

Visit
FREETESTPAPER.com
for more papers



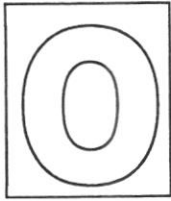
Website: freetestpaper.com



[Facebook.com/freetestpaper](https://www.facebook.com/freetestpaper)



[Twitter.com/freetestpaper](https://www.twitter.com/freetestpaper)



FAJAR SECONDARY SCHOOL 2021 END-OF-YEAR EXAMINATIONS SECONDARY 1 EXPRESS

CANDIDATE
NAME

CLASS

--	--	--

INDEX
NUMBER

--	--

MATHEMATICS

4048/01

Paper 1

6 October 2021
1 hour 15 minutes

Setter: Mr Lim Yeun Chen

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 pencil for any diagrams, graphs, tables or rough working.
Do not use staples, paper clips, 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 three significant figures. Give answers in degrees to one decimal place. For π , use either your calculator value or 3.142, unless the question requires the answer in terms of π .

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [] at the end of each question or part question.

The total of the marks for this paper is **50**.

For Examiner's Use	
Total	50

Do not open this document till permission is given.

This document consists of **11** printed pages and **1** blank page.

Mathematical Formulae*Compound interest*

$$\text{Total amount} = P \left(1 + \frac{r}{100} \right)^n$$

Mensuration

$$\text{Curved surface area of a cone} = \pi r l$$

$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Volume of a sphere} = \frac{4}{3} \pi r^3$$

$$\text{Area of triangle } ABC = \frac{1}{2} ab \sin C$$

$$\text{Arc length} = r\theta, \text{ where } \theta \text{ is in radians}$$

$$\text{Sector area} = \frac{1}{2} r^2 \theta, \text{ where } \theta \text{ is in radians}$$

Trigonometry

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Statistics

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\text{Standard deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f} \right)^2}$$

Answer **all** the questions.

- 1 Write the following in order of size, smallest first.

$$\frac{38}{47}, \sqrt{0.64}, 0.72^{\frac{2}{3}}, 0.80\dot{8}$$

Answer,,, [2]

- 2 Simplify

(a) $5a - 2(-3a + b)$,

Answer [1]

(b) $\frac{2x+1}{3} - \frac{x}{6}$.

Answer [2]

- 3 The usual price of a laptop is \$1200. During a sale, the price of the laptop becomes \$900. What is the percentage decrease in the price of the laptop?

Answer % [2]

[Turn over

- 4 In a sequence, the same number is subtracted each time to obtain the next term. The first five terms of the sequence are

$$56 \quad x \quad y \quad z \quad 32.$$

- (a) Find the values of x , y and z .

Answer $x = \dots\dots\dots$

$y = \dots\dots\dots$

$z = \dots\dots\dots$ [2]

- (b) Write down an expression for the n th term of this sequence in terms of n .

Answer $\dots\dots\dots$ [1]

- (c) Explain why -283 is not a term of the sequence.

Answer $\dots\dots\dots$

$\dots\dots\dots$

$\dots\dots\dots$ [1]

5 Factorise

(a) $x(2 - y) + 13(2 - y),$

Answer $\dots\dots\dots$ [1]

(b) $24x^2y - 6xy.$

Answer $\dots\dots\dots$ [1]

- 6 At 0800, Allen, Bala and Zoe started jogging from the starting point of a 200 m circular track. Allen took 100 seconds, Bala took 35 seconds and Zoe took 42 seconds to complete one round.
Find the time they would next meet again at the starting point, if they continued jogging in the same direction at constant speed?

Answer [3]

- 7 Solve

(a) $3p = -39$,

Answer $p =$ [1]

(b) $15q - 24 = 31 + 3q$.

Answer $q =$ [2]

[Turn over

- 8 (a) By rounding each number to 1 significant figure, estimate the value of $\frac{1986 \times 6.38}{442.5 - 242.5}$.

You must show your working.

Answer [2]

- (b) Calculate the exact value of $\frac{1986 \times 6.38}{442.5 - 242.5}$.

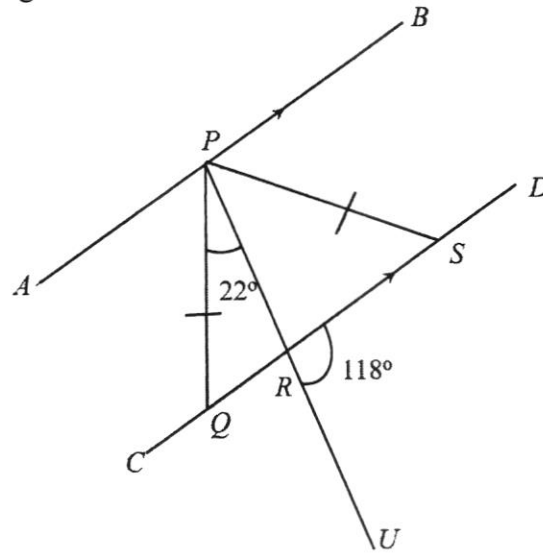
State whether your estimation in part (a) is an under or over estimate.

Answer [2]

- 9 Three of the exterior angles of a polygon with n sides are 60° , 45° and 75° .
The remaining exterior angles are each 30° .
Calculate the value of n .

Answer $n =$ [3]

- 10 In the diagram, APB and PRQ is a straight line, AB is parallel to CD and $PQ=PS$. Angle $QPR=22^\circ$ and angle $DRU=118^\circ$.



Find

- (a) angle PQR ,

Answer [2]

- (b) angle BPS ,

Answer [1]

- (c) reflex angle PSD .

Answer [2]

[Turn over

- 11** Mr Chai bought 25 markers. The red markers cost 30¢ each and the blue markers cost 45¢ each.

(a) If there are x red markers, write down and simplify an expression in x for,

(i) the cost of the red markers,

Answer ¢ [1]

(ii) the cost of the blue markers.

Answer ¢ [1]

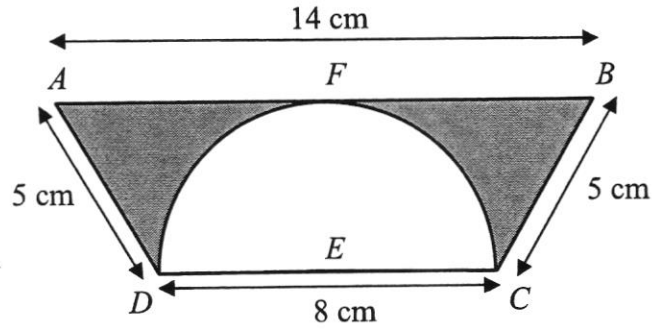
(b) (i) Find the total cost of markers in term of x .

Answer [1]

(ii) The total cost of 25 markers was \$9.45
Find the number of blue markers.

Answer [3]

- 12 The figure below shows trapezium $ABCD$ and semicircle DFC .
 $AB = 14$ cm, $BC = 5$ cm and $AD = 5$ cm. The diameter of the circle E is 8 cm.



Calculate

- (a) the area of the shaded region,

Answercm² [3]

- (b) the perimeter of the shaded region.

Answercm [2]

[Turn over

- 13 A survey was conducted on a class of 25 pupils to find out the number of hours each student spent using computer daily. The results are shown in the table below.

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

- (a) Complete the frequency table.

[2]

Number of hours spent using computer	Tally	Number of students
1		
2		
3		
4		
	Total	25

- (b) Calculate the average number of hours each student spent using computer. Give your answer in hours.

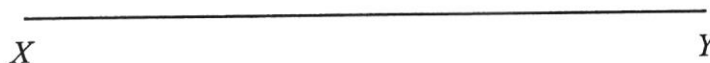
Answer hours [2]

- (c) Students are recommended to spend a maximum of $1\frac{1}{2}$ hours on the computer daily. Find the percentage of students who follow the recommended usage hours.

Answer % [1]

- 14 (a) Construct triangle XYZ , where $XZ = 10$ cm and $\angle XYZ = 85^\circ$.
 XY has already been drawn.

[2]

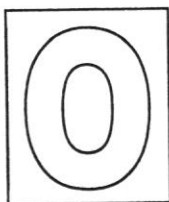
Answer

- (b) Measure and write down the length of YZ .

Answercm [1]

END OF PAPER

[Turn over



FAJAR SECONDARY SCHOOL
2021 END-OF-YEAR EXAMINATIONS
SECONDARY 1 EXPRESS

CANDIDATE
NAME

CLASS

--	--	--

INDEX
NUMBER

--	--

MATHEMATICS

4048/02

Paper 2

8 October 2021
1 hour 15 minutes

Setter: Mr Lim Yeun Chen

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.
 Write in dark blue or black pen on both sides of the paper.
 You may use pencil for any diagrams, graphs, tables or rough working.
 Do not use staples, paper clips, 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 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, unless the question requires the answer in terms of π .

At the end of the examination, fasten all your work securely together.

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

The total of the marks for this paper is **50**.

For Examiner's Use	
Total	50

Do not open this document till permission is given.

This document consists of **13** printed pages and **1** blank page.

Mathematical Formulae*Compound interest*

$$\text{Total amount} = P \left(1 + \frac{r}{100} \right)^n$$

Mensuration

$$\text{Curved surface area of a cone} = \pi r l$$

$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Volume of a sphere} = \frac{4}{3} \pi r^3$$

$$\text{Area of triangle } ABC = \frac{1}{2} ab \sin C$$

$$\text{Arc length} = r\theta, \text{ where } \theta \text{ is in radians}$$

$$\text{Sector area} = \frac{1}{2} r^2 \theta, \text{ where } \theta \text{ is in radians}$$

Trigonometry

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Statistics

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\text{Standard deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f} \right)^2}$$

Answer **all** the questions.

1 (a) Without the use of a calculator, evaluate

(i) $\{-4 - [9 + (-3)]^2\} \times (-4)$

Answer [2]

(ii) $1\frac{1}{9} - \frac{1}{3} \div \left[\left(\frac{1}{8} - \frac{5}{16} \right) \times 3 \right]$

Answer [3]

(b) (i) Calculate $\frac{\sqrt{39} + 6.5}{22 - 2.7^3}$.

Write down the first five digits on your calculator display.

Answer [1]

(ii) Write your answer to part (a) correct to three decimal places.

Answer [1]

- 2 (a) Express 504 as a product of its prime factors.

Answer [1]

- (b) Given that $504k$ is a perfect cube, write down the smallest possible integer k .

Answer $k =$ [1]

- 3 (a) It is given that $d = \frac{b^2 - 3a}{2ac}$.

Find the value of d when $a = 4$, $b = -5$ and $c = \frac{1}{4}$.

Answer [2]

- (b) Solve the equation $2 = \frac{2x-1}{3} + \frac{3(1-5x)}{4}$.

Answer [3]

- 4 (a) Given that $x : y = 0.3 : 0.5$ and $y : z = 2 : 7$, find $x : y : z$.

Answer : : [2]

- (b) In a school election for the head prefect, there were 3 candidates A , B , and C .
Given that there were 1500 voters and the votes for the 3 candidates were divided in the ratio of $11 : 7 : 2$.

Calculate

- (i) the number of votes that the winning candidate received,

Answer [2]

- (ii) the difference between the highest number and lowest number of votes.

Answer [2]

- 5 An airplane flying directly from Singapore to Seoul within the same day travels an average speed of 861 km/h.
The table below shows the actual departure time from Singapore and the arrival time in Seoul (in Singapore time) for a particular flight.

Venue	Singapore (Departure)	Seoul (Arrival)
Time in Singapore	09 45	15 15

- (a) Find the flight distance between Singapore and Seoul. Give your answer in kilometres to the nearest integer.

Answer km [3]

- (b) On a particular day, due to bad weather conditions, the airplane flew at an average speed of 750 km/h to Taipei and stopped over for an hour before completing the journey to Seoul. The flight distance from Singapore to Taipei is 3248 km.
At what time did the airplane leave Taipei for Seoul?

Answer [3]

- 6 A LCD Television advertisement in the month of October is as shown below.

Sale!! NOW \$3 999 Payment Modes Cash Price: \$3 999 or Hire Purchase: 25% deposit + \$140 for 24 months

- (a) A salesman will receive a commission of 2% of the sale price for any LCD Television sold using cash payment.
Calculate the commission he will earn if he manages to sell 100 LCD Television in October.

Answer \$..... [2]

- (b) Mr Chua decides to purchase a LCD Television by hire purchase.
How much more does Mr Chua have to pay if he buys by hire purchase, instead of paying cash?

Answer \$..... [2]

- 7 Valerie's savings is represented by the following equation $y = 10x + 5$.
The table below shows the number of weeks, x , and her savings, \$ y , in her saving jar after each week.

Number of weeks, x	0	1	2	3	4	5	6
Savings, \$ y	5	15	p	35	45	55	65

- (a) Find the value of p .

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

- (b) Using a scale of 2 cm represent 1 week, draw a horizontal x -axis for $0 \leq x \leq 6$.
Using a scale of 2 cm represent \$10, draw a vertical y -axis for $0 \leq y \leq 70$.
On the grid opposite, draw the graph of $y = 10x + 5$. [3]

- (c) Valerie has plans to buy a new bag that cost \$52.
Use your graph, find the number of **whole** weeks she has to save in order to afford the bag.

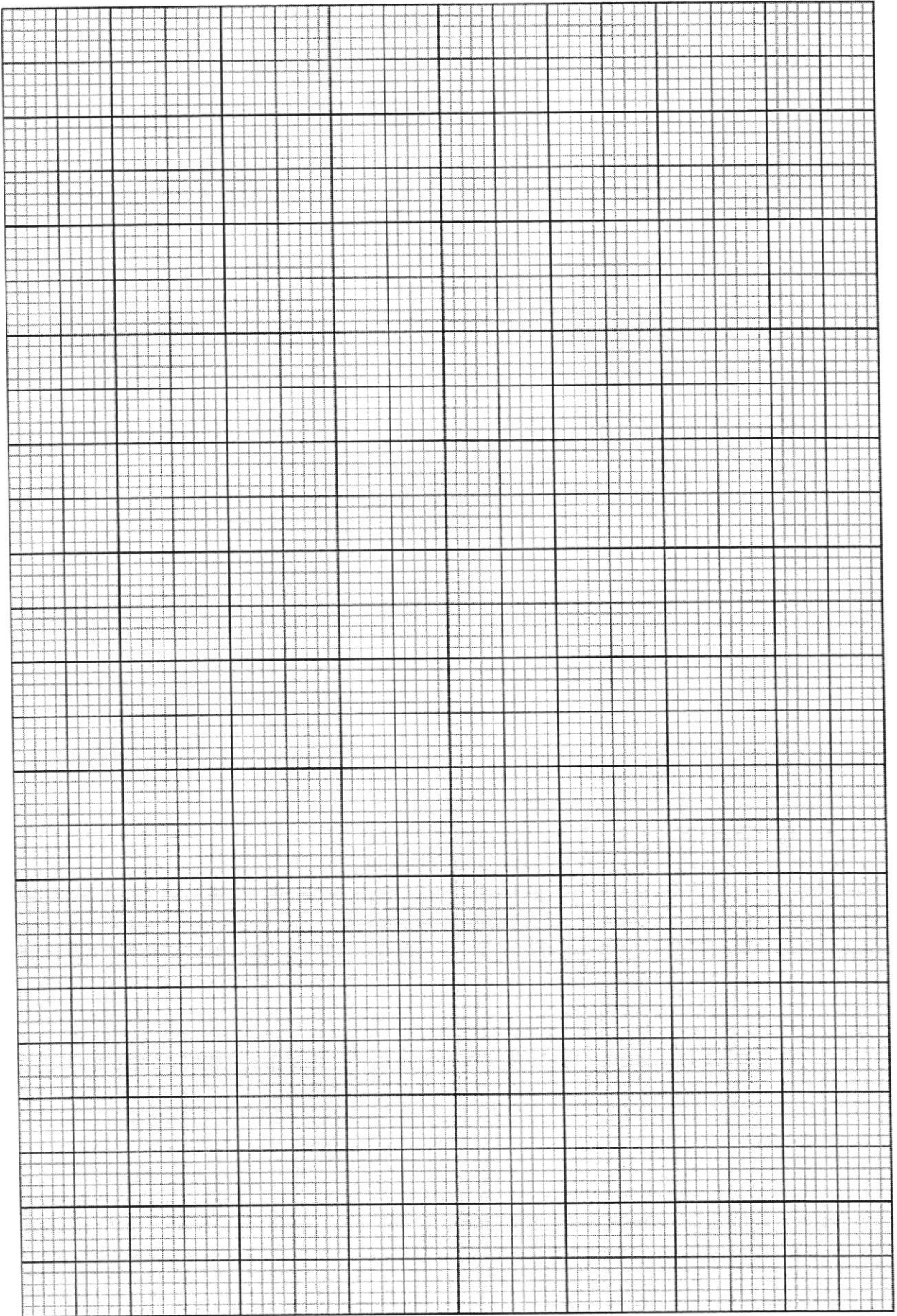
Answer $\dots\dots\dots$ [1]

- (d) (i) Use your graph to find the gradient of the graph.

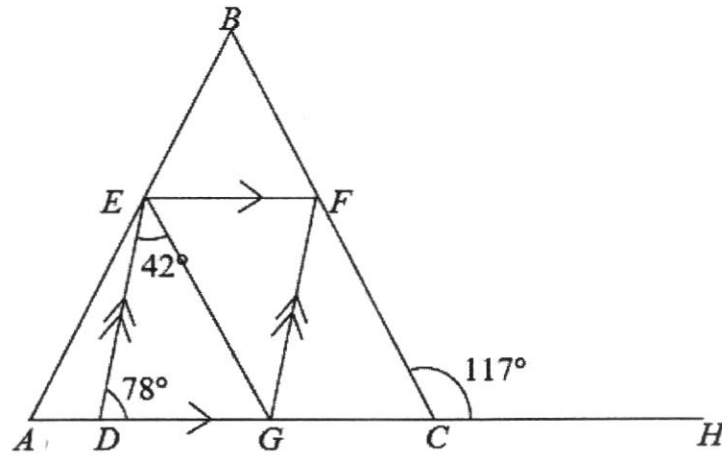
Answer $\dots\dots\dots$ [1]

- (ii) Explain what the gradient of the graph represents.

Answer $\dots\dots\dots$
 $\dots\dots\dots$ [1]



- 8 In the diagram below, ABC is a triangle and $DEFG$ is a parallelogram.
 $\angle EDG = 78^\circ$, $\angle DEG = 42^\circ$ and $\angle BCH = 117^\circ$.



(a) Calculate

(i) angle EFG ,

Answer $^\circ$ [1]

(ii) angle GFC ,

Answer $^\circ$ [2]

(iii) angle EGC .

Answer° [2]

(b) Explain whether BC is parallel to EG .

Answer BC is to EG because.....

.....

..... [1]

- 9 (a) At a shop, a salesman sells a pair of sunglasses to Aileen for \$359.
He makes a loss of 5% on the cost price.
Calculate the cost price of the pair of sunglasses.

Answer \$ [2]

- (b) (i) Aileen also wants to buy a pouch. The marked price of the pouch is \$140.
The shop offers her a 14% discount.
Calculate the total amount she has to pay for the sunglasses and pouch.

Answer \$ [2]

- (ii) Before she decides, she wants to find out the price of the same items from an online shopping site in the United States.
The selling price of the pouch is 90 USD.
The selling price of the pair of sunglasses is 250 USD.
If she pays using credit card, the credit card company converts the prices to Singapore dollars based on the table shown below:

Currency exchange rate for using credit card	
Country	Rates
Great Britain	1.885 SGD = 1 GBP
New Zealand	0.95 SGD = 1 NZD
United States	1.359 SGD = 1 USD
Credit card charges for currency conversion	1.90 %

For purchases	Shipping Charges
below 299 USD	2.99 USD
below 399 USD	7.99 USD

Determine if Aileen should purchase the items from Singapore or online.
Show your workings clearly.

Answer for Q9(b)(ii)

.....
..... [3]

END OF PAPER

FAJAR SECONDARY SCHOOL
2021 END-OF-YEAR EXAMINATIONS
SECONDARY 1E MATHEMATICS
PAPER 1

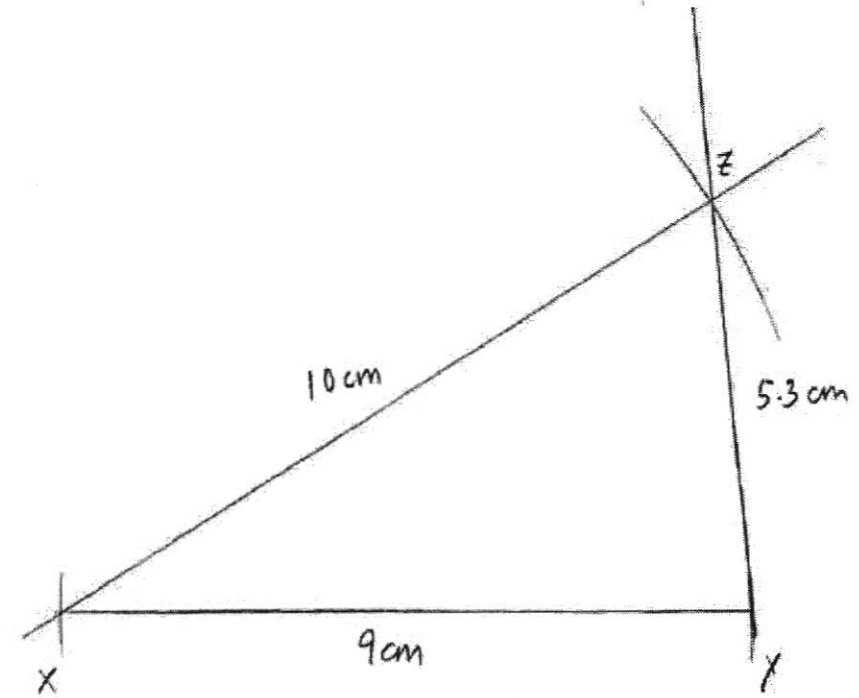
MARK SCHEME

Prepared by: Mr Lim Yeun Chen

1		$\sqrt{0.64}, 0.72^{\frac{2}{3}}, \frac{38}{47}, 0.80\dot{8}$	B2	B1 for 3 correct																												
2	(a)	$11a - 2b$	B1																													
	(b)	$\frac{2x+1}{3} - \frac{x}{6} = \frac{2(2x+1)}{6} - \frac{x}{6}$ $= \frac{4x+2-x}{6}$ $= \frac{3x+2}{6}$	M1 A1	For single fraction																												
3		Percentage decrease = $\frac{\$1200 - 900}{\$1200} \times 100\%$ $= 25\%$	M1 A1																													
4	(a)	$x = 50$ $y = 44$ $z = 38$	B2	B1 for 2 correct																												
	(b)	$T_n = 62 - 6n$ Accept $2(31 - 3n)$ and $-6(n - 1) + 56$	B1																													
	(c)	$62 - 6n = -283$ $-6n = -345$ $n = 57.5$ Since $n = 57.5$ is not a whole number/positive integer, -283 is not a term of this sequence.	B1	With conclusion if calculation is made																												
5	(a)	$x(2 - y) + 13(2 - y)$ $= (x + 13)(2 - y)$	B1																													
	(b)	$24x^2y - 6xy$ $= 6xy(4x - 1)$	B1																													
6		<table><tr><td>2</td><td>100</td><td>35</td><td>42</td></tr><tr><td>2</td><td>50</td><td>35</td><td>21</td></tr><tr><td>3</td><td>25</td><td>35</td><td>21</td></tr><tr><td>5</td><td>25</td><td>35</td><td>7</td></tr><tr><td>5</td><td>5</td><td>7</td><td>7</td></tr><tr><td>7</td><td>1</td><td>7</td><td>7</td></tr><tr><td></td><td>1</td><td>1</td><td>1</td></tr></table> $LCM = 2^2 \times 3 \times 5^2 \times 7$ $= 2100\text{sec}$ $= 35\text{min}$ Time: $0800\text{hrs} + 35\text{min} = 0835\text{hrs}$ or 8.35am	2	100	35	42	2	50	35	21	3	25	35	21	5	25	35	7	5	5	7	7	7	1	7	7		1	1	1	M1 M1 A1	Convert mins
2	100	35	42																													
2	50	35	21																													
3	25	35	21																													
5	25	35	7																													
5	5	7	7																													
7	1	7	7																													
	1	1	1																													
7	(a)	$3p = -39$ $p = -13$	B1																													

	(b)	$15q - 24 = 31 + 3q$ $15q - 3q = 31 + 24$ $12q = 55$ $q = \frac{55}{12}$	M1 A1	
8	(a)	$1986 = 2000$ (Correct to 1 sig. fig.) $6.38 = 6$ (Correct to 1 sig. fig.) $442.5 = 400$ (Correct to 1 sig. fig.) $242.5 = 200$ (Correct to 1 sig. fig.) $\frac{1986 \times 6.38}{442.5 - 242.5} \approx \frac{2000 \times 6}{400 - 200}$ $= 60$	M1 A1	At least 2 correct
	(b)	Exact value of $\frac{1986 \times 6.38}{442.5 - 242.5} = 63.3534$ Since the estimated value is smaller than the exact value, the estimation is an under estimate.	B1 B1	Exact value Conclusion
9		Sum of ext. angles = 360° $360 - 60 - 45 - 75 = 180$ $\frac{180}{30} = 6$ $n = 6 + 3 = 9$	M1 M1 A1	
10	(a)	$\angle PRQ = 118$ (vertically opposite angles) $\angle PQR = 180 - 22 - 118$ (sum of angles in triangle) $= 40$	M1 A1	
	(b)	$\angle PSR = \angle PQR = 40$ (base angle of isosceles triangle) $\angle BPS = 40$ (alternate angles, $AB \parallel CD$)	B1	
	(c)	$\angle PSD = 180 - 40$ (adjacent angles on a straight line) $= 140$ Reflex $\angle PSD = 360 - 140$ (angles at a point) $= 220$	M1 A1	
11	(ai)	$30x \text{ ¢}$	B1	
	(aii)	No. of blue markers = $25 - x$ Cost of blue markers $= 45(25 - x) \text{ ¢}$ Or $1125 - 45x \text{ ¢}$	B1	
	(bi)	$1125 - 45x + 30x$ $= 1125 - 15x$	B1	
	(bii)	Total cost of markers = 945 $1125 - 15x = 945$ $15x = 180$ $x = 12$ Therefore the number of blue markers = $25 - 12 = 13$	M1 M1 A1	

12	(a)	$\text{Area of trapezium} = \frac{1}{2} \times (8 + 14) \times 4$ $= 44 \text{ cm}^2$ $\text{Area of semicircle} = \frac{1}{2} \times (3.142)(4^2)$ $= 25.13 \text{ cm}^2$ $\text{Area of shaded region} = 44 - 25.13 = 18.9 \text{ cm}^2$	M1 M1 A1	Seen area of trapezium Seen area of semicircle																		
	(b)	$\text{Perimeter of semicircle} = \frac{1}{2} \times (2\pi)(4)$ $= 12.57 \text{ cm}$ $\text{Perimeter of shaded region}$ $= 14 + 5 + 5 + 12.57$ $= 36.6 \text{ cm (3 sig. fig.)}$	M1 A1																			
13	(a)	<table border="1"><thead><tr><th>Number of hours spent on computer usage</th><th>Tally</th><th>Number of students</th></tr></thead><tbody><tr><td>1</td><td>///</td><td>5</td></tr><tr><td>2</td><td>/// //</td><td>7</td></tr><tr><td>3</td><td>/// ///</td><td>10</td></tr><tr><td>4</td><td>///</td><td>3</td></tr><tr><td></td><td>Total</td><td>25</td></tr></tbody></table>	Number of hours spent on computer usage	Tally	Number of students	1	///	5	2	/// //	7	3	/// ///	10	4	///	3		Total	25	B1 B1	Tally No. of students
Number of hours spent on computer usage	Tally	Number of students																				
1	///	5																				
2	/// //	7																				
3	/// ///	10																				
4	///	3																				
	Total	25																				
	(b)	$\text{Average number of hours}$ $= \frac{5(1) + 7(2) + 10(3) + 3(4)}{25}$ $= 2\frac{11}{25} \text{ hrs}$	M1 A1																			
	(c)	$\text{Required Percentage} = \frac{5}{25} \times 100$ $= 20 \%$	B1																			

14	(a)		P1 C1	Label points Accurate construction
	(b)	5.3 cm [± 0.1 cm]	B1	

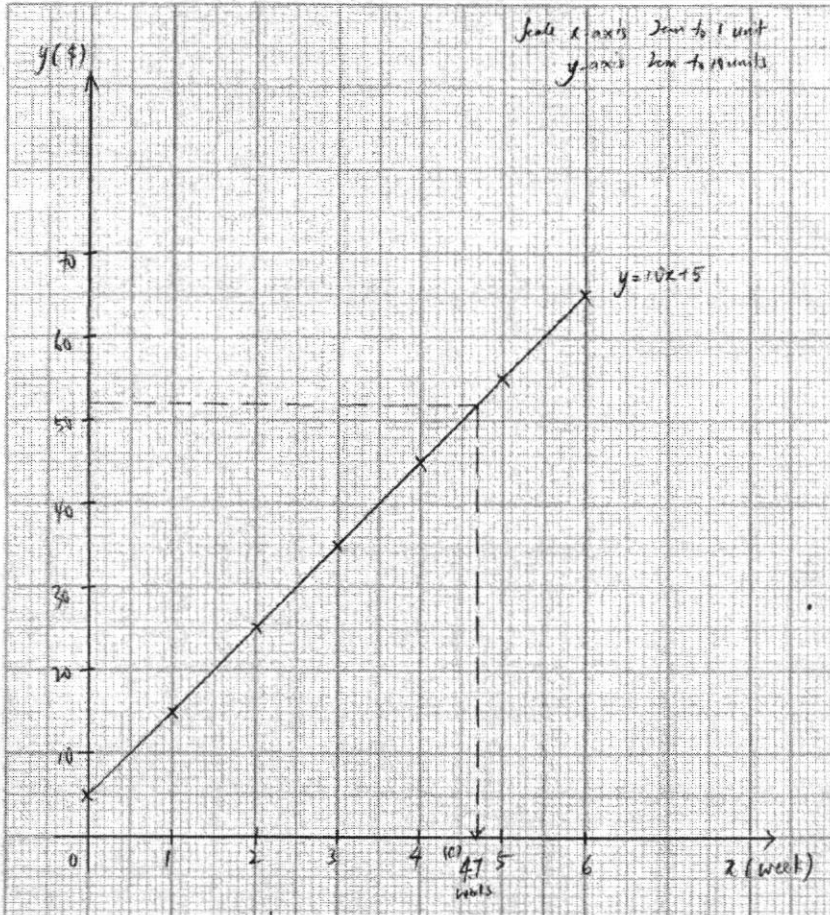
FAJAR SECONDARY SCHOOL
2021 END-OF-YEAR EXAMINATIONS
SECONDARY 1E MATHEMATICS
PAPER 2

MARK SCHEME

Prepared by: Mr Lim Yeun Chen

1	(ai)	$\{-4 - [9 + (-3)]^2\} \times (-4)$ $= \{-4 - 36\} \times (-4)$ $= 160$	M1 A1	Seen 36
	(aii)	$1\frac{1}{9} - \frac{1}{3} \div \left[\left(\frac{1}{8} - \frac{5}{16} \right) \times 3 \right] = \frac{10}{9} - \frac{1}{3} \div \left[\left(\frac{2}{16} - \frac{5}{16} \right) \times 3 \right]$ $= \frac{10}{9} - \frac{1}{3} \div \left(\frac{-9}{16} \right)$ $= \frac{10}{9} - \frac{1}{3} \times \left(\frac{-16}{9} \right)$ $= \frac{10}{9} + \frac{16}{27}$ $= 1\frac{19}{27} \text{ or } \frac{46}{27}$	M1 M1 A1	Seen common denominator seen $-\frac{16}{9}$
	(bi)	$\frac{\sqrt{39} + 6.5}{22 - 2.7^3} = 5.5006$	B1	
	(bii)	5.501	B1	
2	(a)	$504 = 2^3 \times 3^2 \times 7$	B1	
	(b)	$504 = 2^3 \times 3^2 \times 7$ $504k = 2^3 \times 3^2 \times 7 \times 3 \times 7^2$ $k = 147$	B1	
3	(a)	$d = \frac{b^2 - 3a}{2ac}$ $= \frac{(-5)^2 - 3(4)}{2(4)(\frac{1}{4})}$ $= \frac{13}{2}$	M1 A1	Substitution of values
	(b)	$2 = \frac{2x-1}{3} + \frac{3(1-5x)}{4}$ $2 = \frac{(4)(2x-1)}{(4)(3)} + \frac{(3)(3)(1-5x)}{(3)(4)}$ $2 = \frac{8x-4+9-45x}{12}$ $24 = -37x + 5$ $37x = 5 - 24$ $x = -\frac{19}{37}$	M1 M1 A1	Single fraction Remove fraction

4	(a)	$\begin{array}{ccc} x & : & y \\ 0.3 \times 10 & : & 0.5 \times 10 \\ 3 & : & 5 \end{array} \quad \begin{array}{ccc} y & : & z \\ 2 & : & 7 \end{array}$ $\begin{array}{ccc} x & : & y & : & z \\ 3 \times 2 & : & 5 \times 2 & & \\ & & 2 \times 5 & : & 7 \times 5 \\ 6 & : & 10 & : & 35 \end{array}$	M1 A1	y to same unit
	(bi)	Total number of units = $11 + 7 + 2$ = 20 units 20 units $\rightarrow$ 1500 1 unit $\rightarrow \frac{1500}{20}$ = 75 11 units $\rightarrow 11 \times 75$ = 825	M1 A1	Equate total unit to 1200
	(bii)	Highest number of votes = 825 Lowest number of votes = 2×75 = 150 Difference = $825 - 150$ = 675	M1 A1	
5	(a)	Time taken to fly from Spore to Seoul = 5.5h Flight distance between Spore and Seoul = 861×5.5 = 4735.5 = 4736 km (nearest interger)	M1 M1 A1	Time taken Nearest integer
	(b)	Time taken to fly from Singapore to Taipei = $\frac{3248}{750}$ = 4.330667hrs = 4 hrs 20 min (nearest min) Include stopover, time airplane leave from Taipei to Seoul 0945 + 4 hrs 20 min + 1h = 15 05 hrs	M1 M1 A1	Distance / Speed Time taken to travel to taipei
6	(a)	$\frac{2}{100} \times 3999 \times 100$ = \$7998	M1 A1	
	(b)	Total payment = $\frac{25}{100} \times 3999 + 140(24)$ = \$4359.75 Difference in amount if paid by cash	M1 A1	

		$= 4359.75 - 3999$ $= \$360.75$		
7	(a)	$p = 25$	B1	
	(b)		S1 P1 L1	Correct scale Correct points Straight line
	(c)	From the graph, when the cost of bag is \$52 $\rightarrow$ 4.7 weeks Hence Week 5 (whole week)	B1	
	(di)	From the graph, take (0, 5) and (3, 35) Gradient $\frac{35-5}{3-0}$ $= 10$	B1	Working must be shown
	(dii)	The gradient of the graph represents the increase of Valerie's saving per week	B1	
8	(ai)	$\angle EFG = 78^\circ$ (opposite angle of parallelogram)	B1	
	(aii)	$\angle FGC = 78^\circ$ (corresponding angle, $DE \parallel GF$) $\angle FCG = 180^\circ - 117^\circ$ (angles on a straight line) $= 63^\circ$ $\angle GFC = 180^\circ - 63^\circ - 78^\circ$ (angles sum of triangles) $= 39^\circ$ OR $\angle GFC = 111^\circ - 78^\circ$ (exterior angle of triangle GFC) $= 39^\circ$	M1 A1	
	(aiii)	$\angle EGF = 42^\circ$ (alternates angles, $DE \parallel GF$) $\angle EGC = 78^\circ + 42^\circ$ $= 120^\circ$	M1 A1	42° seen
	(b)	BC is not parallel to EG because $\angle EGC = 120^\circ \neq \angle FCH$. Hence, by converse of corresponding angles , BC is not parallel to EG .	B1	

9	(a)	95% → \$359 $100\% \rightarrow \frac{359}{95} \times 100\%$ = \$377.89 (to 2 d.p.) The cost price of the pair of sunglasses is \$377.89	M1	
			A1	
	(bi)	Sale price of pouch at the shop = $0.86 \times \$140$ = \$120.40 (in SGD) <u>Local purchase of sunglasses and pouch at the shop in Singapore</u> Total cost = $\$(359 + 120.40)$ = \$479.40 (in SGD)	M1	Price of pouch in Singapore
			M1	Total cost if purchase in Singapore
	(bii)	Online purchase : Total online price = USD $(90 + 250) + 7.99$ shipping fee = USD $(340 + 7.99)$ = USD 347.99 (inclusive of shipping) Cost converted to Singapore dollar = = 347.77×1.359 = \$472.91841 (in SGD) Total credit card charge payable = $\$472.91841 \times 101.9\%$ = \$481.90 (in SGD) Since the online costs are higher than local purchase costs, Aileen should not do online shopping in United States.	M1	7.99USD chosen
			M1	Total cost if purchase online
			A1	With logical and reasonable conclusion