YUYING SECONDARY SCHOOL
END-OF-YEAR EXAMINATION
Secondary 1

NAME

CLASS REG. NO

G3 MATHEMATICS 4052

Section A

8 October 2024
2 hours

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

This paper consists of Section A and Section B.

Write your name, class and register number on the cover page of both Section A and Section B.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

Answer **all** the 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 in the space below the question.
Omission of essential working will result in loss of marks.
The number of marks for Section A and Section B is 40 each.

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 answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

For Examiner's Use	
Section A	40

1 **(a)** Express 3375 as a product of its prime factors in index notation.

Answer ..... [2]

(b) Find the smallest integer n such that $3375n$ is a perfect square.

Answer $n =$ ..... [1]

(c) Given $108 = 2^2 \times 3^3$, find the highest common factor of 3375 and 108.

Answer ..... [1]

2 **(a)** The deepest point below the ocean on Earth is 11 000 m, rounded off to 2 significant figures. Write down the lowest possible depth below sea level.

Answer ..... m [1]

(b) By writing each number correct to 1 significant figure, estimate the value of $\dfrac{4.97^2}{2.012\times3.51-\sqrt{8.98}}$.

Show your working clearly.

Answer ..... [2]

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3 **(a)** Alan's present age is 4 years younger than 3 times the present age of Syad. If Syad is x years old now, express Alan's present age in terms of x.

Answer ..... years old [1]

(b) Simplify $4(3x+9)-2x(x+2)$.

Answer ..... [2]

(c) Factorise $mn+n^2q+5n^3$.

Answer ..... [1]

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4 Solve $\frac{2x-7}{9x+2}=\frac{3}{20}$.

Answer ..... [3]

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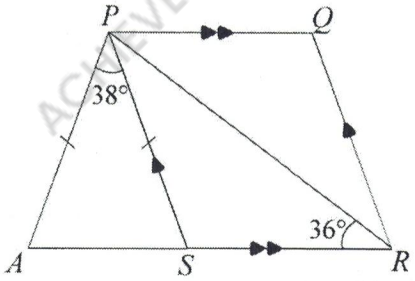
5 In the diagram, $PQRS$ is a parallelogram.
PSA is an isosceles triangle, $\angle PRS = 36°$ and $\angle APS = 38°$.



Find, giving reasons for each answer,

(a) $\angle PAS$,

Answer $\angle PAS$ = ...° [2]

(b) $\angle PSR$.

Answer $\angle PSR$ = ...° [2]

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6 Zen spent 35% and 37% of her monthly salary on food and transport respectively. She saved the rest of her money.

(a) Find the percentage of her monthly salary that she saved.

Answer .....% [1]

(b) If she saved $532, find her monthly salary.

Answer $ ..... [2]

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7 Rayden bought a motorbike for $54 000. He paid a deposit of $10 000 and the rest by monthly instalment of 4.5% interest per annum for a period of 5 years. Calculate the amount of instalment that Rayden pays monthly, rounding off your answers to the nearest cent.

Answer $ ..... [3]

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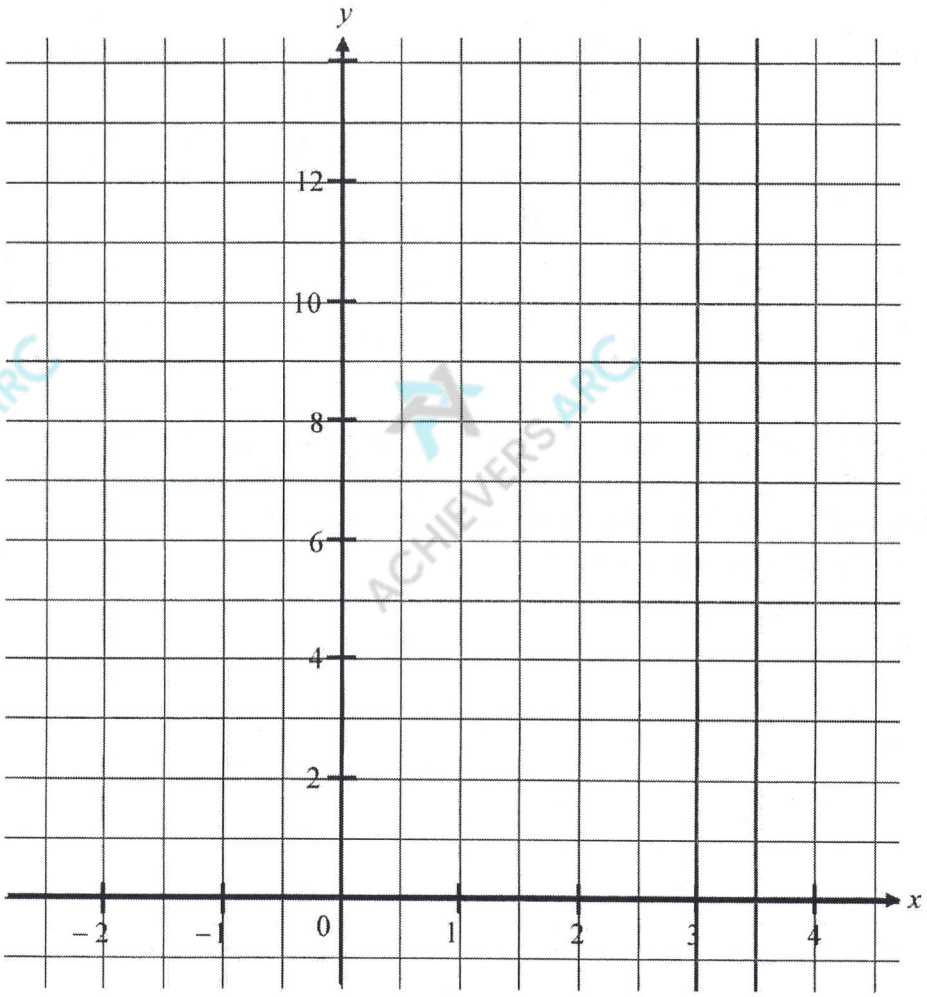
8 **(a)** Complete the table for $y = 7 - 2x$.

Answer [1]

x	-2	-1	0	1	2	3
$y = 7 - 2x$	11		7		3	1

(b) On the grid provided, draw the graph of $y = 7 - 2x$ for $-2 \leq x \leq 3$

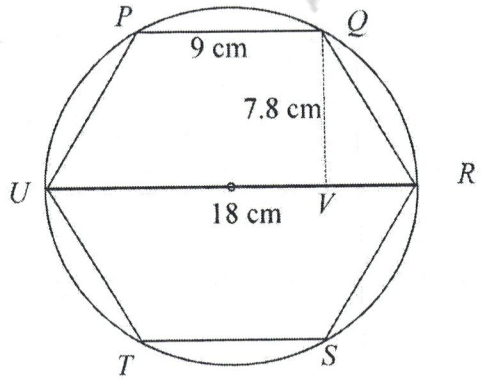
Answer [2]



(c) State the gradient of this line.

Answer ..... [1]

9 Two identical trapeziums, $PQRU$ and $RSTU$, are fixed in a circle of diameter 18 cm.
$PQ = 9$ cm and $QV = 7.8$ cm.



Calculate

(a) the area of trapezium $PQRU$,

Answer ..... cm^2 [2]

(b) the remaining area in the circle that is not covered by the two trapeziums, given $\pi = \frac{22}{7}$.

Answer ..... cm^2 [2]

10 The following list shows the raw data on the number of dogs owned by 30 families.

3	0	2	1	3	0
1	2	3	4	1	0
3	2	1	1	1	0
2	0	3	0	1	2
0	2	4	1	2	2

(a) Based on the information given above, complete the frequency table below.

Answer [1]

Number of dogs	Tally	Frequency
0	𝍸 II	7
1	𝍸 III	8
2		
3		
4	II	2

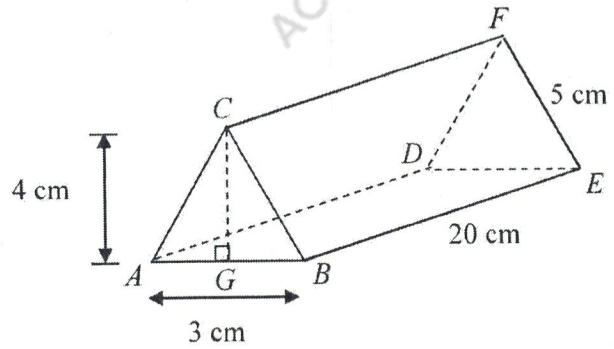
(b) Find the percentage of families who own at least 3 dogs.

Answer ..... % [2]

(c) If a pie chart is used to represent the data, what is the angle of the sector representing families with 4 dogs?

Answer .....° [1]

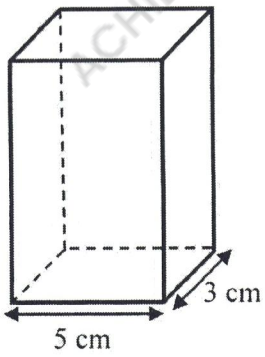
11 A chocolate box in the form of a triangular prism is shown below.



(a) Calculate the volume of the chocolate box.

Answer ..... cm^3 [2]

(b) The chocolate in the triangular box is melted to form a cuboid shown below. Find the height of the cuboid.



Answer ..... cm [2]

END OF SECTION A

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CLASS

REG. NO

G3 MATHEMATICS

4052

8 October 2024

Candidates answer on the question paper.

Section B

For Examiner's Use

Qn No	12	13	14	15	16	17	18	19
Marks								

For Examiner's Use	
Section B	40

12 **(a)** Evaluate $\left[\frac{4}{5}\times\frac{22}{7}\right]+\left(\frac{9}{10}\right)^2$ **without the use of calculator.**

Show your working clearly.

Answer ..... [2]

(b) Write the following number in descending order.

$\frac{13}{99}$, $1.4\dot{5}$, 255%, $\sqrt{\pi}$

Answer ....., ..., ..., ... [2]
Largest Smallest

13 Goody bags were packed for an old folks' home.
There were 640 packets of instant noodles, 320 cans of canned drinks and 800 packets of instant cereal.

If each goody bag was packed with the same quantity of each item, find

(a) the maximum number of goody bags that were packed,

Answer ..... [2]

(b) the quantity of each food item in each goody bag.

Answer Instant noodles .....

Canned drinks .....

Instant cereal ..... [1]

14 **(a)** Simplify each of the following.

(i) $7(x-3)$,

Answer ..... [1]

(ii) $4(n-3)-5(2n-1)$.

Answer ..... [2]

(b) Write down an algebraic expression for each of the following statements.

(i) The sum of thrice of m and the cube of n.

Answer ..... [1]

(ii) Subtract the product of $8x$ and 3 from $2y$.

Answer ..... [1]

15 Solve the following equations.

(a) $3+2x=4$,

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

(b) $4x+7=2(1-3x)$,

Answer $x =$ ..... [2]

(c) $\frac{4x-1}{3}-\frac{3-3x}{6}=\frac{1}{2}$.

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

16 (a) Singapore and Kuala Lumpur are 450 km apart.
A bus took 6 hours 30 minutes to travel from Singapore to Kuala Lumpur.
It arrived in Kuala Lumpur at 1400h.

Find

(i) the time at which the bus left Singapore,

Answer ..... h [1]

(ii) the average speed of the bus.

Answer ..... km/h [1]

(iii) A car travelled from Singapore for Kuala Lumpur at an average speed of 90 km/h. If the car left at the same time as the bus, determine whether the car or the bus will reach Kuala Lumper first? Show your workings clearly.

Answer ..... because .....

..... [3]

(b) In a band, there are 72 members.
There are 8 more boys than girls in the band.

Find

(i) the ratio of the number of boys to the number of girls in the band.

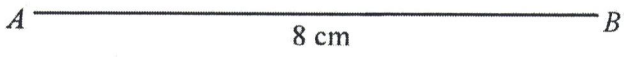
Answer ..... : ..... [1]

(ii) the number of girls who should be recruited to the band such that $\frac{2}{3}$ of the members are girls.

Answer ..... [2]

17 Construct the quadrilateral $ABCD$ such that $AB = 8$ cm, $AD = 6.5$ cm, $BC = 10$ cm, $\angle ABC = 100°$ and $\angle BAD = 60°$.
The line AB has been drawn for you.

Answer [3]



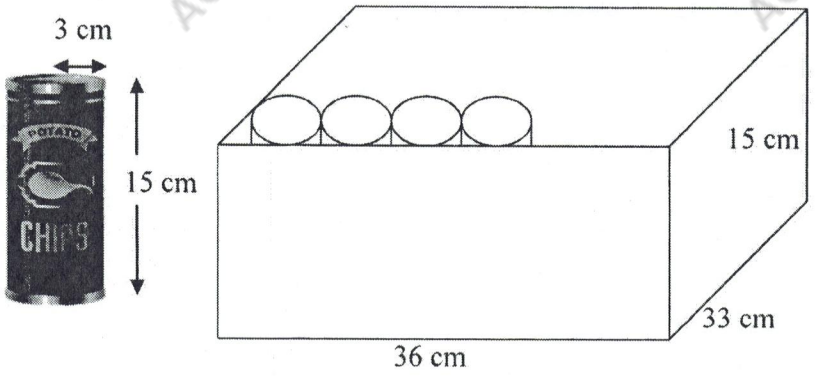
18 **(a)** A regular polygon has n sides. The size of each of its interior angles is 135°.
Find the value of n.

Answer n = ... [2]

(b) The sum of three consecutive even integers is 132.
By forming an equation, solve and find the three integers.

Answer ....., ..., ... [3]

19 Potato chips are sold in cylindrical canisters of radius 3 cm and height 15 cm.



(a) Calculate the volume of each cylindrical can.

Answer ..... cm^3 [2]

(b) To make the packaging attractive, a printed sticker is used to cover the entire curved surface of the can. Find the area of this printed sticker.

Answer ..... cm^2 [2]

(c) Canisters of potato chips are packed into a big rectangular cardboard box measuring 36 cm by 33 cm by 15 cm as shown in the diagram.

Find the greatest number of canisters that can be packed in the box.

Answer ..... [2]

END OF SECTION B