



**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  $\pi$ , use either your calculator value or 3.142.

<div style="text-align: center; font-size: 2em; font-weight: bold;">50</div>	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]

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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  $y(3x - 2) + yz^2$ .

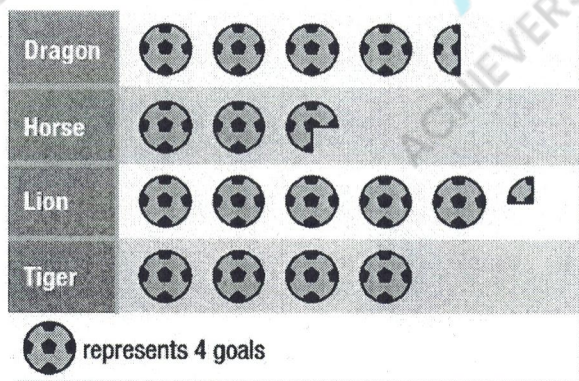
Answer .....[2]

- 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.

Number of goals scored 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  $109^\circ$ ,  $120^\circ$  and  $123^\circ$ , while its remaining exterior angles are  $43^\circ$  each.  
Find the value of  $n$ .

Answer  $n = \dots\dots\dots$ [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]

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- 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]

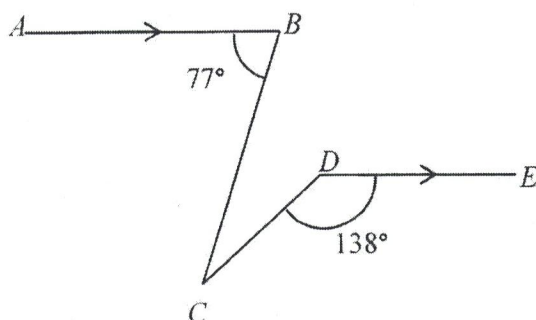
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- 13** A camera costs \$1050. During the Great Singapore Sale, Mr Tan wants to buy the camera at a discount of 24%. How much does he have to pay if a 9% GST is charged?

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 .....  $\text{cm}^3$  [2]

- (b) the surface area of the cylinder.

Answer .....  $\text{cm}^2$  [3]

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*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**

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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Answer **all** questions.

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For  $\pi$ , use either your calculator value or 3.142.

<b>50</b>	<b>TARGET</b>
<b>PARENT'S SIGNATURE</b>	

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]

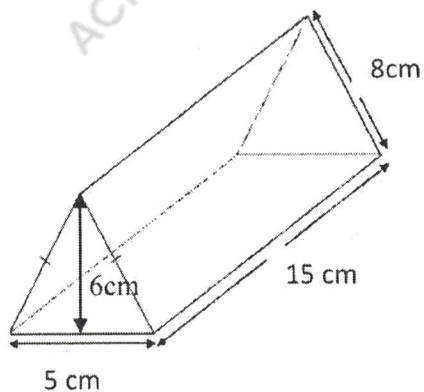
- (iii) Hence, calculate the price of an adult ticket and the price of a child's ticket.

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

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



5 The figure below shows a prism.



(a) Show that the volume of the prism is  $225 \text{ cm}^3$ .

[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]

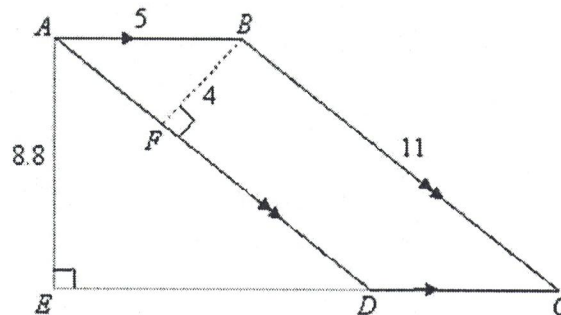
(c) Find the total surface area of the prism.

Answer .....  $\text{cm}^2$  [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

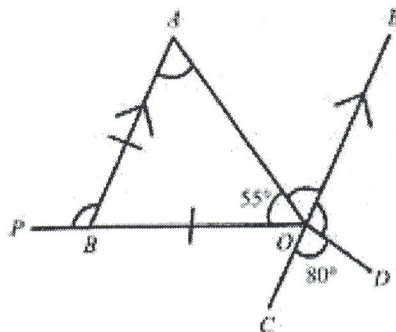
(a) the area of parallelogram  $ABCD$ ,

Answer .....  $\text{m}^2$  [2]

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

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]

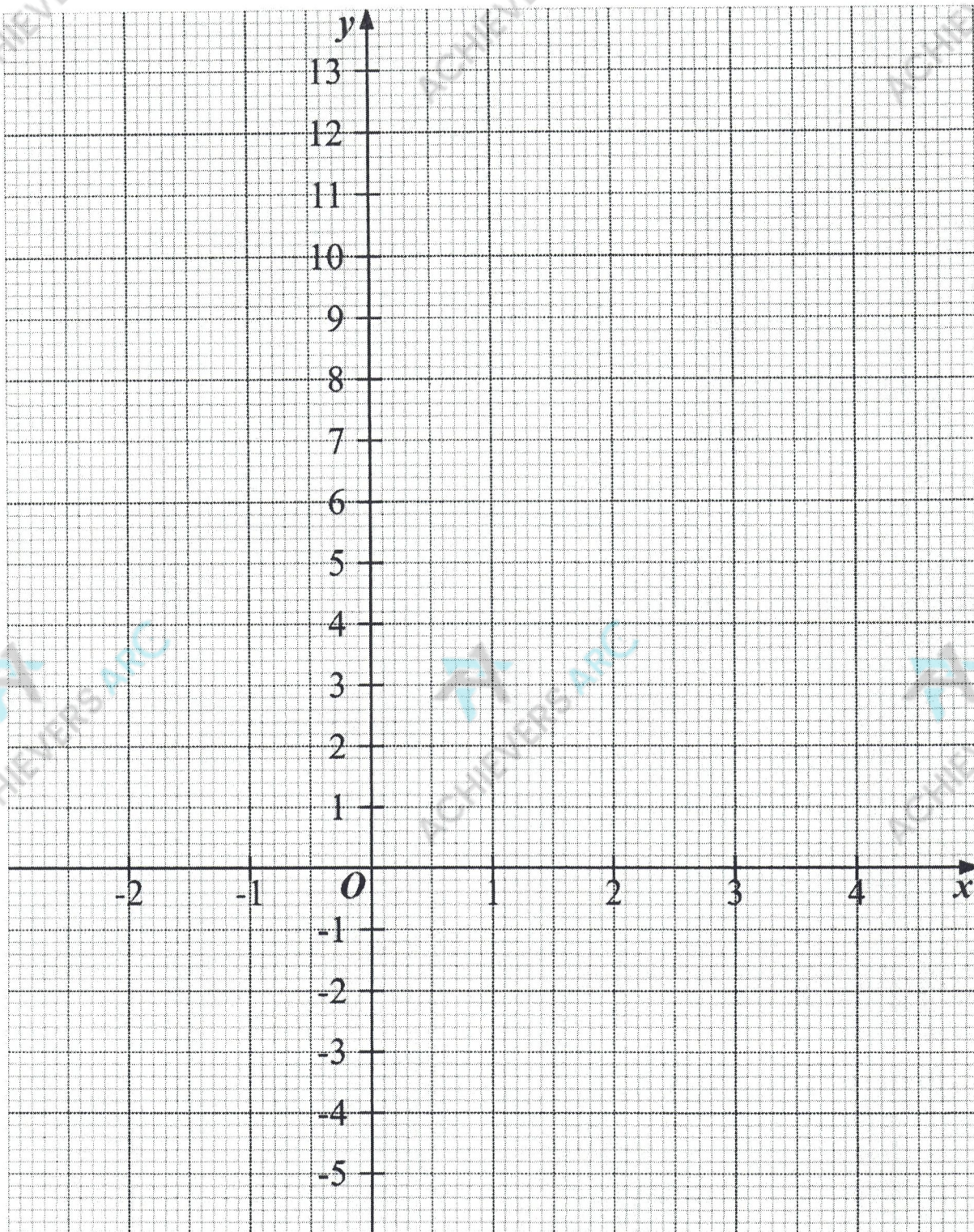
(iii) the value of  $x$  when  $y = 6$ .

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  $XY$ .  
(b) Measure the largest angle.

[2]

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]

