

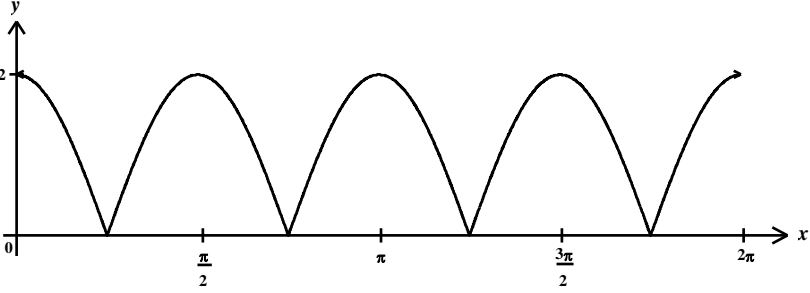
SKEMA KERTAS 2 SET 1 JUJ 2014

NO	SOLUTION	SUB MARK	TOTAL MARK
1.	<p>Lets base = x and height = y</p> $4y + 8x = 40$ $2x^2 + 4xy = 66$ $y = 10 - 2x \quad \text{OR} \quad x = \frac{10 - y}{2}$ $x^2 + 2x(10 - 2x) = 33 \quad \text{OR} \quad \left(\frac{10 - y}{2}\right)^2 + 2y\left(\frac{10 - y}{2}\right) = 33$ $(3x - 11)(x - 3) = 0 \quad \text{OR} \quad (y - 4)(3y - 8) = 0$ $x = \frac{11}{3}, \quad x = 3$ $y = 4, \quad y = \frac{8}{3}$	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<hr style="width: 100%;"/> <p>7 marks</p>
2. (a)	$x^2 - (6 + 2p)x + 3p + 19 = 0$ $(-6 - 2p)^2 - 4(1)(3p + 19) = 0$ $(p + 5)(p - 2) = 0$ $p = -5, \quad p = 2$	<p>1m</p> <p>1m</p> <p>1m</p>	
(b)	$m + n = 2 \quad \text{OR} \quad mn = 5$ $2m + 2n = 2(m + n) \quad \text{OR} \quad (2m)(2n) = 4mn$ $2m + 2n = 4 \quad \text{and} \quad (2m)(2n) = 20$ $x^2 - 4x + 20 = 0$	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<hr style="width: 100%;"/> <p>7 marks</p>

SKEMA KERTAS 2 SET 1 JUJ 2014

3. (a)	$P_1 = a = 3s$ OR $P_2 = 3s + 6$ OR $P_3 = 3s + 12$ $d = 6$ $S_5 = \frac{5}{2}(2(3s) + 4(6))$ $15s + 60$	1m 1m 1m 1m	6 marks
(b)	$T_n = 3s + (n-1)6$ $3s + 6n - 6$	1m 1m	
4. (a) (i)	$12\hat{i} + (k+8)\hat{j} = \lambda((k-5)\hat{i} - 3\hat{j})$ $12 = \lambda(k-5)$ OR $k+8 = -3\lambda$ Solve to find k $(k+4)(k-1) = 0$ $k = -4$, $k = 1$	1m 1m 1m	
(ii)	$ \hat{p} = \sqrt{160}$	1m	
(b) (i)	$\overline{PT} = \overline{PQ} + \frac{1}{4}\overline{QS}$ $\overline{PT} = \hat{y} + \frac{1}{4}(-\hat{y} + \hat{x})$ $\overline{PT} = \frac{3}{4}\hat{y} + \frac{1}{4}\hat{x}$	1m 1m	
(ii)	$\overline{PU} = \overline{PR} + \frac{3}{5}\overline{RS}$ $\overline{PU} = 4\hat{y} + \frac{3}{5}(-3\hat{y} + \hat{x})$ $\overline{PU} = \frac{6}{5}\hat{y} + \frac{3}{5}\hat{x}$	1m 1m	
			8 marks

SKEMA KERTAS 2 SET 1 JUJ 2014

5(a)	<p>Use base angle $\theta = 30^\circ$</p> <p>$2x = 210^\circ, 330^\circ, 570^\circ, 690^\circ$ (any 2 angle)</p> <p>$x = 105^\circ, 165^\circ, 285^\circ, 345^\circ$</p>	1m	
		1m	
		1m	
(b)	 <p>Shape and amplitude 2</p> <p>2 Cycle</p> <p>Modulus graph</p>	1m	6 marks
		1m	
		1m	
6(a)	<p>$\frac{k-30}{2.5} = 2$</p> <p>$k = 35$</p>	1m	
		1m	
(b)	<p>$P(X > 35) = P(Z > 2)$</p> <p>$P(Z > 2) = 0.0228$</p> <p>9 students</p>	1m	
(c)	<p>$P(33 \leq X \leq 35) = P(1.2 \leq Z \leq 2)$</p> <p>$= 0.1151 - 0.0228$</p> <p>0.0923</p>	1m	6 marks

SKEMA KERTAS 2 SET 1 JUJ 2014

7(a)	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">$\frac{y}{x}$</td> <td style="padding: 5px;">1.64</td> <td style="padding: 5px;">1.53</td> <td style="padding: 5px;">1.43</td> <td style="padding: 5px;">1.33</td> <td style="padding: 5px;">1.22</td> <td style="padding: 5px;">1.12</td> <td style="padding: 5px;">1.03</td> </tr> </table>	$\frac{y}{x}$	1.64	1.53	1.43	1.33	1.22	1.12	1.03	1m	
$\frac{y}{x}$	1.64	1.53	1.43	1.33	1.22	1.12	1.03				
	Plot one point with scale giving	1m									
	Plot all point correctly	1m									
	Line of best fix	1m									
(b)	$\frac{y}{x} = -bx + a$	1m									
	(i) use $a = c$	1m									
	$a = 1.74 \pm 0.2$	1m									
	(ii) Use $-b = m$	1m									
	$b = 0.207 \pm 0.2$	1m									
	(iii) $y = 1.85 \pm 0.2$	1m									
		<hr style="width: 50%; margin: auto;"/> 10 marks									
8(a)	$\tan \angle CBO = \frac{8}{8}$ $\angle CBO = 45^\circ$ <p style="padding-left: 40px;">0.7855 rad</p>	1m									
		1m									
(b)	$CB = 11.31$ $AD = 16 - 11.31$ $\cap CD = 11.31(0.7855)$ OR $\cap AC = 8(1.571)$	1m									
	Perimeter = $(16 - 11.31) + 11.31(0.7855) + 8(1.571)$	1m									
	26.14	1m									
(c)	$\frac{1}{2}(11.31)^2(0.7855)$ OR $\frac{1}{2}(8)(8)(1.571)$	1m									
	$\frac{1}{2}(8)(8)$	1m									
	$\frac{1}{2}(8)^2(1.571) - \left(\frac{1}{2}(11.31)^2(0.7855) - \frac{1}{2}(8)(8) \right)$	1m									
	32.03	1m									
		<hr style="width: 50%; margin: auto;"/> 10 mark									

SKEMA KERTAS 2 SET 1 JUJ 2014

9(a)	Find x -int $\frac{0-3}{x-8} = \frac{9-3}{0-8}$	1m	
	$\frac{x}{12} + \frac{y}{9} = 1$	1m	
(b)	$M = \left(\frac{0+8}{2}, \frac{9+3}{2} \right)$	1m	
	(4,6)	1m	
(c)	Find $AM = \sqrt{(0-4)^2 + (9-6)^2}$ OR $AM = \sqrt{(8-4)^2 + (3-6)^2}$	1m	
	$\sqrt{(x-4)^2 + (y-6)^2} = 5$	1m	
	$x^2 - 8x + 16 + y^2 - 12y + 36 = 25$	1m	
	$x^2 + y^2 - 8x - 12y + 27 = 0$	1m	
(d)	$\frac{2(2)+x(1)}{3} = 4$ OR $\frac{14(2)+y(1)}{3} = 6$	1m	
	(8, -6)	1m	
		<u>10 marks</u>	
10(a)	(i) $t = 6$	1m	
	(ii) $\frac{1(3)+2(5)+3(7)+4(3)+5(t)+6(1)}{3+5+7+3+t+1} > 4$	1m	
	$t > 24$		
	$t = 25$	1m	
	(iii) $3+5+7+2=t+1$ OR $3+5+7=2+t+1$	1m	
	$12 \leq t \leq 16$	1m	
(b)	(i) Mean = $\frac{1(3)+2(5)+3(7)+4(3)+5(6)+6(1)}{3+5+7+3+6+1}$	1m	
	3.28	1m	

SKEMA KERTAS 2 SET 1 JUJ 2014

	<p>(ii) $\sum fx^2 = 3(1)^2 + 5(2)^2 + 7(3)^2 + 4(3)^2 + 6(5)^2 + 6(1)^2$</p> $\sigma^2 = \frac{3(1)^2 + 5(2)^2 + 7(3)^2 + 4(3)^2 + 6(5)^2 + 6(1)^2}{3+5+7+3+6+1} - (3.28)^2$ <p>$\sigma = 1.25$</p>	<p>1m</p> <p>1m</p> <p>1m</p>	<hr style="width: 50%; margin: auto;"/> <p>10 marks</p>
11(a)	<p>$y = x^3 - 12x$</p> $\frac{dy}{dx} = 3x^2 - 12$ <p>Use $\frac{dy}{dx} = 0$ to find x</p> <p>$x = \pm 2$</p> <p>$(2, -16)$ and $(-2, 16)$</p> <p>Use $\frac{d^2y}{dx^2} = 6x$, $(2, -16)$ min point</p> <p>$(-2, 16)$ max point</p>	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	
(b)	<p>$M_T = -9$ and $M_N = \frac{1}{9}$</p> <p>$y = \frac{1}{9}x - \frac{28}{9}$ and use $y = 0$</p> <p>$P(28, 0)$</p>	<p>1m</p> <p>1m</p> <p>1m</p>	
(c)	<p>$6x + 2x(3x^2 - 12) - 6(x^3 - 12x) = 27$</p> <p>$x = 0.5$</p>	<p>1m</p> <p>1m</p>	<hr style="width: 50%; margin: auto;"/> <p>10 marks</p>
12(a)	<p>i. $50x + 40y \geq 200$</p> <p>ii. $40y - 60x \leq 150$</p> <p>iii. $30x + 50y \leq 480$</p>	<p>1m</p> <p>1m</p> <p>1m</p>	

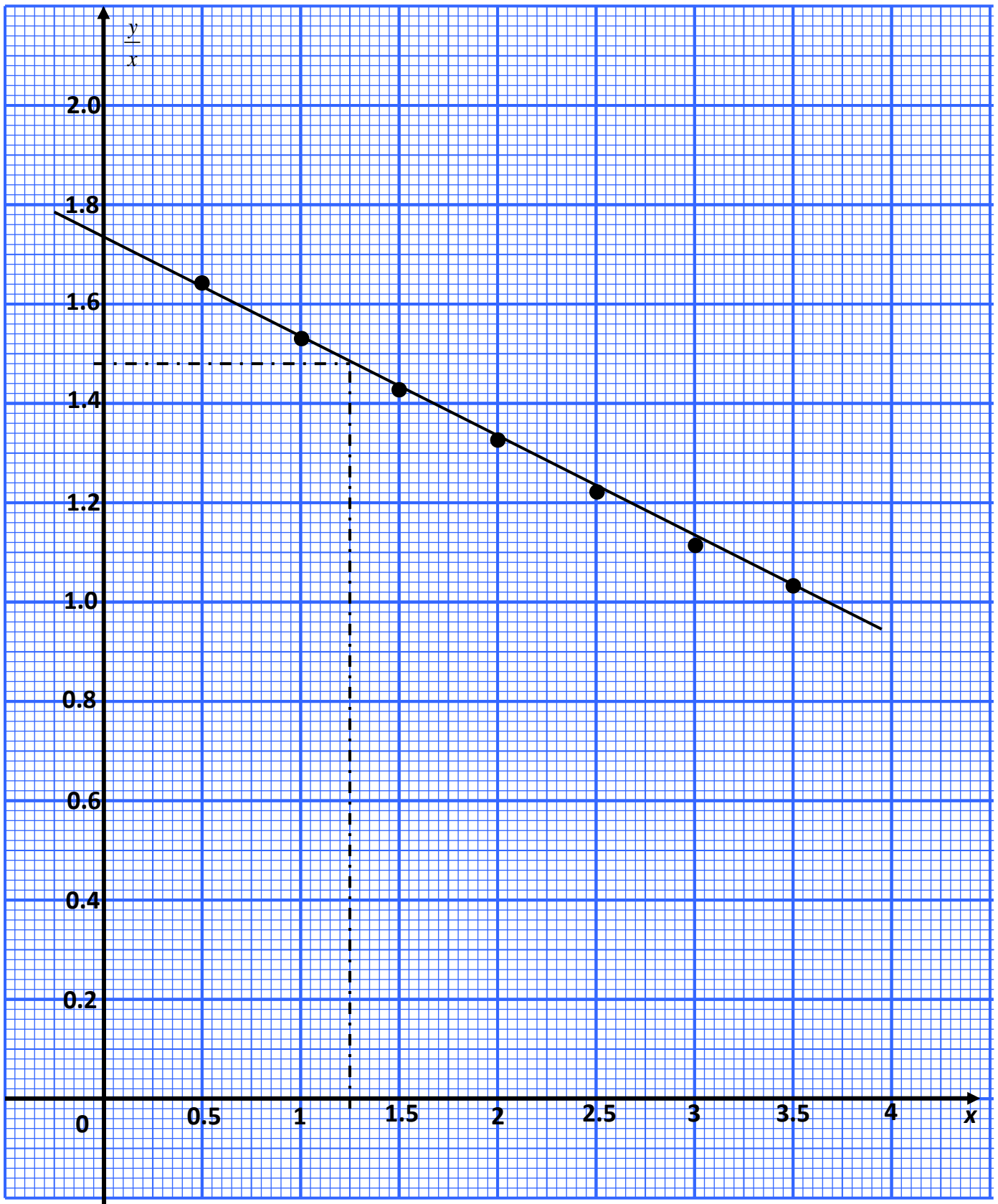
SKEMA KERTAS 2 SET 1 JUJ 2014

(b)	Draw 1 line correctly Draw all line correctly Shaded and label R.	1m 1m 1m	<hr style="width: 80%; margin: auto;"/> 10 marks
(c)	(i) 6 kg (ii) Use point (16,0) $Cost = 3.5(16) + 5(0)$ RM56	1m 1m 1m 1m	
13(a)	$v = 2ht + k$ $c = -8$ $a = 2h$ and $h = 1$ $k = -2$	1m 1m 1m 1m	
(b)	Use $S = 0$ and $(t - 4)(t + 2) = 0$ $t = 4$ $v = 2(4) - 2$ 6 ms^{-1}	1m 1m 1m 1m	
(c)	$(t - 4)(t + 2) \leq 0$ $0 \leq t \leq 4$	1m 1m	<hr style="width: 80%; margin: auto;"/> 10 marks
14(a)	$x = \frac{18}{15} \times 100$ OR $110 = \frac{y}{20} \times 100$ OR $130 = \frac{19.50}{z} \times 100$ $x = 120$, $y = 22$, $z = 15$ all correct : 2m 1 mistake : 1m	1m 2m	

SKEMA KERTAS 2 SET 1 JUJ 2014

(b)	$\frac{140}{100} = \frac{I_{14/10}}{120}$ $I_{14/10} = 168$	1m		
		1m		
(c)	$\frac{I_{10/08}}{100} = \frac{115}{110}$ $I_{10/08} = 104.5$	1m		
		1m		
(d)	$\frac{120(4) + 110(2) + 110(h) + 140(6) + 130(3)}{4 + 2 + h + 6 + 3} = 124$ $110h + 1930 = 124h + 1860$ $h = 5$	1m		
		1m		
		1m		
				10 marks
15(a)	$SR^2 = 20^2 + 26^2 - 2(20)(26)\cos 52^\circ$ $SR = 20.87$	1m		
		1m		
(b)	$RX = \sqrt{26^2 - 102} \quad \text{OR} \quad SX = \sqrt{20^2 - 10^2}$ $20.87^2 = 17.32^2 + 24^2 - 2(17.32)(24)\cos \angle SXR$ $\angle SXR = 58.01^\circ$	1m		
		1m		
(c)	$\frac{1}{2}(20)(20)\sin 60^\circ \quad \text{OR} \quad \frac{1}{2}(20)(26)\sin 52^\circ$ $= \frac{1}{2}(20)(20)\sin 60^\circ + \left[2 \left(\frac{1}{2}(20)(26)\sin 52^\circ \right) \right]$ 582.97	1m		
		1m		
		1m		
(d)	$\sin 58.01^\circ = \frac{h}{17.32}$ $h = 14.69$	1m		
		1m		
			10 marks	

Soalan 7



Soalan 12

