

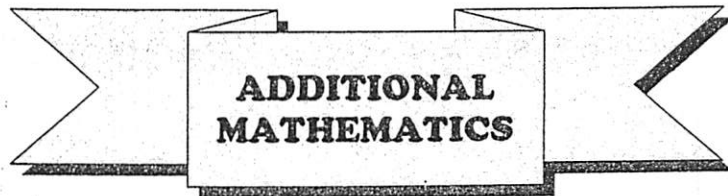
SULIT



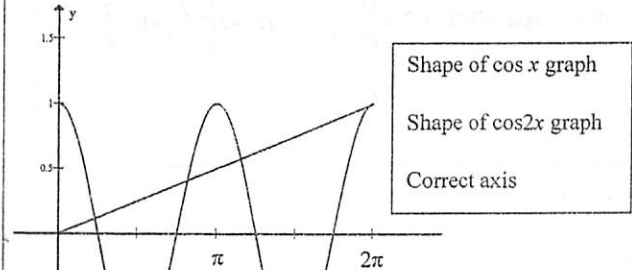
MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN DARUL KHUSUS

SIJIL PELAJARAN MALAYSIA 2011
PEPERIKSAAN PERCUBAAN

PERATURAN PEMARKAHAN



PAPER 2

Question	Solution and Marking Scheme	Sub Marks	Total Marks
1	$y = 3x - 5$ or $x = \frac{y+5}{3}$ $4x^2 - 15x + 3x - 5 + 8 = 0$ or $4\left(\frac{y+5}{3}\right)^2 - 15\left(\frac{y+5}{3}\right) + y + 8 = 0$ $x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(4)(3)}}{2(4)}$ or $y = \frac{-4 \pm \sqrt{(4)^2 - 4(4)(-53)}}{2(4)}$ $x = 2.725, 0.275$ or $y = 3.174, -4.174$ $y = 3.175, -4.175$ or $x = 2.725, 0.275$	P1 K1 K1 N1 N1	5
2	LHS : $1 - \cos 2x$ (a) $= 1 - (1 - 2\sin^2 x)$ $= 2\sin^2 x$ (b) (i)  (ii) Draw straight line $y = \frac{x}{2\pi}$ Number of solutions = 4	K1 N1 P1 P1 P1 K1 N1	7

Question	Solution and Marking Scheme	Sub Marks	Total Marks
3.			
(a)	$m_{CD} = \frac{1}{6}$ $y - 8 = \frac{1}{6}(x + 1)$ $y = \frac{1}{6}x + \frac{49}{6}$ or equivalent	P1 K1 N1	
(b)	Solve equations $x - 6y = -49$ and $x - y = -2$ $x = 7.4$ or $y = 9.4$ $(7.4, 9.4)$	K1 N1 N1	
(c)	Area of triangle ACD = $\frac{1}{2} \left[7\frac{2}{5}(8) - 1(2) - 2 \left(7\frac{2}{5} \right) + 1 \left(9\frac{2}{5} \right) \right]$ Area of rectangle ABCD = $2 \times \frac{1}{2} \left[7\frac{2}{5}(8) - 1(2) - 2 \left(7\frac{2}{5} \right) + 1 \left(9\frac{2}{5} \right) \right]$ $= 51.8$	K1 N1	8
4. (a)	$\frac{dy}{dx} = 2x + 2$ $m_{normal} = -\frac{1}{6}$ $y + 1 = -\frac{1}{6}(x - 2)$ $y = -\frac{1}{6}x - \frac{2}{3}$ or equivalent	P1 P1 K1 N1	
(b)	$\delta x = -0.01$ or $\frac{dy}{dx} = -\frac{24}{16}$ $\delta y = -\frac{24}{16} \times -0.01$ $= 0.015$	P1 K1 N1	7

Question	Solution and Marking Scheme	Sub Marks	Total Marks
5. (a)(i)	$2960 + 32k$ $\frac{2960 + 32k}{90 + k} = 32.64$ $k = 35$	P1 K1 N1	
(ii)	29.5 $29.5 + \left(\frac{\frac{125}{2} - 40}{35} \right) \times 5$ 32.71	P1 K1 N1	
(b)	Class mode = 30 - 34	P1	7
6. (a)	$40 + 9(-4)$ 4	K1 N1	
(b)	$a = 640$ $d = -64$ $\frac{10}{2} [2(640) + 9(-64)]$ $= 3520$	P1 P1 K1 N1	6

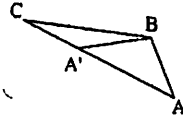
Question	Solution and Marking Scheme							Sub Marks	Total Marks
7(a)	$\frac{1}{x}$	0.4	0.33	0.25	0.20	0.125	0.083	N1	10
	xy	4.9	4.5	4.0	3.7	3.28	3.0	N1	
(b)	$xy = \frac{q}{x} + p$							P1	
	Use $q = \text{gradient}$							K1	
	$q = 6 \pm 0.05$							N1	
	Read from graph $p = y\text{-intercept}$							K1	
	$p = 2.5 \pm 0.05$							N1	
8(a)(i)	$\overline{ST} = \overline{SO} + \overline{OT}$							K1	
	$= y - 4x$							N1	
(ii)	$-2x + 3y$							N1	
(b)(i)	$\overline{RO} + \overline{OT} = h\overline{ST}$ or $-\overline{OR} + y = h(-4x + y)$							K1	
	$(1-h)y + 4hx$							N1	
(ii)	$\overline{PO} + \overline{OR} = k\overline{PQ}$ or $\overline{PO} + \overline{OR} = k(-2x + 3y)$							K1	
	$(2-2k)x + 3ky$							N1	
(c)	$4h = 2 - 2k$ or $3k = 1 - h$							K1	
	$k = \frac{1}{5}$							N1	
	$h = \frac{2}{5}$							N1	

Question	Solution and Marking Scheme	Sub Marks	Total Marks
9(a)	$8(0.9426\text{rad})$	K1	10
	7.5408 cm	N1	
	(b) $\frac{x}{8} = \cos 27^\circ$	K1	
	$x = 7.128 \text{ cm}$	N1	
	$AC = 14.26 \text{ cm}$	N1	
(c)	$\frac{1}{2}(8)^2(3.142) - \frac{1}{2}(14.26)^2(0.4713)$	K1K1	
	52.63 cm^2	N1	
(d)	$14.26 + 8(3.142 - 0.9426)$	K1	
	31.86 cm	N1	
10(a)	$m_2 = -\frac{1}{2}$	K1	
	$\frac{2-0}{2-x} = -\frac{1}{2}$	K1	
	$(6, 0)$	N1	
(b)	$\int_0^2 \frac{1}{2}x^{\frac{1}{2}}dx + \frac{1}{2} \times 2 \times 4$	K1K1	
	$\left[\frac{x^{\frac{3}{2}}}{\frac{3}{2}}\right]_0^2 + 4$	K1	
	$5\frac{1}{3} \text{ unit}^2$	N1	

Question	Solution and Marking Scheme	Sub Marks	Total Marks
10(c)	$\pi \int_0^2 \left(\frac{1}{2}x\right)^2 dx$ $\pi \left[\frac{x^3}{20}\right]$ $\frac{8}{5}\pi \text{ unit}^3$	K1 K1 N1	10
11(a)(i)	$P(X \geq 2) = 1 - P(X=0) - P(X=1)$ $1 - {}^9C_0(0.4)^0(0.6)^9 - {}^9C_1(0.4)^1(0.6)^8$ 0.9295	K1 K1 N1	
(ii)	$n(0.4)(0.6) = 396$ $n = 1650$	K1 N1	
(b)(i)	$P\left(\frac{90-100}{5} \leq Z \leq \frac{105-100}{5}\right)$ $1 - 0.1587 - 0.0228$ 0.8185 $\text{Percentage} = 81.85\%$	K1 N1	
(ii)	$P\left(Z < \frac{m-100}{5}\right) = 0.28 \quad \text{or} \quad \frac{m-100}{5} = -0.583$ 97.085	K1 N1	10

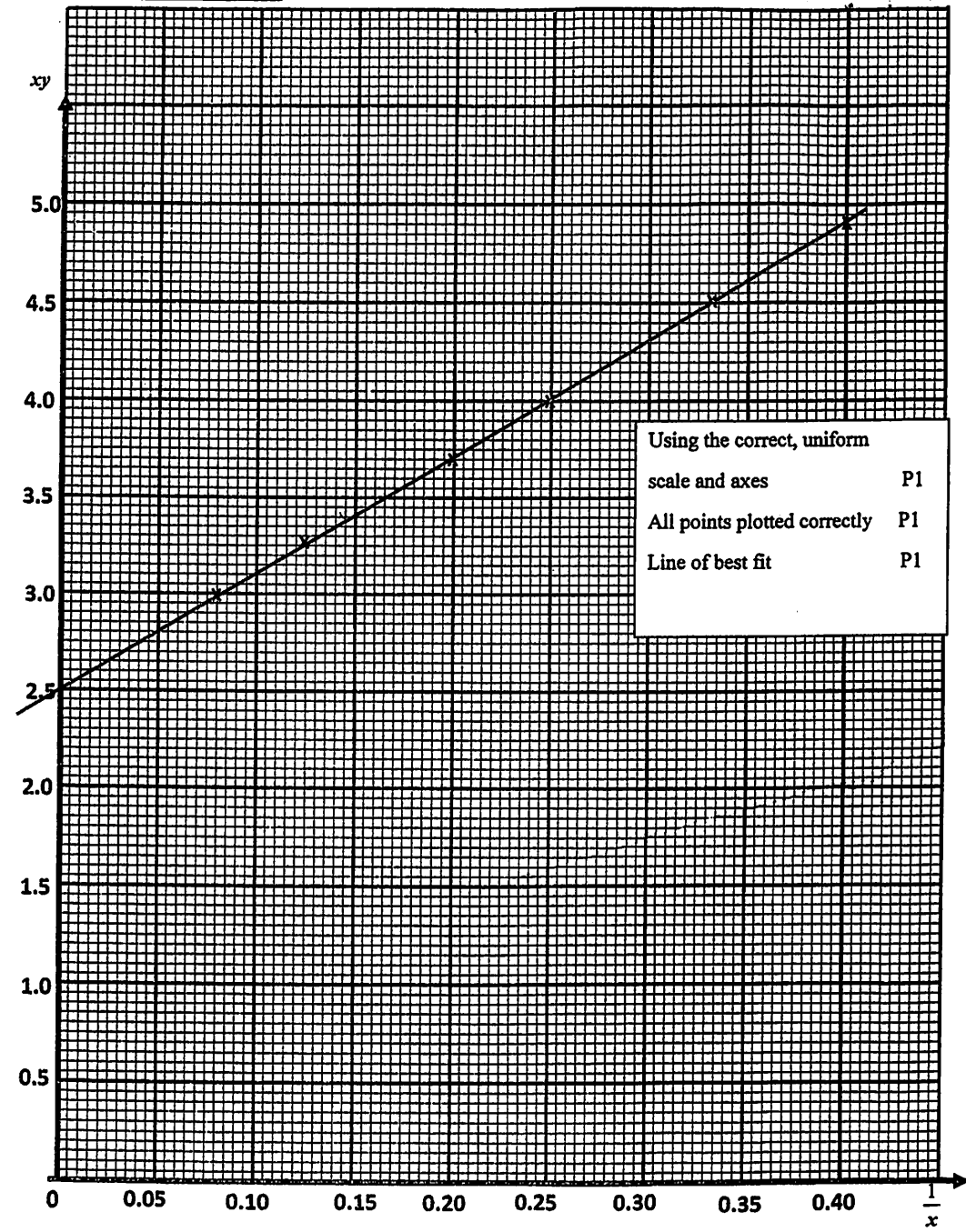
Question	Solution and Marking Scheme	Sub Marks	Total Marks
12(a)	12	P1	
(b)	$a = 2t - 8$ $2t - 8 = 0$ $t = 4$ $v = (4)^2 - 8(4) + 12$ $= -4 \text{ ms}^{-1}$	P1 K1 N1	
(c)	$t^2 - 8t + 12 < 0$ $(t-2)(t-6) < 0$ $2 < t < 6$	K1 N1	
(d)	$\text{Total distance} = \int_0^2 (t^2 - 8t + 12) dt + \left \int_2^4 (t^2 - 8t + 12) dt \right $ $= \left[\frac{t^3}{3} - 4t^2 + 12t \right]_0^2 + \left[\frac{t^3}{3} - 4t^2 + 12t \right]_2^4$ $= \left[\frac{2^3}{3} - 4(2)^2 + 12(2) \right] + \left[\frac{4^3}{3} - 4(4)^2 + 12(4) \right] - \left[\frac{2^3}{3} - 4(2)^2 + 12(2) \right]$ $= 16$	K1 K1 K1 N1	10

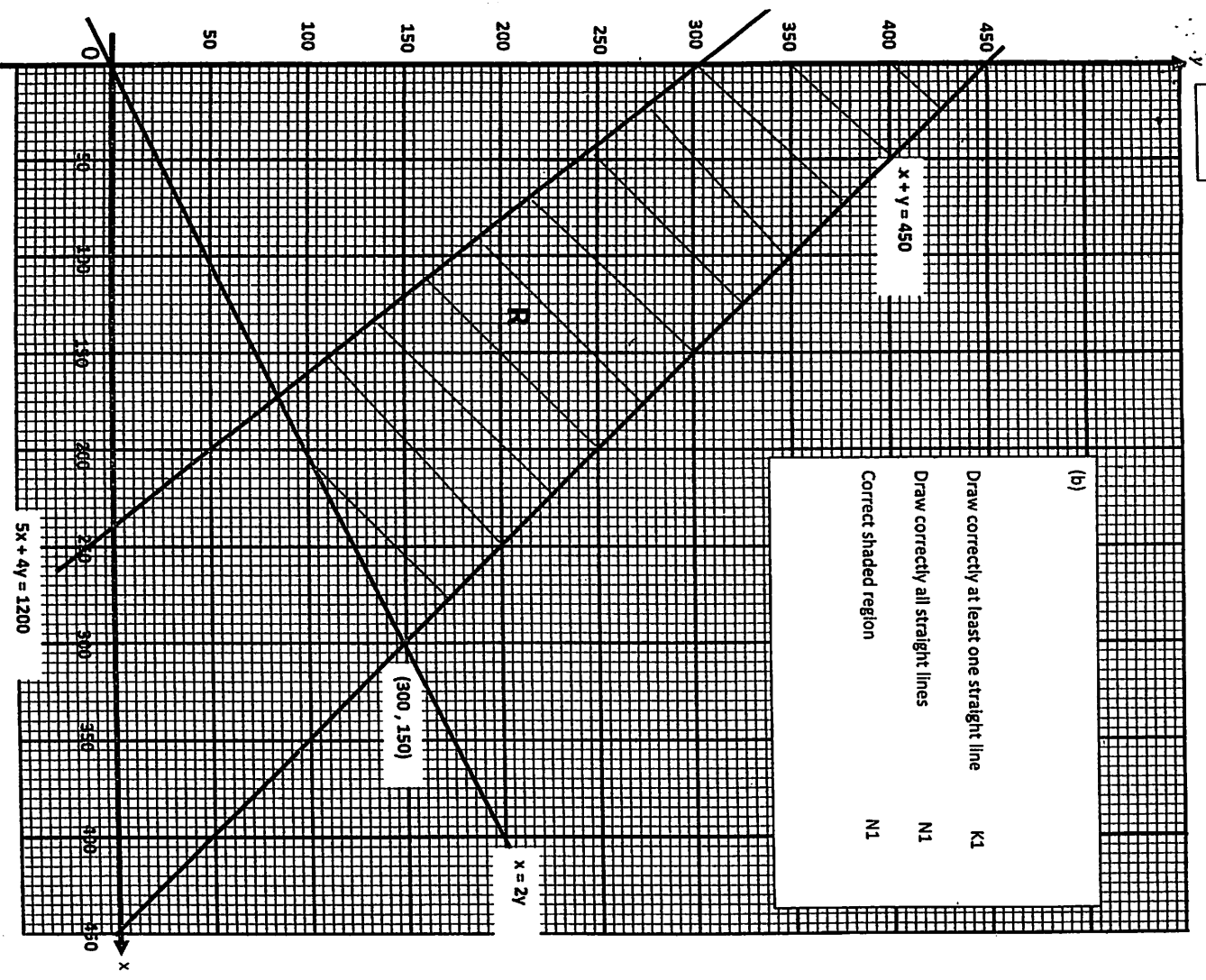
Question	Solution and Marking Scheme	Sub Marks	Total Marks
13(a)	$x = 2.00$ $y = 80$ $z = 3.30$	P1 P1 P1	
(b)	$\sum W = 360$ $\frac{(150 \times 150) + (120 \times 40) + (125 \times 90) + (80 \times 50) + (110 \times 30)}{360}$ $= 127.36$	P1 K1 N1	
(c)	$\frac{120}{100} \times \frac{127.36}{100} \times 100$ $= 152.83$ Production cost = $\frac{152.83}{100} \times 12$ $= 18.34$	K1 N1 K1 N1	10

Question	Solution and Marking Scheme	Sub Marks	Total Marks
14			
(a)(i)	$AC^2 = 7^2 + 18.4^2 - 2(7)(18.4) \cos 40^\circ$ $AC = 13.79$	K1 N1	
(ii)	$\frac{\sin \angle ACB}{6.5} = \frac{\sin 110^\circ}{13.79}$ $\angle ACB = 26.29^\circ$	K1 N1	
(b)(i)		P1	
(ii)	$\angle BAC = 180^\circ - 110^\circ - 26.29^\circ$ $= 43.71^\circ$ <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 100px;"> Either $\angle BAC$ or $\angle ABA'$ </div> $\angle ABA' = 180^\circ - 43.71^\circ - 43.71^\circ$ $= 92.58^\circ$ $\text{Area } \triangle ABC = \frac{1}{2}(13.79)(6.5) \sin 43.71^\circ$ $= 30.97$ $\text{Area } \triangle A'BA = \frac{1}{2}(6.5)(6.5) \sin 92.58^\circ$ $= 21.10$ $\text{Area } \triangle A'BC = 30.97 - 21.10$ $= 9.87$	P1 K1 K1 K1 N1	10

Soalan 7

Question	Solution and Marking Scheme	Sub Marks	Total Marks
15			
(a)	$x + y \leq 450$	P1	
	$x \leq 2y$	P1	
	$20x + 16y \geq 4800$ or $5x + 4y \geq 1200$	P1	
(c)(i)	Minimum B = 175	P1	
(ii)	Point (300, 150)	P1	
	Total maximum profit = $20(300) + 16(150)$	K1	
	= RM8400	N1	10





(b)

Draw correctly at least one straight line	K1
Draw correctly all straight lines	N1
Correct shaded region	N1