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REGENT SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2024
SECONDARY ONE (G3)

NAME: _____ INDEX NUMBER: _____

MATHEMATICS **4045/01**
Paper 1 **27 September 2024**
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.

50	TARGET
PARENT'S SIGNATURE	

- 1 Arrange the following in ascending order.

$$\left(-\frac{1}{2}\right)^3, 4.916, -\sqrt{24}, 7\frac{17}{19}$$

Answer[1]

- 2 (a) Calculate $\frac{(-16)^2 + \sqrt{3.03} \times 98.9^2}{0.989 - 30.3}$.

Write your answer correct to two significant figures.

Answer[1]

- (b) (i) Express $\frac{10}{15}$ as a recurring decimal.

Answer[1]

- (ii) If $x : y = 20 : 35$ and $y : z = 15 : 20$, find $x : y : z$.

Answer[2]

- (c) Express the fraction $2\frac{5}{8}$ as a percentage.

Answer[1]

- 3 The table gives the lowest daily temperature in Hokkaido in a week in December.

Date	20	21	22	23	24	25	26
	Dec	Dec	Dec	Dec	Dec	Dec	Dec
Temperature ($^{\circ}\text{C}$)	6	0	-3	-4	-1	0	-2

- (a) Which day has the lowest daily temperature?

Answer[1]

- (b) Find the difference between the temperatures on 20 Dec and 22 Dec.

Answer $^{\circ}\text{C}$ [1]

- 4 (a) Write 5832 as a product of its prime factors in index notation.

Answer[1]

- (b) Explain why 5832 is a perfect cube.

Answer[1]

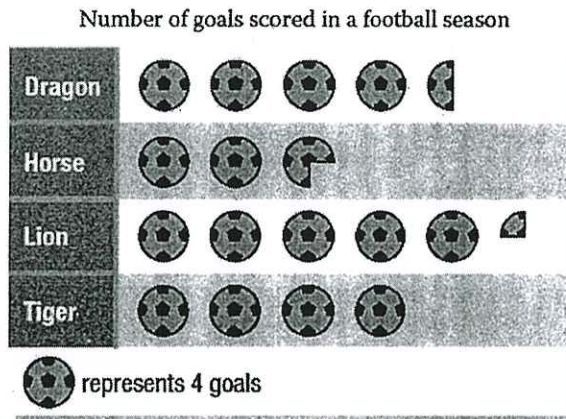
- 5 If $x = 2$, $y = -1$, $z = -2$, find the value of $y(3x - 2) + yz^2$.

Answer[2]

- 6 Solve $3(3x + 8) = 2(5x - 3)$.

Answer $x =$ [2]

- 7 The pictogram below shows the goals scored by four teams in a football season.



- (a) Which team scored the least number of goals?

Answer[1]

- (b) How many goals were scored altogether in the whole season?

Answer[1]

- (c) Express the number of goals scored by Lion team as a percentage of the total number of goals scored.

Answer[2]

8 Factorise fully

(a) $4pq + 2p^2 - 10p$,

Answer[1]

(b) $14x(y + 2) - 2x(7 + y)$.

Answer[2]

9 Simplify $\frac{2x - 5y}{2} - \frac{3x + 2y}{3}$ as a single fraction in its simplest form.

Answer.....[3]

-
- 10 (a) Find an interior angle of a hexagon.

Answer[2]

- 10 (b) A polygon has n sides. Three of its interior angles are 109° , 120° and 123° , while its remaining exterior angles are 43° each.

Find the value of n .

Answer $n =$ [3]

-
- 11 The numbers 60 and 126, written as products of their prime factors, are $60 = 2^2 \times 3 \times 5$ and

$$126 = 2 \times 3^2 \times 7.$$

- (a) Find the largest integer which is a factor of both 60 and 126.

Answer[1]

- (b) Find the smallest integer which is an exact multiple of both 60 and 126.

Answer[1]

- (c) Find the smallest possible value of x such that $60x$ is a perfect square.

Answer $x =$ [1]

- 12 Ben inherits some money. He divides the money between education funds, holiday and savings in the ratio 3 : 4 : 5 respectively.

- (a) The difference between the education funds and the savings is \$5000.
Calculate the total amount of money he inherits.

Answer \$.....[3]

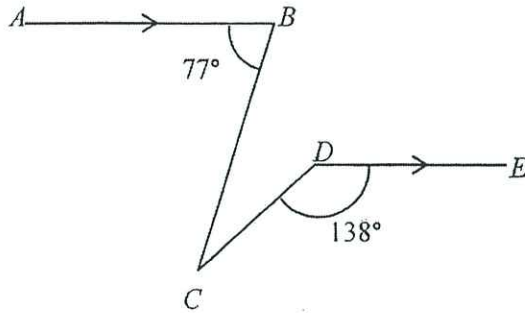
- (b) He puts the \$5000 savings into ABC bank that pays simple interest of 3.5% per annum. Calculate the total amount of money, correct to the nearest dollar in his account after 5 years.

Answer\$.....[2]

- 13 A camera costs \$1050. During the Great Singapore Sale, Mr Tan wants to buy the camera at a discount of 24%. How much does he have to pay if a 9% GST is charged?

Answer\$.....[3]

- 14 Given that angle $ABC = 77^\circ$, angle $CDE = 138^\circ$ and AB is parallel to DE , find reflex angle BCD .



Answer..... [3]

- 15 Apples in a box are arranged in 6 rows and each row consists of $(2a - 3)$ apples.

(i) Express, in its simplest form the number of apples in the box in terms of a .

Answer [1]

(ii) Find the number of apples in the box when $a = 5$.

Answer [1]

- 16 A solid cylinder has a radius of 5 cm and a length of 30 cm.

Find

- (a) the volume of the cylinder,

Answer cm^3 [2]

- (b) the surface area of the cylinder.

Answer cm^2 [3]

End Of Paper



**REGENT SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2024
SECONDARY ONE (G3)**

NAME: _____

INDEX NUMBER: _____

MATHEMATICS

4045/02

Paper 2

8 October 2024

1 hour 30 minutes

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- 1 The main gate of Istana is monitored by three security cameras.
 The first camera scans the gate every 30 seconds, the second camera scans every 24 seconds and the third camera scans every 50 seconds.
 The three cameras scan the main gate together at 6 am.
 At what time will they scan the main gate together again?

Answer [3]

- 2 Farid, a new sales employee is given a choice of any of the following rates of pay per week.

Rate A	Rate B
\$14 per hour up to 35 hours and \$16 per hour over 35 hours	\$16 per hour up to 30 hours and \$14 per hour over 30 hours

If Farid works 45 hours a week, which rate would pay him more?
 Explain your answer with working.

Answer Farid should choose rate because
 [3]

- 3 Lisa bought an air ticket to Sydney in September for \$800.
In October, the airline increased the price of the air tickets by 23%.
- (a) Find the cost of the air ticket in October.

Answer \$.....[1]

- (b) In November, there was a promotion which gave a reduction of 10% of the price of the air ticket.

If Lisa bought the air ticket in November, what is the percentage increase or decrease in the price compared to the price in September?

Answer Percentage of% [3]

- 4 At an amusement park, the cost of an adult ticket is \$ x while the cost of a child's ticket is $\frac{3}{5}$ the price of an adult ticket.

(i) Express the cost of a child's ticket in terms of x .

Answer \$.....[1]

- (ii) A family of 2 adults and 3 children went to the amusement park and paid a total of \$57 for the tickets.

Write an equation in terms of x .

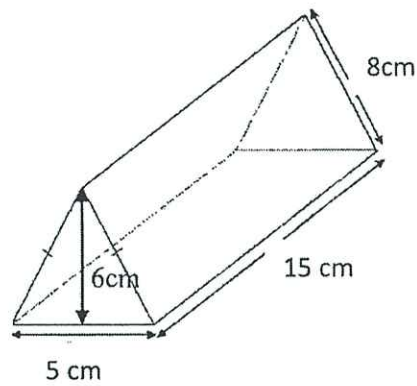
Answer \$.....[1]

- (iii) Hence, calculate the price of an adult ticket and the price of a child's ticket.

Answer Adult ticket : \$.....[2]

Child ticket : \$.....[1]

- 5 The figure below shows a prism.



- (a) Show that the volume of the prism is 225 cm^3 . [2]

- (b) If the prism is melted and recast into a cylindrical bar of radius 8 cm, find the height of the bar.

Answer cm [3]

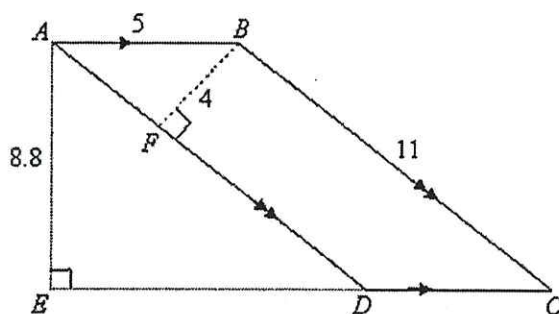
- (c) Find the total surface area of the prism.

Answer cm^2 [3]

6 Figure $ABCD$ is a parallelogram.

The perpendicular from A meets CD produced at E .

$AE = 8.8$ m, $AB = 5$ m, $BC = 11$ m and $BF = 4$ m.



Calculate

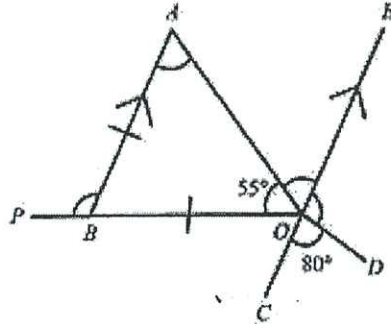
(a) the area of parallelogram $ABCD$,

Answer m^2 [2]

(b) the length of DE given that the area of trapezium $ABCDE$ is 70.4 m^2 .

Answer m [3]

- 7 Triangle ABO is an isosceles triangle.
 PBO and EOC are straight lines and AB and EC are parallel.
 Angle $COD = 80^\circ$ and $OB = AB$.



- (a) Find, giving reasons for each answer,

(i) angle PBA ,

Answer [2]

(ii) angle AOE ,

Answer [1]

(iii) angle DOE .

Answer [1]

- (b) State the conditions for $ABOE$ to be a rhombus.

Answer :

.....
[2]

8 Answer the whole of this question on a sheet of graph paper.

(a) Copy and complete the following table. [1]

x	-2	-1	0	1	2	3	4
$y = 3x + 1$	-5		1	4	7	10	13

(b) On the grid of page 9, draw the graph of $y = 3x + 1$ for $-2 \leq x \leq 4$. [2]

Use your graph, find

(c) (i) the gradient of the graph,

Answer[2]

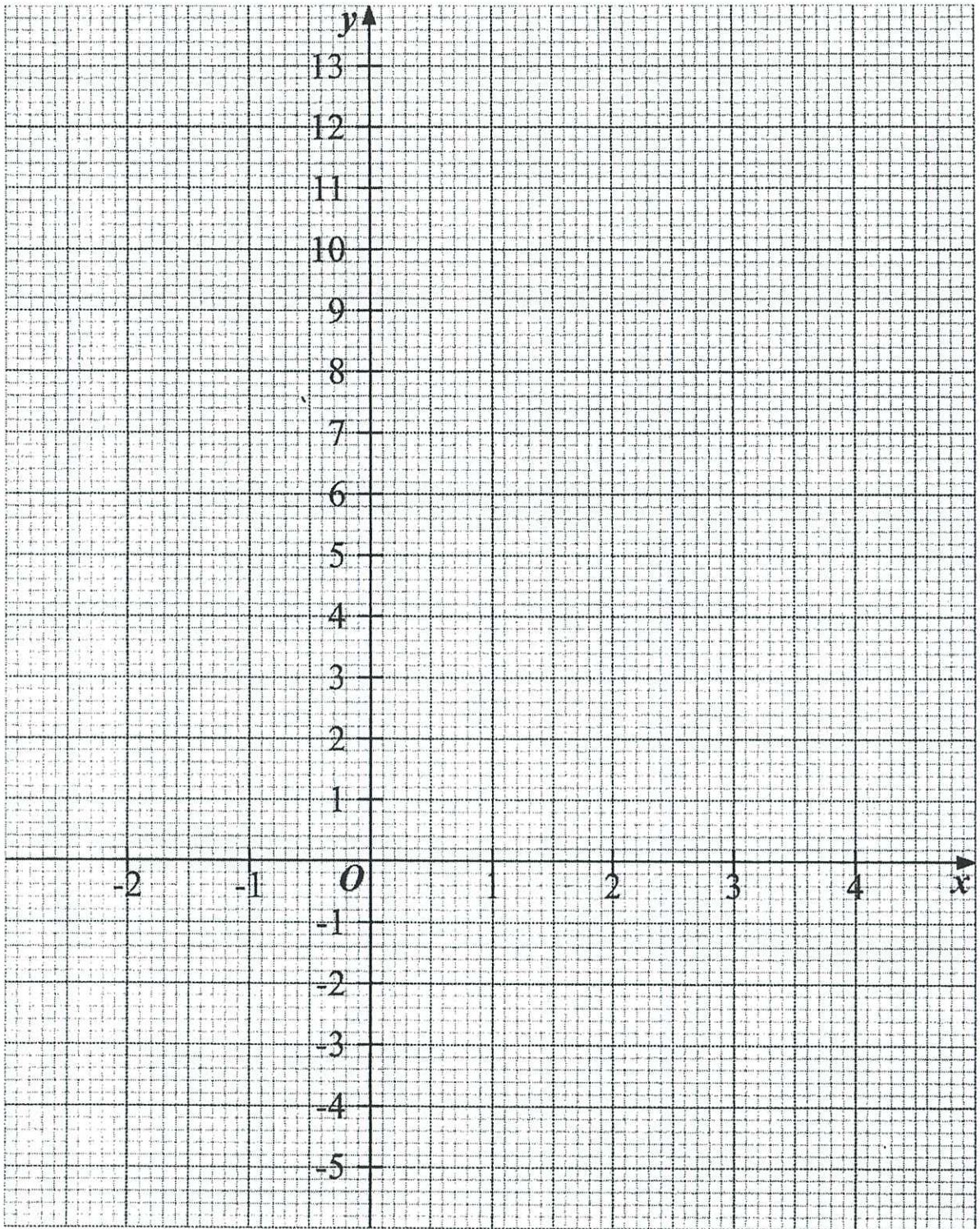
(ii) the value of y when $x = 3.2$,

Answer $y =$ [1]

(iii) the value of x when $y = 6$.

Answer $x =$ [1]

(d) On the same axes, draw the graph of $x = 0.5$. [1]



- 9 The triangle XYZ has $YZ = 10$ cm and $\angle XYZ = 50^\circ$. XY is drawn below.



- (a) Construct triangle XYZ , using the line XY . [2]
(b) Measure the largest angle.

Answer[1]

- 10 The diagram below is a representation of four patterns formed by matchsticks.



Figure 1

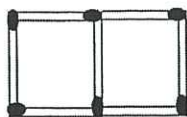


Figure 2

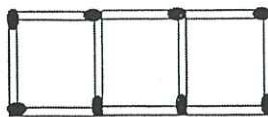


Figure 3

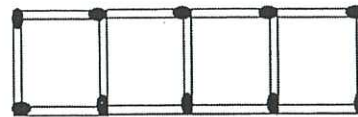


Figure 4

- (a) Draw Figure 5 in the space provided below.

[1]

- (b) Observe the table below.

Figure No.	No. of Squares	No. of Matchsticks
1	1	4
2	2	7
3	3	10
4	4	13
5	a	b
.	.	.
.	.	.
.	.	.
n	n	C

- (i) Find the values of a and b .

Answer $a = \dots\dots\dots$ [1]

$b = \dots\dots\dots$ [1]

- (ii) Write down an expression for C in terms of n .

Answer $C = \dots\dots\dots$ [1]

- (iii) Hence, calculate the number of matchsticks in the Figure 100.

Answer $C = \dots\dots\dots$ [1]

End Of Paper



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SECONDARY ONE (G3)

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INDEX NUMBER: _____

CLASS: _____

SETTER : Mrs Lily Ng

MATHEMATICS

4045/01

Paper 1

27 September 2024

1 hour 15 minutes

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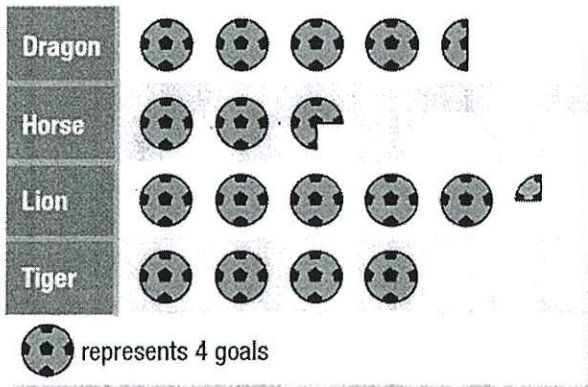
For π , use either your calculator value or 3.142.

50	TARGET
PARENT'S SIGNATURE 	

This document consists of 10 printed pages.

1	Arrange the following in ascending order. $\left(-\frac{1}{2}\right)$, 4.916 , $-\sqrt{24}$, $7\frac{17}{19}$	
	Answer $-\sqrt{24}, \left(-\frac{1}{2}\right), 4.916, 7\frac{17}{19}$[1]	
2	(a)	Calculate $\frac{(-16)^2 + \sqrt{3.03}}{0.989 - 30.3}$. Write your answer correct to two significant figures. -589.61 (5 sf) = -590
		Answer -590[1]
	(b)	(i) Express $\frac{10}{15}$ as a recurring decimal. $\frac{10}{15} = 0.\dot{6}$ B1
		Answer $0.\dot{6}$[1]
		(ii) If $x : y = 20 : 35$ and $y : z = 15 : 20$, find $x : y : z$. $x : y : z$ $20 : 35$ $15 : 20$ M1 $60 : 105 : 140$ $12 : 21 : 28$ A1
		Answer[2]
	(c)	Express the fraction $2\frac{5}{8}$ as a percentage. $2\frac{5}{8} \times 100\% = 262.5\%$ B1
		Answer 262.5%[1]

3	The table shows the lowest daily temperature in Hokkaido in a week in December.								
		Date	20 Dec	21 Dec	22 Dec	23 Dec	24 Dec	25 Dec	26 Dec
		Temperature (°C)	6	0	−3	−4	−1	0	−2
	(a)	Which date has the lowest daily temperature? Answer23 Dec.....[1]							
	(b)	Find the difference between the temperatures on 20 Dec and 22 Dec. Difference = 6 − (−3) = 9 A1 Answer9..... °C [1]							
4	(a)	Write 5832 as a product of its prime factors in index notation. $2^3 \times 3^6$ B1 Answer $2^3 \times 3^6$[1]							
	(b)	Explain why 5832 is a perfect cube. $\sqrt[3]{2^3 \times 3^6}$ M1 = 2×3^2 = 18 Since the powers of its prime factors of 5832 are powers of 3, it is a perfect cube. Answer18.....[1]							

5	If $x = 2$, $y = -1$, $z = -2$, find the value of $y(3x - 2) + yz^2$. $y(3x - 2) + yz^2$ $= (-1)(3(2) - 2) + (-1)(-2)^2 \quad \text{M1}$ $= -4 - 4$ $= -8 \quad \text{A1}$ <i>Answer</i>[2]
6	Solve $3(3x + 8) = 2(5x - 3)$. $3(3x + 8) = 2(5x - 3)$ $9x + 24 = 10x - 6 \quad \text{M1 - expansion}$ $30 = x \quad \text{A1}$ <i>Answer</i> $x =$[2]
7	The pictogram below shows the goals scored by four teams in a football season. Number of goals scored in a football season   represents 4 goals (a) Which team scored the least number of goals? <i>Answer</i>Horse.....[1] (b) How many goals were scored altogether in the whole season? <i>Answer</i>66.....[1] (c) Express the number of goals scored by Lion team as a percentage of the total number of goals scored. $\frac{24}{66} \times 100 = 36.4\%$ <i>Answer</i>%[2]

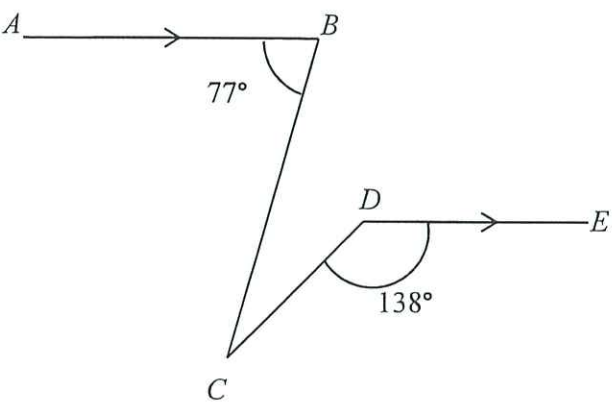
8	Factorise completely	
	(a)	$4pq + 2p^2 - 10p,$
		$2p(2q + p - 5)$ B1
		<i>Answer $2p(2q + p - 5)$[1]</i>
	(b)	$14x(y + 2) - 2x(7 + y).$
		$14x(y + 2) - 2x(7 + y)$ $= 14xy + 28x - 14x - 2xy$ M1 $= 14x + 12xy$ A1 $= 2x(7 + 6y)$ alternative
		<i>Answer $2x(7 + 6y)$[2]</i>
9	Write down as a single fraction in its simplest form $\frac{2x - 5y}{2} - \frac{3x + 2y}{3}.$	
		$\frac{2x - 5y}{2} - \frac{3x + 2y}{3} = \frac{3(2x - 5y) - 2(3x + 2y)}{6}$ M1 $= \frac{6x - 15y - 6x - 4y}{6}$ M1 $= -\frac{19}{6}y \text{ or } \frac{-19}{6}y$ A1
		<i>Answer.....[3]</i>

10	(a) Find an interior angle of a hexagon. $\frac{(6-2) \times 180}{6} \quad \text{M1}$ $= \frac{720}{6}$ $= 120 \quad \text{A1}$
	<i>Answer</i>[2]
10	(b) A polygon has n sides. Three of its interior angles are 109°, 120° and 123°, while its remaining exterior angles are 43° each. Find the value of n.
	$180^\circ - 109^\circ = 71^\circ$ $180^\circ - 120^\circ = 60^\circ \quad \text{M1 find the exterior angle}$ $180^\circ - 123^\circ = 57^\circ$ $71 + 60 + 57 + 43(n-3) = 360 \quad \text{M1 form equation for sum of exterior angles}$ $188 + 43n - 129 = 360$ $43n = 301$ $n = 7 \quad \text{A1}$ <i>Answer</i> $n =$[3]
11	Written as a product of their prime factors, $60 = 2^2 \times 3 \times 5$ and $126 = 2 \times 3^2 \times 7$.
	(a) Find the largest integer which is a factor of both 60 and 126. $\text{HCF}(60, 126) = 2 \times 3$ $= 6 \quad \text{A1}$
	<i>Answer</i>[1]

	(b)	Find the smallest integer which is an exact multiple of both 60 and 126. $\text{LCM}(60, 126) = 2^2 \times 3^2 \times 5 \times 7$ $= 1260$ A1
		Answer[1]
	(c)	Find the smallest possible value of k such that $60k$ is a perfect square. $x = 3 \times 5 = 15$ B1
		Answer $x =$[1]
12		Ben inherits some money. He divides the money between education funds, holiday and savings in the ratio 3 : 4 : 5 respectively.
	(a)	The difference between the education funds and the savings is \$5000. Calculate the total amount of money he inherits. $5 - 3 = 2 \text{ units}$ M1 2 units ---- \$5000 1 unit ---- \$2500 12 units ----- $12 \times \$2500$ M1 $= \$30\,000$ A1
		Answer \$.....[3]

End Of Paper

	(b) He puts the \$5000 savings into ABC bank that pays simple interest of 3.5% per annum. Calculate the total amount of money, correct to the nearest dollar in his account after 5 years. $I = \frac{PRT}{100}$ $= \frac{\$5000 \times 3.5 \times 5}{100}$ $= \$875 \quad \text{A1}$ Total Amount = \$5000 + \$875 $= \$5875 \quad \text{A1}$
	<i>Answer \$.....[2]</i>
13	A camera costs \$1050. During the Great Singapore Sale, Mr Tan wants to buy the camera at a discount of 24%. How much does he have to pay if a 9% GST is charged? $100 - 24 = 76 \quad \text{M1}$ $\frac{76}{100} \times 1050 = 798 \quad \text{M1}$ $\frac{109}{100} \times 798 = 869.82 \quad \text{A1}$
	<i>Answer \$.....[3]</i>

14	AB is parallel to DE. Angle $ABC = 77^\circ$ and angle $CDE = 138^\circ$ Find reflex angle BCD. 
	$\begin{aligned} \angle p &= 180^\circ - 77^\circ \text{ (int. angles)} \\ &= 103^\circ && \text{M1} \\ \angle q &= 103^\circ \text{ (vert. opp. angles)} && \text{M1} \\ \angle r &= 180^\circ - 138^\circ \text{ (angles on st. line)} \\ &= 42^\circ \\ \angle s &= 180^\circ - 42^\circ - 103^\circ \text{ (angles on st. line)} \\ &= 35^\circ \\ \text{reflex angle} &= 360^\circ - 35^\circ \text{ (angles at a point)} && \text{A1} \\ &= 325^\circ \end{aligned}$ <i>Answer</i>..... 325 [3]
15	Apples in a box are arranged in 6 rows and each row consists of $(2a - 3)$ apples.
(i)	Express, in its simplest form, the total number of apples in the box in terms of a. $\begin{aligned} \text{No. of apples} &= 6 \times (2a - 3) \\ &= 12a - 18 && \text{A1} \end{aligned}$
	<i>Answer</i> $12a - 18$ [1]
(ii)	Find the number of apples in the box when $a = 5$. $\begin{aligned} \text{No of apples} &= 12(5) - 18 \\ &= 42 && \text{A1} \end{aligned}$
	<i>Answer</i> 42 [1]

16	A solid cylinder has a radius of 5 cm and a height of 30 cm. Find
(a)	the volume of the cylinder. $\begin{aligned} \text{Volume of cylinder} &= \pi r^2 h \\ &= 3.142 \times (5)^2 \times 30 \quad \text{M1} \\ &= 2356.19449/2360 \text{ cm}^3 \quad \text{A1} \end{aligned}$ <i>Answer</i> cm³ [2]
(b)	the surface area of the cylinder, $\begin{aligned} \text{Area of curved surface} &= 2\pi r h \\ &= 2 \times 3.142 \times 30 \times 5 \\ &= 942.6 \quad \text{M1} \end{aligned}$ $\begin{aligned} \text{Surface area} &= 2\pi r^2 + 942.6 \quad \text{M1} \\ &= 157.1 + 942.6 \\ &= 1099.6/1100 \quad \text{A1} \end{aligned}$ <i>Answer</i> cm² [3]



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END-OF-YEAR EXAMINATION 2024
SECONDARY ONE (G3)

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CLASS: _____ SETTER : Mrs Lily Ng

MATHEMATICS

4045/02

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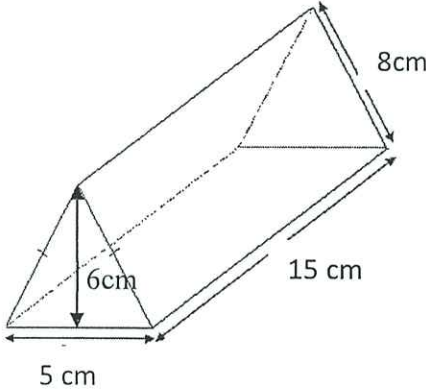
 50	TARGET
PARENT'S SIGNATURE	

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1	The main gate of Istana is monitored by three security cameras. The first camera scans the gate every 30 seconds, the second camera scans every 24 seconds and the third camera scans every 50 seconds. The three cameras scan the main gate together at 6 am. At what time will they scan the main gate together again?																
	<table><tr><td>2</td><td>30</td><td>24</td><td>50</td></tr><tr><td>3</td><td>15</td><td>12</td><td>25</td></tr><tr><td>5</td><td>5</td><td>4</td><td>25</td></tr><tr><td></td><td>1</td><td>4</td><td>5</td></tr></table> $LCM = 2 \times 3 \times 5 \times 1 \times 4 \times 5$ M1 = 600sec = 10min M1 The time will be at 6.10 am. A1	2	30	24	50	3	15	12	25	5	5	4	25		1	4	5
2	30	24	50														
3	15	12	25														
5	5	4	25														
	1	4	5														
	Answer [3]																
2	Farid, a new sales employee is given a choice of any of the following rates of pay per week. <table><tr><th>Rate A</th><th>Rate B</th></tr><tr><td>\$14 per hour up to 35 hours and \$16 per hour over 35 hours</td><td>\$16 per hour up to 30 hours and \$14 per hour over 30 hours</td></tr></table> If Farid works 45 hours a week, which rate would be a better choice? Explain your answer with working. For Rate A, $14 \times 35 + 16 \times 10$ $= 490 + 160$ $= \\$650$ per week M1 For Rate B, $16 \times 30 + 14 \times 15$ $= 480 + 210$ $= \\$690$ per week M1 Thus Farid should choose <u>rate B</u> because he will be paid <u>higher/ more</u>. A1	Rate A	Rate B	\$14 per hour up to 35 hours and \$16 per hour over 35 hours	\$16 per hour up to 30 hours and \$14 per hour over 30 hours												
Rate A	Rate B																
\$14 per hour up to 35 hours and \$16 per hour over 35 hours	\$16 per hour up to 30 hours and \$14 per hour over 30 hours																

		Answer Farid should choose rate because [3]
3		Lisa bought an air ticket to Sydney in September for \$800. In October, the airline increased the price of the air tickets by 23%.
	(a)	Find the cost of the air ticket in October. $\frac{123}{100} \times \$800 \quad \text{M1}$ $= \$984$
		Answer \$. 984 [1]
	(b)	In November, there was a promotion which gave a reduction of 10% of the price of the air ticket. If Lisa bought the air ticket in November, what is the percentage increase or decrease in the price compared to the price in September? $\text{Cost of air ticket in November} = \frac{90}{100} \times \$984 \quad \text{M1}$ $= \$885.60$ $\% \text{ increase} = \frac{\$(885.60 - 800)}{800} \times 100\% \quad \text{M1}$ $= 10.7\% \quad \text{A1}$
		Answer Percentage increase of 10.7 % [3]

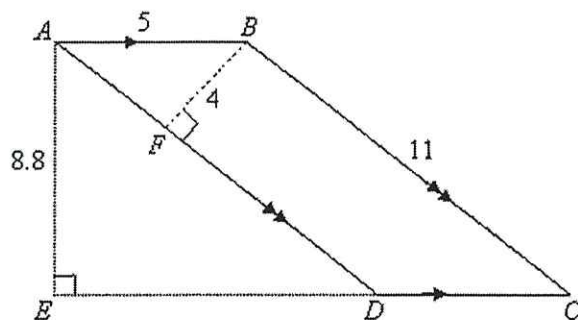
4	At an amusement park, the cost of an adult ticket is \$ x while the cost of a child's ticket is $\frac{3}{5}$ the price of an adult ticket.	
	(i)	Express the cost of a child's ticket in terms of x . Child's ticket = \$ $\frac{3x}{5}$ B1
		Answer \$..... $\frac{3x}{5}$[1]
	(ii)	A family of 2 adults and 3 children went to the amusement park and paid a total of \$57 for the tickets. Write an equation in terms of x . Solution $2x + 3\left(\frac{3x}{5}\right) = 57$ A1
		Answer $2x + 3\left(\frac{3x}{5}\right) = 57$[1]
	(iii)	Hence, calculate the price of an adult ticket and the price of a child's ticket. $2x + \frac{9}{5}x = 57$ $\frac{19}{5}x = 57$ $19x = 285$ M1 $x = 15$ Adult ticket = \$15 A1 Child's ticket = \$9 A1
		Answer Adult ticket : \$15.....[2] Child ticket : \$9.....[1]

5	The figure below shows a prism. 	
(a)	Show that the volume of the prism is 225 cm^3. [2] Volume = $(\frac{1}{2} \times 5 \times 6) \times 15$ M1 $= 225 \text{ cm}^3$ A1	
(b)	If the prism is melted and recast into a cylindrical bar of radius 8 cm, find the height of the bar. Let l be the height of cylinder. $\pi(8)^2 l = 225$ M1 $l = \frac{225}{(\pi)(64)}$ M1 $= 1.119058$ $= 1.12 \text{ cm}$ A1 (to 3 sig. figures)	
		Answer1.12..... cm [3]
(c)	Find the total surface area of the prism. Total surface area = $(2 \times \frac{1}{2} \times 5 \times 6)$ M1 $+ (8 + 8 + 5) \times 15$ M1 $= 30 + 315$ $= 345 \text{ cm}^2$ A1	
		Answer345..... cm^2 [3]

6 Figure $ABCD$ is a parallelogram.

The perpendicular from A meets CD produced at E .

$AE = 8.8$ m, $AB = 5$ m, $BC = 11$ m and $BF = 4$ m.



Calculate

(a) the area of parallelogram $ABCD$,

Area of parallelogram $ABCD$

$$= 4 \times 11 \quad \text{M1}$$

$$= 44 \text{ m}^2 \quad \text{A1}$$

Or

$$5 \times 8.8 = 44 \text{ m}^2$$

Answer44..... m^2 [2]

(b) the length of DE given that the area of trapezium $ABCDE$ is 70.4 m^2 .

$$\frac{1}{2}(5 + CE)(8.8) = 70.4$$

$$(5 + CE) = 16$$

$$CE = 11 \text{ m}$$

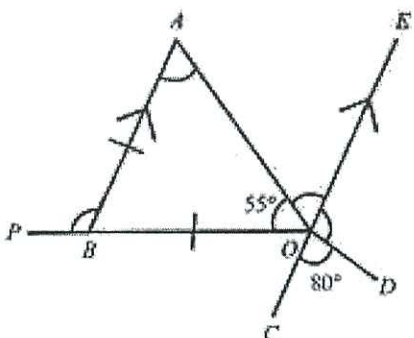
$$DE = (11 - 5) \text{ m} \\ = 6 \text{ m}$$

Alternative

Area of triangle

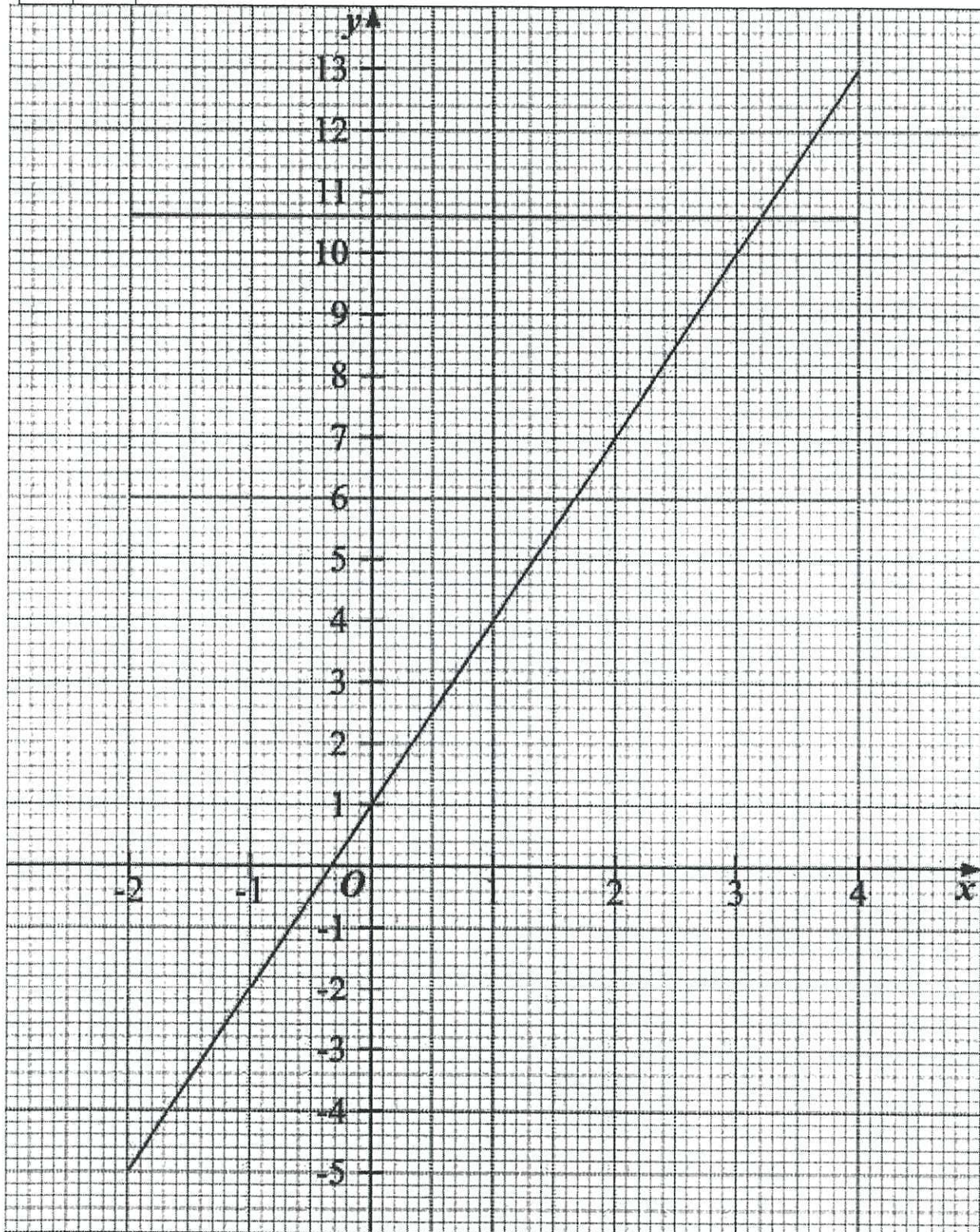
$$= 70.4 - 44$$

$$= 26.4 \quad \text{M1}$$

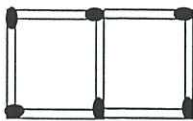
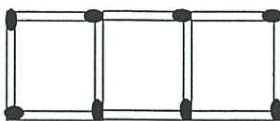
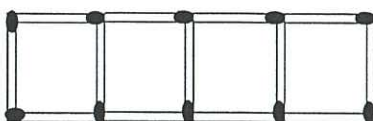
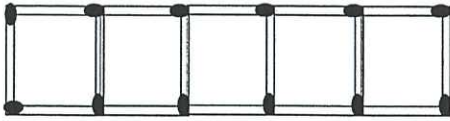
		$\frac{1}{2}(DE)(8.8) = 26.4 \quad \text{M1}$ $DE = 6m \quad \text{A1}$ <i>Answer6..... m [3]</i>
7		Triangle ABO is an isosceles triangle. PBO and EOC are straight lines and AB and EC are parallel. Angle $COD = 80^\circ$ and $OB = AB$. 
	(a)	Find, giving reasons for each answer,
		(i) angle PBA, $\angle BAO = 55^\circ$ (<i>Base $\angle$s of isos. Δ</i>) M1 $\angle PBA = 55^\circ + 55^\circ$ (<i>Ext. $\angle$ of Δ</i>) $= 110^\circ$ A1 <i>Alt ans</i> $\angle BAO = 55^\circ$ (<i>Base $\angle$s of isos. Δ</i>) M1 $\angle ABO = 180^\circ - 55^\circ - 55^\circ$ (<i>$\angle$ sum of isos. Δ</i>) $= 70^\circ$ $\angle PBA = 180^\circ - 70^\circ$ (<i>adj. $\angle$s on a straight line</i>) $= 110^\circ$ A1 <i>Answer110..... [2]</i>
		(ii) angle AOE, $\angle AOE = \angle BAO$ (<i>Alt. $\angle$s, $AB \parallel EC$</i>) $= 55^\circ$ A1 <i>Alt ans</i> $\angle AOE + 55^\circ = \angle PBA$ (<i>Corr. $\angle$s, $AB \parallel EC$</i>) $\angle AOE = 110^\circ - 55^\circ$ A1 $= 55^\circ$ <i>Answer55..... [1]</i>

		(iii) angle DOE . $\angle DOE = 180^\circ - 80^\circ$ (<i>Adj. $\angle$s on a str. line</i>) A1 $= 100^\circ$																
		Answer100..... [1]																
	(b)	State the conditions for $ABOE$ to be a rhombus.																
	Answer : $EO = AE =$ either AB or OB ; M1 OB is parallel to AE ; angle $ABO =$ angle OEA or angle $BAE =$ angle BOE . M1 (b) [2]																	
8	Answer the whole of this question on a sheet of graph paper.																	
	(a)	Copy and complete the following table. [1] <table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>$y = 3x + 1$</td><td>-5</td><td></td><td>1</td><td>4</td><td>7</td><td>10</td><td>13</td></tr></table>	x	-2	-1	0	1	2	3	4	$y = 3x + 1$	-5		1	4	7	10	13
x	-2	-1	0	1	2	3	4											
$y = 3x + 1$	-5		1	4	7	10	13											
	(b)	On the grid of page 9, draw the graph of $y = 3x + 1$ for $-2 \leq x \leq 4$. [2] P1 : plot all the points in the table G1 : smooth graph, label equation, pass through all the points. Use your graph, find																
	(c)	(i) the gradient of the graph, Gradient = $\frac{15}{5}$ M1 $= 3$ A1 Answer3.....[2]																
	(ii)	the value of y when $x = 3.2$, Answer $y = 10.6$[1]																
	(iii)	the value of x when $y = 6$. Answer $x = 1.65$[1]																

	(d)	On the same axes, draw the graph of $x = 0.5$. [1]



9	The $\triangle XYZ$ has $YZ = 10$ cm and $\angle XYZ = 50^\circ$. XY is drawn below.	
		
	(a)	Construct triangle XYZ , using the line XY . [2]
	(b)	Measure the largest angle.
		Answer78±0.5[1]

10	The diagram below is a representation of four patterns formed by matchsticks.																																	
																																		
	Figure 1	Figure 2	Figure 3	Figure 4																														
(a)	Draw Figure 5 in the space provided below.			[1]																														
																																		
(b)	Observe the table below.																																	
	<table><tr><th>Figure No.</th><th>No. of Squares</th><th>No. of Matchsticks</th></tr><tr><td>1</td><td>1</td><td>4</td></tr><tr><td>2</td><td>2</td><td>7</td></tr><tr><td>3</td><td>3</td><td>10</td></tr><tr><td>4</td><td>4</td><td>13</td></tr><tr><td>5</td><td>a</td><td>b</td></tr><tr><td>.</td><td>.</td><td>.</td></tr><tr><td>.</td><td>.</td><td>.</td></tr><tr><td>.</td><td>.</td><td>.</td></tr><tr><td>n</td><td>n</td><td>C</td></tr></table>			Figure No.	No. of Squares	No. of Matchsticks	1	1	4	2	2	7	3	3	10	4	4	13	5	a	b	.	.	.	.	.	.	.	.	.	n	n	C	
Figure No.	No. of Squares	No. of Matchsticks																																
1	1	4																																
2	2	7																																
3	3	10																																
4	4	13																																
5	a	b																																
.	.	.																																
.	.	.																																
.	.	.																																
n	n	C																																
(i)	Find the values of a and b .																																	
	Answer $a = \dots\dots\dots 5 \dots\dots\dots$ [1] Answer $b = \dots\dots\dots 16 \dots\dots\dots$ [1]																																	
(ii)	Write down an expression for C in terms of n .																																	
	$C=3n+1$																																	
	Answer $C = \dots\dots\dots$ [1]																																	
(iii)	Hence, calculate the number of matchsticks in the Figure 100.																																	
	$C=3(100)+1$ $=301$																																	
	Answer $C = 301 \dots\dots\dots$ [1]																																	

End Of Paper