

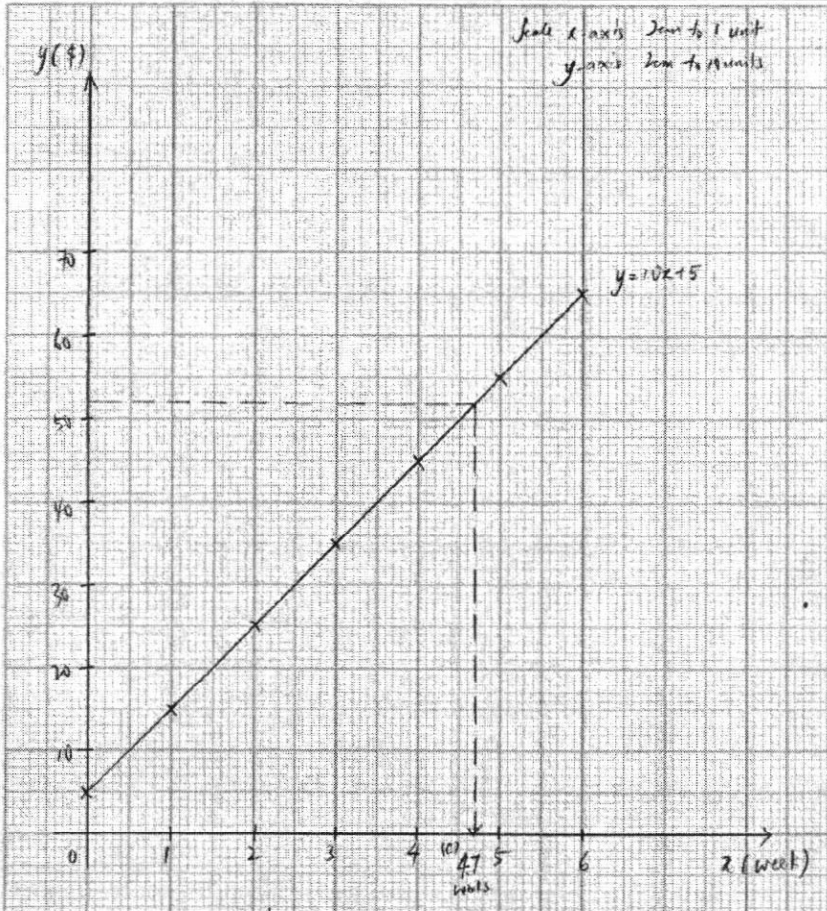
FAJAR SECONDARY SCHOOL
2021 END-OF-YEAR EXAMINATIONS
SECONDARY 1E MATHEMATICS
PAPER 2

MARK SCHEME

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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)	<p>Total number of units = $11 + 7 + 2$ = 20 units</p> <p>20 units \rightarrow 1500 1 unit $\rightarrow \frac{1500}{20}$ = 75 11 units $\rightarrow 11 \times 75$ = 825</p>	M1 A1	Equate total unit to 1200
	(bii)	<p>Highest number of votes = 825 Lowest number of votes = 2×75 = 150 Difference = $825 - 150$ = 675</p>	M1 A1	
5	(a)	<p>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)</p>	M1 M1 A1	Time taken Nearest integer
	(b)	<p>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</p>	M1 M1 A1	Distance / Speed Time taken to travel to taipei
6	(a)	$\frac{2}{100} \times 3999 \times 100$ = \$7998	M1 A1	
	(b)	<p>Total payment = $\frac{25}{100} \times 3999 + 140(24)$ = \$4359.75 Difference in amount if paid by cash</p>	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