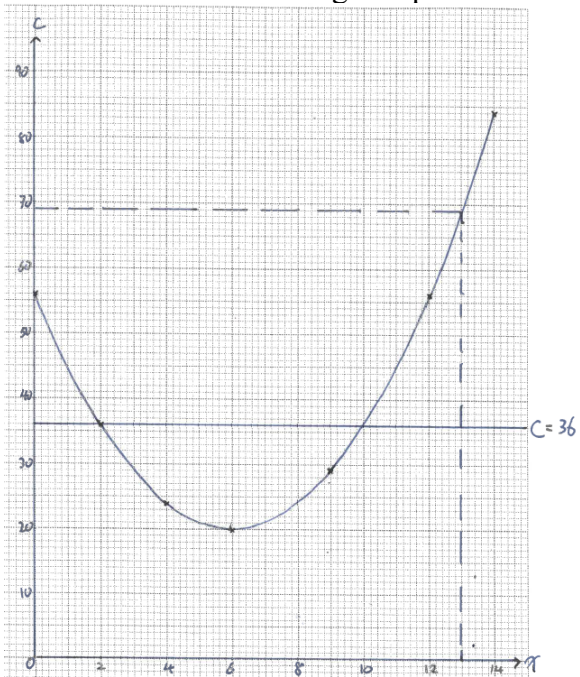


Marking Scheme Secondary 2 Express 2021 EOY Paper 2

1	a	5 cm : 1 km 1 cm : 0.2 km 1 cm : 20000 cm 1 : 20000	
1	b	1 cm : 0.04 km ² Area = $542 \times 0.04 = 21.68 \text{ km}^2$	
2	a	$\frac{292}{40} = 7.3$	
2	b	8	
2	c	7	
2	d	Mode, as it was the size which the most shoes were sold. Alt Median, as it gives the middle shoe size that the shopkeeper can order.	
3	a	33 °C	
3	b	28 °C	
3	c	29 °C	
3	d	Singapore, as the median temperature was higher. Alt Singapore, as the mean temperature was higher. Singapore as the noon temperature peaks/clusters at 30 °C, which is higher than Bangkok's peak at 27 °C.	
3	e	$\frac{8}{28} \times 360^\circ = 102.9^\circ$	
4	a	$\frac{46 - 2x}{2} = 23 - x$	
4	b	$2x(23 - x) = 264$ $-2x^2 + 46x = 264$ $-2x^2 + 46 - 264 = 0$ $x^2 - 23x + 132 = 0$	

4	c	$x^2 - 23x + 132 = 0$ $(x - 11)(x - 12) = 0$ $x = 11$ or $x = 12$ $BC = 22$ or 24	
5	a	$\cos 60^\circ = \frac{x}{20}$ $x = 20 \cos 60^\circ$ $x = 10 \text{ cm}$	
5	b	$75^\circ, 10 \text{ cm}$	
5	ci	$\frac{170}{200} \times 100\% = 85\%$	
5	cii	Loading at 85% $\theta = 60^\circ, d = 10 \text{ cm}$ $\cos 60^\circ = \frac{x}{10}$ $x = 10 \cos 60^\circ$ $x = 5 \text{ cm}$ $\theta = 75^\circ, d = 15 \text{ cm}$ $\cos 75^\circ = \frac{x}{15}$ $x = 15 \cos 75^\circ$ $x = 3.88 \text{ cm}$ Largest value of x is 5 cm .	
6	ai	False	
6	a ii	False	
6	a iii	False	
6	bi	$180^\circ - 90^\circ - 35^\circ = 55^\circ$	

6	bii	$\frac{x+2}{x+7} = \frac{5}{8}$ $8(x+2) = 5(x+7)$ $8x+16 = 5x+35$ $3x = 19$ $x = 6\frac{1}{3}$ $DF = 6\frac{1}{3} + 7 = 13\frac{1}{3} \text{ cm}$	
7	a	$(3x-1)^2 - 2(2x-3)(2x+3)$ $= 9x^2 - 6x + 1 - 2(4x^2 - 9)$ $= 9x^2 - 6x + 1 - 8x^2 + 18$ $= x^2 - 6x + 19$	
7	b	$\frac{b^2}{2ab^3} \div \frac{8a^2b}{a^3}$ $= \frac{b^2}{2ab^3} \times \frac{a^3}{8a^2b}$ $= \frac{a^3b^2}{16a^3b^4}$ $= \frac{1}{16b^2}$	
7	c	$\frac{2x-1}{x^2+x-6} - \frac{5}{x+3}$ $= \frac{2x-1}{(x+3)(x-2)} - \frac{5}{x+3}$ $= \frac{2x-1-5(x-2)}{(x+3)(x-2)}$ $= \frac{-3x+9}{(x+3)(x-2)}$	
8	a	36	

8	b	Draw axes and all points plotted correctly Draw smooth curve through all points 	
8	ci	\$69	
8	cii	6	
8	di	See above	
8	dii	3, 4, 5, 6, 7, 8, 9	
9	a	$(15)(10)(8) + \frac{1}{3}(10)(8)(6)$ $= 1360 \text{ m}^3$	
9	b	By pythagoras' theorem Slant height triangle $VBC = \sqrt{61} \text{ m}$ Slant height triangle $VAB = \sqrt{52} \text{ m}$ Area of triangles $= 2\left(\frac{1}{2}\right)(10)(\sqrt{52}) + 2\left(\frac{1}{2}\right)(8)(\sqrt{61})$ $= 134.59$ Area of rectangular surfaces $= (10 + 10 + 8 + 8)(15) = 540$ Total Area = $134.59 + 540 = 674.59 = 675 \text{ m}^2$	

9	c	$674.59 \times 35 = \$23610.76 = \23600	