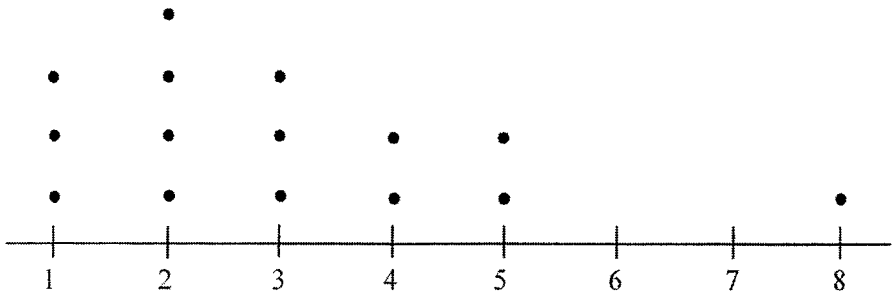
(b) x yellow balls are added to the bag.

The probability of getting a yellow ball becomes $\frac{1}{2}$.

Find the value of x.

Answer ..... [2]

10 The dot diagram below represents the number of books read by 15 students in a month.



Number of books read

(a) State the modal number of books read.

Answer ..... [1]

(b) Find the median number of books read.

Answer ..... [1]

(c) When the number of books read by a 16^{th} student is added to the diagram, the median remains the same as that in **part (b).**
Find a possible number of books that this student read.

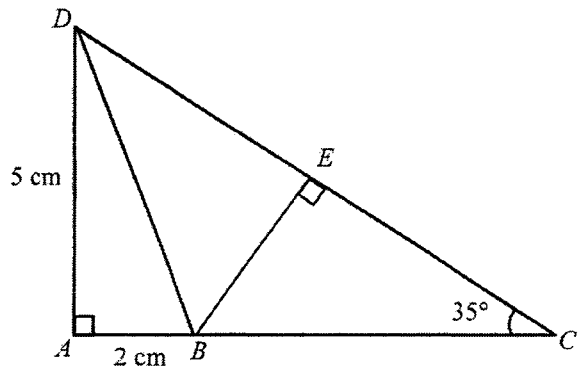
Answer ..... [1]

(d) Explain why finding the mean is not an appropriate average for this data set.

.....

.....[1]

11 In triangle ABC, $AD = 5$ cm, $AB = 2$ cm and angle $ACD = 35°$.



(a) Calculate the length of the metal rod BC.

Answer ..... cm[2]

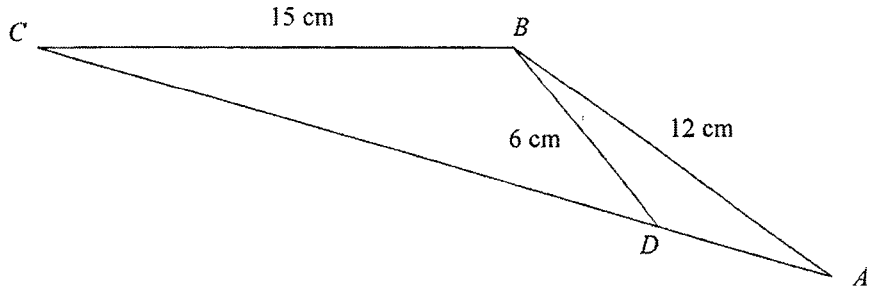
(b) Calculate the length of the metal rod, BE.

Answer .....cm [2]

(c) Calculate angle DBE.

Answer .....° [3]

12 In the figure below, triangle ABC is similar to triangle ADB where $BC = 15$ cm, $AB = 12$ cm and $BD = 6$ cm.



Find

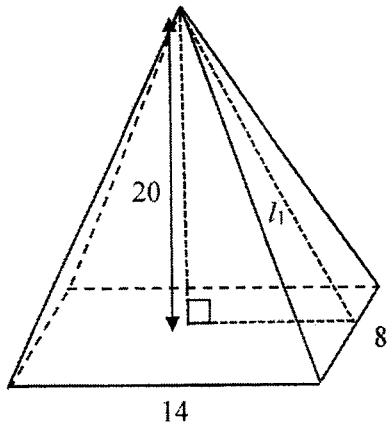
(a) AD

Answer ..... m [2]

(b) CD.

Answer ..... m [2]

13 An upright solid pyramid with a rectangular base measuring 14 m by 8 m has a height of 20 m.



(a) Show that the slant height $l_1 = 21.190$ m, correct to 3 decimal places. [1]

(b) Calculate the total surface area of the pyramid.

Answer ..... m^2 [3]

End of Paper

REGENT SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2025
SECONDARY TWO (G3)

NAME: _____ INDEX NUMBER: _____

CLASS: _____

MATHEMATICS **4052/02**

Paper 2 **07 October 2025**

1 hours 15 minutes

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your class, index number and name on all the work you hand in.
Write in dark blue or black pen.
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For π, use either your calculator value or 3.142.

	TARGET
50	
PARENT'S SIGNATURE	

Answer **all** questions.

1 A map of a flower garden is drawn to a scale of 2 cm to 3 km.

(a) The scale of the map can be expressed as 1 : n. Find n.

Answer .....[1]

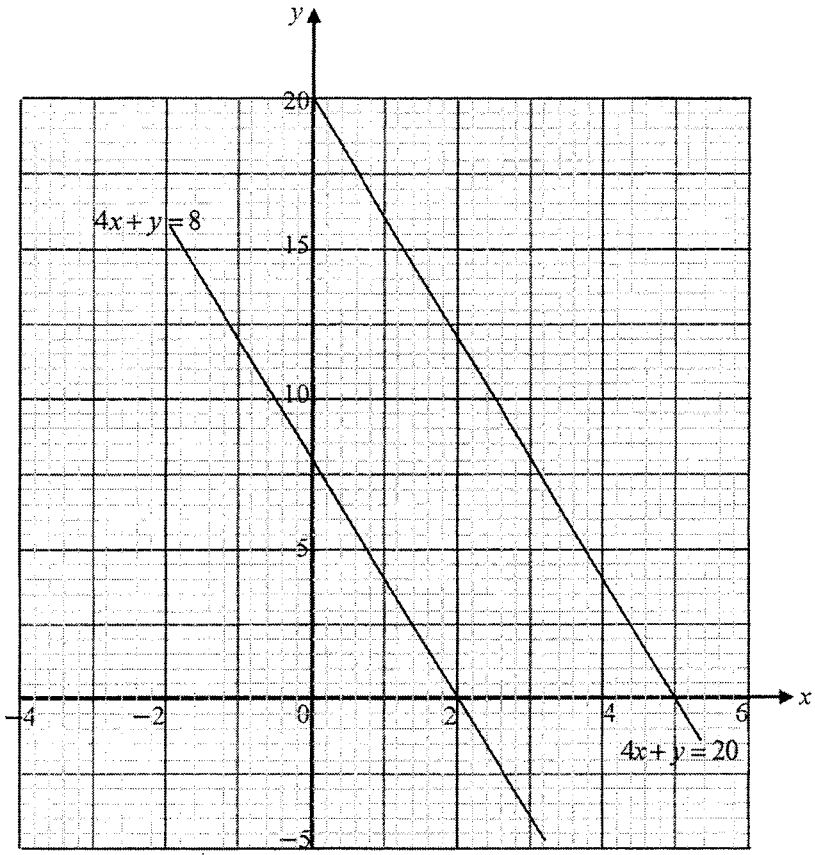
(b) The actual perimeter of the flower garden is 21 km.
Find the perimeter of the flower garden on the map, in cm.

Answer .....cm[1]

(c) The flower garden is represented by an area of 2 cm^2 on the map.
Find the actual area, in km^2, of the flower garden.

Answer.....km^2[2]

2 The grid shows the graphs of two equations $4x + y = 8$ and $4x + y = 20$.



(a) Without solving these two equations, state the number of solutions these equations have.

Explain your answer.

Number of solutions ..... Because .....

.....

.....[2]

(b) Draw and label the line $y = 4$ onto the grid. [1]

(c) Hence, write down the coordinates of the point of intersection of the lines $y = 4$ and $4x + y = 8$.

Answer (..... , ...)[1]

3 Simplify $\left(\frac{2q-6}{p+4}\right) \div \frac{q-3}{p^2-16}$.

Answer .....[3]

4 Without working out the values of x and y, find the value of $2(x+y)^2$ given that $x^2+y^2=272$ and $xy=64$.

Answer.....[3]

5 In a race, John walks at an average speed of $(x-1)$ km/h for x hours and cycles at an average speed of $(2x+1)$ km/h for $(x+2)$ hours.

(a) Write down an expression, in terms of x, for the distance he walks.

Answer .....km[1]

(b) Write down an expression, in terms of x, for the distance he cycles.

Answer .....km[1]

(c) Given that John covers a distance of 97 km, write down an equation, in terms of x, and show that it reduces to

$$3x^2+4x-95=0.$$

Answer [3]

(d) Solve the equation $3x^2+4x-95=0$.

Answer .....[2]

(e) Explain why the negative value of x is rejected.

.....

.....[1]

(f) **Hence**, find the time John takes to finish the race.

Answer .....hours[1]

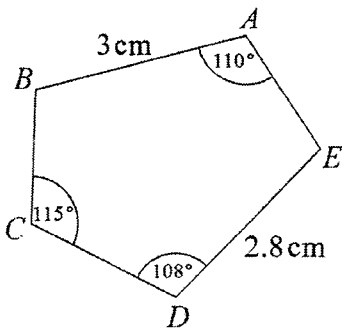
6 The frequency table below shows the number of goals scored in a series of netball matches.

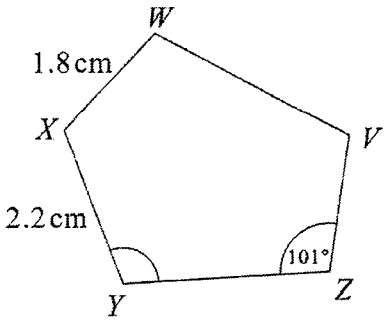
No. of goals	0	1	2	3	4	5	6
No. of matches	2	3	8	r	4	1	2

If the mean number of goals is 2.68, find the value of r.

Answer.....[3]

7 In the diagram, *ABCDE* is congruent to *VWXYZ*.





Find

(a) the length of *CD*,

Answer $CD =$ .....cm [1]

(b) the angle *XYZ*.

Answer $XYZ =$ .....° [1]

8 An arrow was fired from a raised platform towards a field.
The vertical height of the arrow, y metres above the ground, at a horizontal distance x metres from the platform, is given by $y = 6 + x(3 - \frac{1}{5}x)$, $x \geq 0$.

The table below shows some corresponding values of x and y.

x	0	2	4	6	9	12	14	16	18
y	6	11.2	14.8	16.8	16.8	13.2	8.8	p	−4.8

(a) Find the value of p.

Answer.....[1]

(b) On the grid opposite, draw the graph of $y = 6 + x(3 - \frac{1}{5}x)$ for $0 \leq x \leq 18$. [2]

(c) Use your graph to find

(i) the greatest height reached by the arrow,

Answer.....m[1]

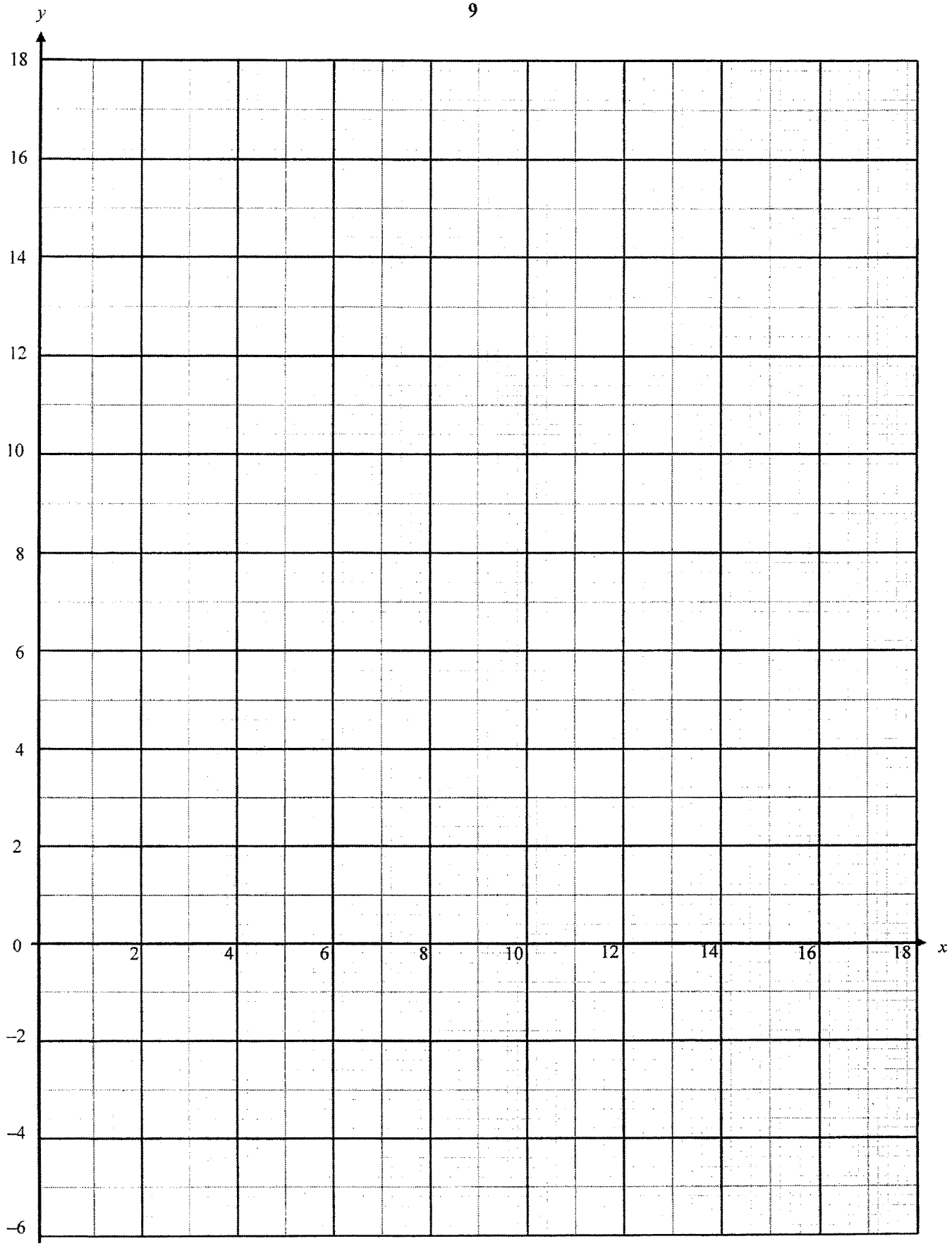
(ii) the horizontal distance, x travelled by the arrow before it hits the ground.

Answer.....m[1]

(iii) the horizontal distance for which the arrow was more than 14 metres above the ground.

Answer.....m[1]

9



9 The stem-and-leaf diagram shows the distribution of masses, in grams, of 29 Grade A peaches and 30 Grade B peaches.

Grade A		Grade B
9 8 8 0	34	3 4 6 7 7 9
7 6 6 5 1 1 0 0	35	1 3 3 5 6 6 8 9
9 7 7 6 6 4 4 3 3 2 1 0	36	0 *m* 4 6 6 6 6 8 8 9 9
9 6 2 2	37	0 1 1 2 2
3	38	

Key: 34|8 means 348 grams

Key: 34|3 means 343 grams

(a) Write down the modal mass of Grade A peaches.

Answer.....g[1]

(b) The median mass for both grades of peaches was the same.
Write down the value of m.

Answer.....[2]

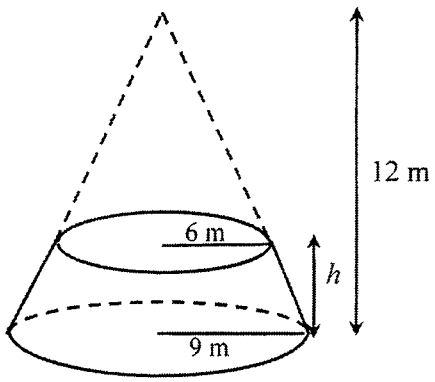
(c) Due to an error, all the recorded masses were 10g less.
Explain how the recorded median mass had been affected.

Answer

.....

.....[1]

10 A **closed** water container is made from a section of a cone with radius 9 m and height 12 m as shown in the diagram below.
The top of the container is a circle of radius 6 m.



(a) Show that the height h of the container is 4 m. [2]

Answer

(b) The container is filled completely with water.
Find the volume of water in the container.

Answer.....m^3[3]

(c) The entire container, including its base, is to be painted with a reflective coat of paint. Find the total surface area that needs to be painted, giving your answer in terms of π.

Answer.....m^2[3]

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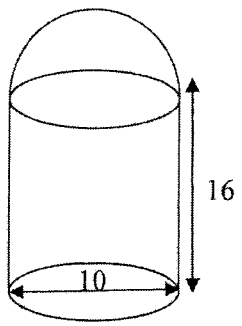
11 A solid metal structure consists of a hemisphere and a cylinder which share a common base. The cylinder has a base diameter of 10 cm and a height of 16 cm. An engineer calculated that the metal structure can be melted to form at least 360 spheres of 2cm diameter. Is his calculation correct?



Answer

The engineer is correct/wrong because .....

.....[4]

End Of Paper

REGENT SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2025
SECONDARY TWO (G3)

2025 Sec 2 2G3 SA2 P1 Marking Scheme

1			$4x-3y=-7, \quad ---(1)$ $15x-2y=20 \quad ---(2)$ (1) x 2, (2) x 3 $8x-6y=-14 \quad ---(3)$ $45x-6y=60 \quad ---(4)$ (4) – (3) $45x-8x=60+14$ $37x=74$ $x=2$ Sub $x=2$ into (1) $4(2)-3y=-7$ $-3y=-15$ $y=5$	M1 A1 A1	3	
						Total: 3 marks
2	**(a)**		$2x+5>8$ $2x>3$ $x>1.5$	B1	1	
	(b)		$x=2$	B1	1	
						Total: 2 marks

3			$2(3p-5q)^2$ $=2(9p^2-30pq+25q^2)$ $=18p^2-60pq+50q^2$	M1 A1	2	
						Total: 2 marks
4	(a)		x^2-81y^2 $=(x-9y)(x+9y)$	B1	1	
	(b)		$x^2-5x-14$ $=(x+2)(x-7)$	B1	1	
	(c)		$3xy-2y^2-6y+9x$ $=y(3x-2y)+3(-2y+3x)$ $=(y+3)(3x-2y)$	M1 A1	2	
						Total: 4 marks
5	(a)		$12=\frac{k}{a^2}$ $k=12a^2$ sub $x=2a$ $y=\frac{12a^2}{(2a)^2}$ $=3$	M1 A1	2	
	(b)		percentage decrease $=\frac{12-3}{12}\times 100$ $=75\%$	M1 A1	2	FT y
	(c)		I disagree with Dan because the graph does not pass through the origin	B1		
						Total: 5 marks

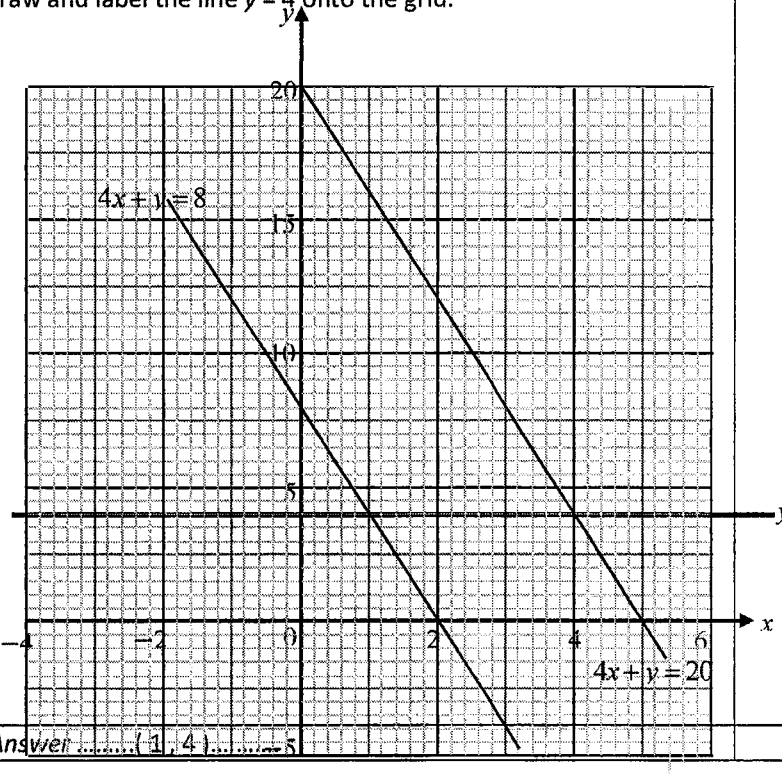
6	(a)		$\frac{9p^2y^2}{7a^4} \div \frac{3p^3}{2a^8y}$ $= \frac{9p^2y^2}{7a^4} \times \frac{2a^8y}{3p^3}$ $= \frac{18a^8p^2y^3}{21a^4p^3}$ $= \frac{6a^4y^3}{7p}$	M1 A1	2	
	(b)		$\frac{3x}{(x-5)(x+1)} + \frac{1}{5-x}$ $= \frac{3x}{(x-5)(x+1)} - \frac{1}{x-5}$ $= \frac{3x-1(x+1)}{(x-5)(x+1)}$ $= \frac{3x-x-1}{(x-5)(x+1)}$ $= \frac{2x-1}{(x-5)(x+1)}$	M1 M1 A1		
						Total: 5 marks
7	(a)		$\frac{20}{x+1} = 2x+5$ $(2x+5)(x+1) = 20$ $2x^2+7x+5-20=0$ $2x^2+7x-15=0$ $(2x-3)(x+5)=0$ $x=1.5, x=-5$	 M1 M1 A1	3	
						Total: 3 marks
8	(a)		$a = \frac{4b+3c}{2-b}$ $a = \frac{4(-6)+3(-2)}{2-(-6)} = -3.75$	 B1	1	

	(b)		$a=\dfrac{4b+3c}{2-b}$ $a(2-b)=4b+3c$ $2a-ab=4b+3c$ $4b+ab=2a-3c$ $b(4+a)=2a-3c$ $b=\dfrac{2a-3c}{4+a}$	M1 M1 A1	3	
						Total: 4 marks
9	**(a)**		$\dfrac{1}{2}$	B1	1	
	(b)		$\dfrac{3+x}{16+x}=\dfrac{1}{2}$ $2(3+x)=16+x$ $6+2x=16+x$ $x=10$	M1 A1	2	
						Total: 3 marks
10	**(a)**		2	B1	1	
	(b)		3	B1	1	
	(c)		Any number ≥ 3	B1	1	
	(c)		The value 8 is an outlier and will increase the mean significantly. Hence, it will not be a good indication of the central tendency of the data set	B1	1	
						Total: 4 marks
11	**(a)**		$\dfrac{5}{AC}=\tan 35°$ $AC=\dfrac{5}{\tan 35°}$ $BC=\dfrac{5}{\tan 35°}-2$ $=5.14cm$	M1 A1	2	

	(b)		$\frac{BE}{5.1407} = \sin 35°$ $BE = 2.9486$ $BE = 2.95cm$	M1 A1	2	
	(c)		$BD = \sqrt{2^2 + 5^2}$ $= \sqrt{29}$ $\cos \angle DBE = \frac{2.9486}{\sqrt{29}}$ $\angle DBE = \cos^{-1}\left(\frac{2.9486}{\sqrt{29}}\right)$ $= 56.8°$	M1 M1 A1	3	
						Total: 7 marks
12	(a)		$\frac{AD}{AB} = \frac{BD}{CB}$ $\frac{AD}{12} = \frac{6}{15}$ scale factor 2.5 or 0.4 or equivalent $AD = \frac{6}{15} \times 12$ $AD = 4.8$ cm	M1 A1	2	
	(b)		$\frac{AC}{AB} = \frac{BC}{DB}$ $\frac{AC}{12} = \frac{15}{6}$ $AC = \frac{15}{6} \times 12$ $AC = 30$ cm $CD = 30 - 4.8$ $= 25.2$ cm	M1 A1		
						Total: 4 marks

13	**(a)**		$l_1 = \sqrt{20^2 + 7^2}$ B1 $= 21.190$ (3 dp)	B1	1	
	(b)		$l_2 = \sqrt{20^2 + 4^2}$ M1 $= 20.396$ Base $= 14 \times 8 = 112$ M1 Triangles = $2\left(\frac{1}{2} \times 8 \times 21.190\right) + 2\left(\frac{1}{2} \times 14 \times 20.396\right)$ M1(/) either $= 169.52 + 285.544 = 455.064$ Total $= 112 + 455.064 = 567\ m^2$	M1 M1 A1	3	M1(/) either = 169.52 + 285.544 = 455.064
						Total: 6 marks

2025 EOY ELEMENTARY MATHEMATICS PAPER 2

Qn	Solutions	Marks	Total
1a	$2cm \rightarrow 300000cm$ 1:150000	B1	
1b	14 cm	B1	
1c	$4cm^2 \rightarrow 9km^2$ $2cm^2 \rightarrow 4.5km^2$	M1 A1	4
2a	Number of solutions = ...0..... because both lines have the same gradients but different y-intercepts, i.e., the lines are parallel and do not intersect. Hence there is no solution.	B1 B1	
2b	Draw and label the line $y = 4$ onto the grid.  	B1	
2c	Answer .....(−1, 4).....	A1	4

Qn	Solutions	Marks	Total
3	$\left(\frac{2q-6}{p+4}\right) \div \frac{q-3}{p^2-16}$ $=\left(\frac{2(q-3)}{p+4}\right) \times \left(\frac{(p+4)(p-4)}{q-3}\right)$ M1 $=\left(\frac{2}{1}\right) \times \left(\frac{p-4}{1}\right)$ M1 $=2(p-4)$ A1	M1 M1 A1	3
4	$2(x+y)^2 = 2(x^2+2xy+y^2)$ **[M1]** $x^2+2xy+y^2=400$ $=2(x^2+y^2+2xy)$ $=2(272+2(64))$ **[M1]** $2(400)$ $=800$ **[A1]**	M1 M1 A1	3
5a	*Answer* ..... $x(x-1)$ ...hours	A1	
5b	*Answer* ..... $(2x+1)(x+2)$ .....hours	A1	
5c	$x(x-1)+(2x+1)(x+2)=97$ M1, M1 $x^2-x+2x^2+4x+x+2=97$ M1 $3x^2+4x-95=0$ (shown)	M2 M1	
5d	$(x-5)(3x+19)=0$ M1 $x-5=0$ or $3x+19=0$ $x=5$ or $x=-\frac{19}{3}$ A1	M1 A1	
5e	The time value which is 2x cannot be negative values, thus it is rejected.....	A1	
5f	$x+x+2$ $=2x+2$ $=2(5)+2$ $=12$	A1	

Qn	Solutions	Marks	Total
			9
6	$\frac{0(2)+1(3)+2(8)+3(r)+4(4)+5(1)+6(2)}{2+3+8+r+4+1+2}=2.68$ **[M1]** $\frac{52+3r}{20+r}=2.68$ $52+3r=2.68(20+r)$ $52+3r=53.6+2.68r$ **[M1]** $3r-2.68r=53.6-52$ $0.32r=1.6$ $r=\frac{1.6}{0.32}$ $r=5$ **[A1]**	M1 M1 A1	3
7a	*Answer* CD = ...2.2.....cm [1]	M1	
7b	*Answer* XYZ = ...108.....° [1]	A1	2
8a	*Answer*.....2.8.....[1]	M1	
8b	draw the graph of $y=6+x(3-\frac{1}{5}x)$ for $0\le x\le 18$.	M1	7

Qn	Solutions	Marks	Total
8ci	*Answer*.....17.2 – 17.4.....m[1]	M1	
8cii	*Answer*.....16.7 – 16.9.....m	A1	
8ciii	horizontal distance = 11.5 – 3.5 = 8 m	M1	
9a	*Answer*.....348.....g	B1	
9b	Median = 362 = $\frac{360+M}{2}$ --[M1] to identify median value $M = 364$ $m = 4$ --[A1]	M1 A1	
9c	All the recorded masses (values) were lowered by 10 grams, hence the calculated median value was also lowered by 10 grams.	A1	4
10a	Height of smaller cone $= \frac{6}{9} \times 12$ $= 8$ m M1 $h = 12 - 8$ $= 4$ m A1	M1 A1	
10b	Volume of container = vol of big cone – vol of small cone $= \frac{1}{3}\pi(9)^2(12) - \frac{1}{3}\pi(6)^2(8)$ M2 $= 716$ m^3 A1	M2 A1	
10c	Slant height of large cone $= \sqrt{9^2 + 12^2}$ = 15 m M1 Slant height of small cone $= \sqrt{6^2 + 8^2}$	M1	8

Qn	Solutions	Marks	Total
	$= 10$ m M1 Surface area to be painted $= \pi(9)(15) - \pi(6)(10) + \pi(6)^2 + \pi(9)^2$ $= 192\pi$ m^2 A1	M1 A1	

Qn	Solutions	Marks	Total
11	radius $= \frac{10}{2} = 5$ Volume of the metal structure $= (\frac{1}{2} \times \frac{4}{3} \times \pi \times 5^3) + (\pi \times 5^2 \times 16)$ [M1] $= 1518.436$ $= 1520\ cm^3$ (3 s.f.) Volume of a sphere $= \frac{4}{3}\pi(1)^3$ [M1] $=4.18879\ cm^3$ Number of spheres $= 1520 \div 4.18879$ =362 spheres [A1] *Answer* The engineer is correct/~~wrong~~ because the total number of spheres that can be formed is 362 which is more than 360.[1]	M1 M1 M1 A1	4