

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

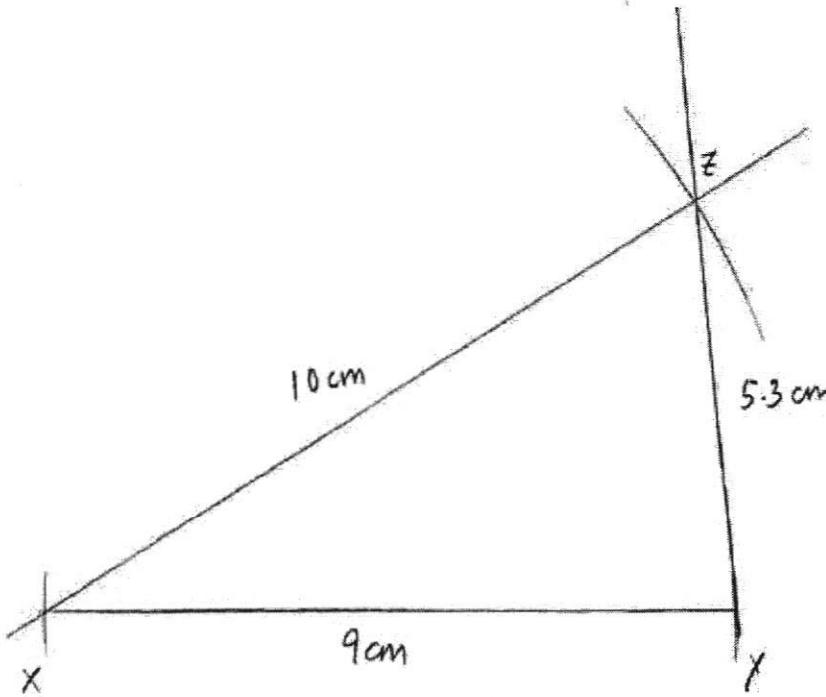
MARK SCHEME

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		$\text{Percentage decrease} = \frac{\$1200 - \$900}{\$1200} \times 100\%$ $= 25\%$	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)	$62 - 6n = -283$ $-6n = -345$ $n = 57.5$ <p>Since $n = 57.5$ is not a whole number/positive integer, -283 is not a term of this sequence.</p>	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 style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2</td> <td style="width: 20%;">100</td> <td style="width: 20%;">35</td> <td style="width: 20%;">42</td> <td style="width: 20%;"></td> </tr> <tr> <td>2</td> <td>50</td> <td>35</td> <td>21</td> <td></td> </tr> <tr> <td>3</td> <td>25</td> <td>35</td> <td>21</td> <td></td> </tr> <tr> <td>5</td> <td>25</td> <td>35</td> <td>7</td> <td></td> </tr> <tr> <td>5</td> <td>5</td> <td>7</td> <td>7</td> <td></td> </tr> <tr> <td>7</td> <td>1</td> <td>7</td> <td>7</td> <td></td> </tr> <tr> <td></td> <td>1</td> <td>1</td> <td>1</td> <td></td> </tr> </table> $LCM = 2^2 \times 3 \times 5^2 \times 7$ $= 2100 \text{ sec}$ $= 35 \text{ min}$ Time: 0800hrs + 35min = 0835hrs 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																																				
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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)	$1986 = 2000 \quad (\text{Correct to 1 sig. fig.})$ $6.38 = 6 \quad (\text{Correct to 1 sig. fig.})$ $442.5 = 400 \quad (\text{Correct to 1 sig. fig.})$ $242.5 = 200 \quad (\text{Correct to 1 sig. fig.})$ $\frac{1986 \times 6.38}{442.5 - 242.5} \approx \frac{2000 \times 6}{400 - 200}$ $= 60$	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, $AB // CD$)	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)	<p>Area of trapezium = $\frac{1}{2} \times (8+14) \times 4$ $= 44 \text{ cm}^2$</p> <p>Area of semicircle = $\frac{1}{2} \times (3.142)(4^2)$ $= 25.13 \text{ cm}^2$</p> <p>Area of shaded region = $44 - 25.13 = 18.9 \text{ cm}^2$</p>	M1 M1 A1	Seen area of trapezium Seen area of semicircle																		
	(b)	<p>Perimeter of semicircle = $\frac{1}{2} \times (2\pi)(4)$ $= 12.57 \text{ cm}$</p> <p>Perimeter of shaded region $= 14 + 5 + 5 + 12.57$ $= 36.6 \text{ cm } (3 \text{ sig. fig.})$</p>	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>Total</td> <td></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
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1	///	5																				
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4	///	3																				
Total		25																				
	(b)	<p>Average number of hours</p> $= \frac{5(1) + 7(2) + 10(3) + 3(4)}{25}$ $= 2 \frac{11}{25} \text{ hrs}$	M1 A1																			
	(c)	<p>Required Percentage = $\frac{5}{25} \times 100$ $= 20 \%$</p>	B1																			

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