Name: .... ( ) Class: ....

ASSUMPTION ENGLISH SCHOOL
END-OF-YEAR EXAMINATION
2024

G3 MATHEMATICS (4052/01)

LEVEL : Sec 1 **DATE** : 4 October 2024

TEACHING GROUPS: TG1, 2, 5 **DURATION:** 1 Hour 15 Minutes

Additional Materials provided: NIL

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 a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
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 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 3 significant figures. Give answers in degrees to 1 decimal place.
For π, use either your calculator value or 3.142, unless the question requires the answer in terms of π.

For Examiner's use:	
Total	**/ 50**

The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

Answer **all** questions.

1 For the list of numbers below, state all

$$-6.1,\ \frac{22}{7},\ \pi,\ \sqrt{85},\ 0,\ 3\frac{2}{9}$$

(a) irrational number(s),

Answer ..... [1]

(b) recurring decimal(s).

Answer ..... [1]

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2 Use a calculator to evaluate each of the following, leaving your answer to 1 decimal place where necessary.

(a) $-11.7+\left(-5\frac{5}{6}\right)^2\times\sqrt{\frac{49}{36}}$,

Answer ..... [1]

(b) $\dfrac{4.5^2+\left(-\frac{11}{2}\right)^2}{\sqrt{9^2-8^2}}$.

Answer ..... [1]

---

3 A number x lies in between -50 and -30.
A number y lies in between -80 and -20.

Give an example for a pair of numbers x and y such that

(a) the sum of x and y is -60,

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

(b) the difference between x and y is 40,

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

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4 Determine whether 257 is a prime number or a composite number.

Answer (Circle one): prime / composite [1]

5

Plan A	Plan B
3GB at $7.80 daily	100GB for 30 days at $64.99

Colin is visiting Country **X** for 8 days. He sees the above advertisement at the airport for data roaming.

Without using a calculator and showing all relevant workings, estimate and suggest which plan Colin should choose. Explain your choice.

Answer (Circle One): Plan A / Plan B [2]

---

6 **(a)** Given $a:b=13:6$ and $b:c=9:5$, express $a:b:c$ in the simplest form.

Answer ..... : ..... : ..... [2]

(b) Circle the ratios given below that are equivalent to $a:b$. [1]

$$a^2:b^2, \quad 7a:7b, \quad a+2:b+2, \quad \frac{1}{b}:\frac{1}{a}$$

(c) Write down the next term in each of these sequences.

Sequence A: $1, -\frac{1}{3}, \frac{1}{9}, -\frac{1}{27},$ .....

Answer ..... [1]

Sequence B: 1 , 4 , 9 , 16 , ...

Answer ..... [1]

7 A quadrilateral $ABCD$ is such that $BC = 5$ cm, angle $ABC = 90°$, $AD = 10.5$ cm and $CD = 7$ cm.
The line segment AB has been drawn below.

(a) Construct the quadrilateral $ABCD$. [3]

(b) Measure and write down angle ADC.

Answer .....° [1]

8 **(a)** For the algebraic expression $2x-4y+3$, state

(i) the coefficient of y,

Answer ..... [1]

(ii) the constant term.

Answer ..... [1]

(b) Simplify the following algebraic expression.

(i) $1+2x-4y+3x-5y-7$,

Answer ..... [1]

(ii) $-2(5x+7y)+11x$,

Answer ..... [2]

(iii) $\frac{3y-10x}{3}-\frac{x+2y}{4}$.

Answer ..... [3]

(c) Factorise completely $3am^2+9m$.

Answer ..... [1]

9 **(a)** Solve each of the following equations.

(i) $5x+1=3x+6$,

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

(ii) $\dfrac{4}{5y+12}=\dfrac{2}{2y-11}$.

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

(b) It is given that $y=4x-7$. Find the value of x when $y=7$.

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

(c) The price of an adjustable table is \$210 more than a gaming chair.
Let the price of the gaming chair be \$$x$.

(i) Write down an expression, in terms of x, for the adjustable table.

Answer ..... [1]

(ii) Arya paid \$960 for 2 gaming chairs and 1 adjustable table.
By forming an equation and solving it, find the price of the adjustable table.

Answer \$..... [3]

10 **(a)** The first three figures of a sequence are as shown below.

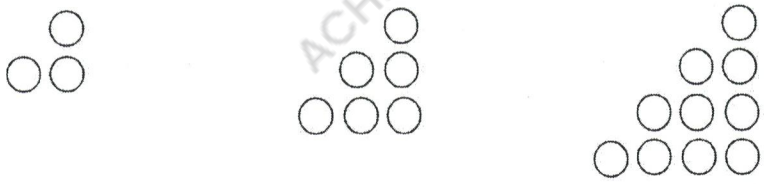


Figure 1 Figure 2 Figure 3

Draw Figure 4 in the space below.

[1]

(b) **(i)** Complete the table below.

Answer

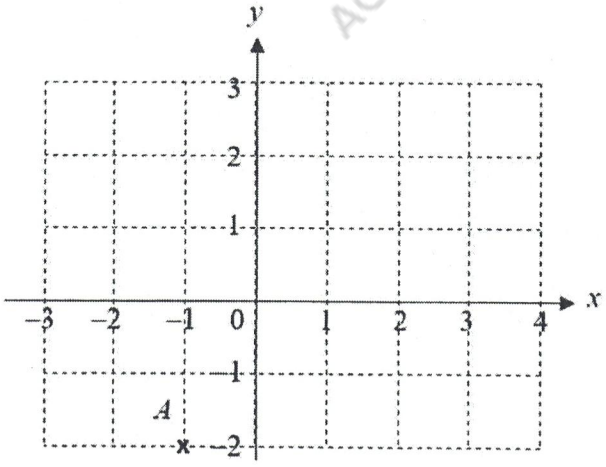
Figure n	Total Number of Circles, T_n
1	$1+2 = 3 = \frac{2\times3}{2}$
2	$1+2+3 = 6 = \frac{3\times4}{2}$
3	$1+2+3+4 = 10 = \frac{4\times5}{2}$
4	
5	
n	

[3]

(ii) Find the total number of circles in Figure 25.

Answer ..... [2]

11



(a) Write down the coordinates of point A.

Answer $A = (\ldots\ldots, \ldots\ldots)$ [1]

(b) B is the point $(3, -2)$. State the gradient of AB.

Answer ..... [1]

(c) To draw the graph $y = 0.5x + 1$, the table of values below is used.

x	−2	0	2
$y = 0.5x + 1$	a	1	2

(i) Calculate the value of a.

Answer $a =$ ..... [1]

(ii) On the grid above, draw the graph of $y = 0.5x + 1$. [2]

(iii) Using the same grids, draw another line with the same gradient as $y = 0.5x + 1$ passing through the origin.

[1]

- End of Paper -

Name: .... ( ) Class: ....

ASSUMPTION ENGLISH SCHOOL
END-OF-YEAR EXAMINATION
2024

G3 MATHEMATICS (4052/02)

LEVEL : Sec 1 **DATE** : 8 October 2024

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Answer **all** questions.

1 **(a)** By converting $\left(\frac{5}{7}\right)^3$ into a decimal, express the answer correct to

(i) 1 significant figure.

Answer ..... [1]

(ii) 3 significant figures.

Answer ..... [1]

(b) In 2024, the population in Singapore is approximately 5 832 000, correct to four significant figures.

Write down

(i) the greatest possible number of people,

Answer ..... [1]

(ii) the smallest possible number of people.

Answer ..... [1]

2 **(a)** When written as a product of their prime factors,

$$p = 2^6 \times 3^3$$
$$q = 2 \times 3^2 \times 5^3 \times 11$$

Find, **as a product of their prime factors in index notation,**

(i) the value of the cube root of p,

Answer ..... [1]

(ii) the highest common factor of p and q,

Answer ..... [1]

(iii) the smallest value of k such that kq is a perfect square.

Answer ..... [1]

(b) Two security cameras monitor the corridor of a school.

The first camera scans every 14 s.

The second camera scans every 35 s.

Calculate the total number of times both cameras scan together in 14 minutes.

Answer ..... [2]

3 The sum of three consecutive positive odd integers is 153. Given that the middle odd integer is x,

(a) express the smallest and largest odd integer in terms of x.

Answer Smallest odd integer:..... , largest odd integer:..... [1]

(b) Form an equation in x and solve the equation to find the three odd integers.

Answer ..... [3]

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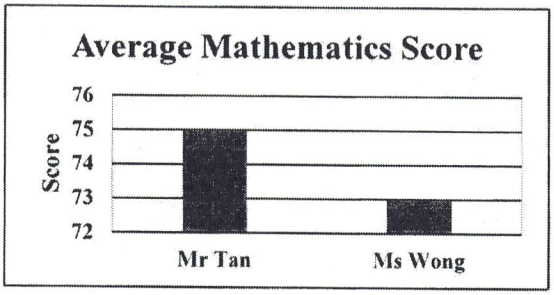
4 **(a)** The bar graph below shows Mr Tan's and Ms Wong's average class scores for a particular mathematics test.



State one aspect of the graphs that may be misleading and explain how this may lead to Mr Tan's misinterpretation of the test results.

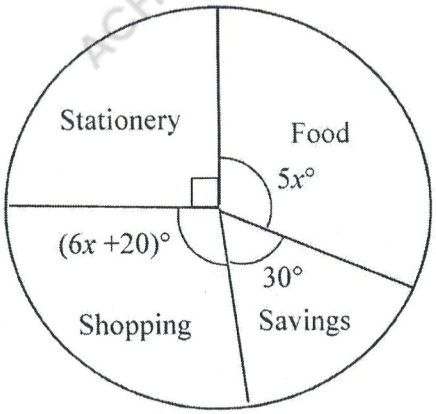
Answer .....

.....

.....

..... [2]

(b) The pie chart below shows Rachael's total spendings over one particular weekend.



(i) Find the ratio of Rachael's savings to her total spendings in the simplest form.

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

(ii) Find the value of x.

Answer x = ... [2]

(iii) Given that she spent \$77 on shopping, calculate her total spendings for that weekend.

Answer \$..... [2]

5 **(a)** Convert 80 m/s to km/h.

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

(b) On a trip, Paul drove at a speed of 80 km/h for 1 hour and 45 minutes.

He stopped to rest for x hours and continued to drive at 110 km/h for another 2 hours.

(i) Calculate the total distance travelled.

Answer ..... km [2]

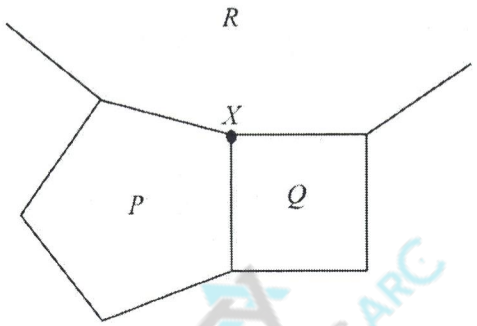
(ii) Given that his average speed for the entire trip was 90 km/h, find the value of x.

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

6 **(a)** Calculate the size of each interior angle of a regular pentagon.

Answer .....° [2]

(b) In the diagram below, P is regular pentagon, Q is a square and R is a regular polygon.
The three regular polygons fit together at X.



Using your answer in part **(a)**, find the number of sides of the regular polygon R.

Answer ..... [3]

7 **(a)** Karen's weekly allowance was \$20 and \$36 in Primary 6 and Secondary 1 respectively. Find the percentage increase in her allowance.

Answer .....% [2]

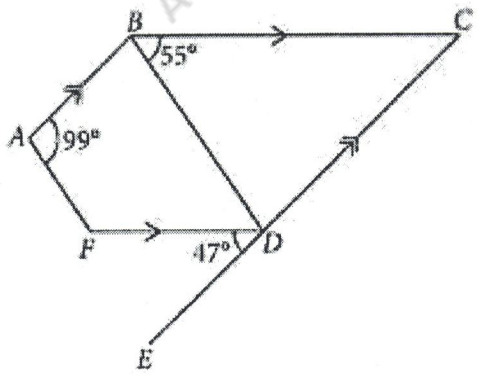
(b) (i) A shop sold a LED TV at \$3423.70 after offering a discount of 27%. Calculate the marked price of the LED TV before discount.

Answer \$..... [2]

(ii) The selling price of that TV, \$3423.70, was inclusive of a 9% Goods and Service Tax (GST). Find the amount of GST charged.

Answer \$..... [2]

8 In the diagram below, AB is parallel to EDC and BC is parallel to FD. Angle $CBD = 55°$, angle $FDE = 47°$ and angle $BAF = 99°$.



(a) Calculate

(i) angle BCD,

Answer .....° [1]

(ii) angle ABD,

Answer .....° [2]

(iii) angle AFD.

Answer .....° [2]

(b) Explain whether $ABDF$ is a trapezium.

Answer .....

.....

.....

..... [2]

9 The exchange rate between Singapore dollars ($) and euros (€) is $1 = €0.68 .

The exchange rate between pounds (£) and Singapore dollars is £1 = $1.72 .

Samuel is planning a trip to Europe. He finds these hotel prices on a website.

London hotel £165 per night Paris hotel €165 per night

(a) By comparing the exchange rates, explain whether the hotel in London or Paris cost more per night.

Answer ..... [2]

(b) Samuel books 3 nights in the hotel in London and 4 nights in the hotel in Paris.

He wishes to pay using one of his credit cards. Each credit card charges a conversion fee for the currency conversion to Singapore dollars and the charges are shown below.

City Bank credit card
• 2.2% currency conversion fee • Get $50 off your bill for spendings above $1800

Best Bank credit card
1.8% currency conversion fee

Explain with clear working which credit card Samuel should use to pay for his hotel stays.

Answer City Bank / Best Bank [5]

(Circle the correct answer)

~ End of paper ~