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## Add Maths



## Kertas 1

Soalan	Jawapan	Markah	Soalan	Jawapan	Markah
1	(a) many – to – one relation (b) It is a function	3	18.	(a) $PQ = 9i - 11j$ (b) $ PQ  = \sqrt{202}$  Unit vector $= \frac{9i - 11j}{\sqrt{202}}$	3
2.	12	2	19.	$11y + x - 23 = 0$	4
3	(a) 2 (b) 7	3	20.	$k\sqrt{1-h} - h\sqrt{1-k}$	4
4.	$k = 3$	2	21.	(a) $\frac{3}{x}$ (b) 24	4
5.	(a) $h = 4$ , $k = 6$  (b) $x = \frac{-4 + 6}{2}$  $x = 1$	3	22.	$k = 3, h = 7$	4
6.	$-\frac{3}{5}$	2	23.	(a) 1.5 (b) 0.4332	4
7.	$p = \pm \frac{1}{5}$	3	24.	$m = 1, n = 2$	4
8.	$4x^2 + 17x - 15 = 0$	2	25.	$x = 90, 221^\circ 49', 318^\circ 49'$	4
9.	(a) $\frac{37}{120}$ (b) $\frac{33}{40}$	4			
10.	15.2 cm	3			
11.	$y = \frac{x^4}{4} - \frac{x^3}{3} + \frac{5}{12}$	3			
12.	$x = -\frac{3}{5}, 1$	3			
13.	$y = -1, 0$	3			
14.	33	3			
15.	$3 \times 6! = 2160$	3			
16	(a) 1008 (b) 1785	4			
17.	$k = -8$	3			



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## Kertas 2

Soalan	Jawapan	Markah	Soalan	Jawapan	Markah												
	SECTION A			SECTION B													
1.	$x = -\frac{5}{2}, y = -\frac{15}{4}, x=3, y=-1$	7	7.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><math>\frac{1}{x}</math></td> <td>0.44</td> <td>0.25</td> <td>0.16</td> <td>0.11</td> <td>0.04</td> </tr> <tr> <td><math>\frac{1}{y}</math></td> <td>1.82</td> <td>1.06</td> <td>0.69</td> <td>0.50</td> <td>0.21</td> </tr> </table>	$\frac{1}{x}$	0.44	0.25	0.16	0.11	0.04	$\frac{1}{y}$	1.82	1.06	0.69	0.50	0.21	
$\frac{1}{x}$	0.44	0.25	0.16	0.11	0.04												
$\frac{1}{y}$	1.82	1.06	0.69	0.50	0.21												
2.	(a) (-3,3) (b) $7y = x + 24$ (c) 15 unit <sup>2</sup>	6		$\frac{p}{y} - \frac{q}{x^2} = 1$ $y(q+x^2) = px^2$ $y = \frac{px^2}{q+x^2}$	10												
3.	(a) $p = 5$ (b) $y = \frac{5}{3}x^3 - \frac{x^2}{2} - \frac{13}{6}$ (c) $y = -\frac{1}{4}x - \frac{3}{4}$	6		$\frac{1}{y} = \frac{q}{p} \left( \frac{1}{x^2} \right) + \frac{1}{p}$													
4.	(a) $h = \frac{1}{6}, k = -5$ (b) (i) 1 (ii) $\frac{3}{2}$	7		(b) (i) $\frac{1}{p} = \frac{1}{y}$  intercept = 0.04, $p = 25$													
5.	(a) (i) 0.5 (ii) 8 (b) (i) 15.2 cm (ii) 43.8 cm	7		(ii) $\frac{q}{p} = \text{gradient}$  $\frac{q}{p} = \frac{0.96}{0.24}$  $q = 100$													
6.	(a) 0.00884 (b) (i) 0.9533 (ii) 50	7	8.	(a) $-\frac{29}{12}$  (b) (i) $-\frac{1}{7}$  (ii) Number of solution = 4	10												
				<p><i>Times SPM 2008</i>  <a href="http://edu.joshuatly.com">http://edu.joshuatly.com</a>  <a href="http://www.joshuatly.com">http://www.joshuatly.com</a></p>													



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## Kertas 2

Soalan	Jawapan	Markah	Soalan	Jawapan	Markah																																													
9.	(a) (i) $55.5 + (30 - 18/15) 5 = 59.5$ (ii) quartile 1 = $50.5 + (15 - 11/7) 5 = 53.36$  Quartile 3 = $60.5 + (45 - 33/13) 5 = 65.12$  Interquartile range = $65.12 - 53.36 = 11.76$  <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th>Mark</th> <th>x</th> <th>f</th> <th>fx</th> <th>fx<sup>2</sup></th> </tr> </thead> <tbody> <tr><td>41-45</td><td>43</td><td>3</td><td>129</td><td>5547</td></tr> <tr><td>46-50</td><td>48</td><td>8</td><td>384</td><td>18432</td></tr> <tr><td>51-55</td><td>53</td><td>7</td><td>371</td><td>19663</td></tr> <tr><td>56-60</td><td>58</td><td>15</td><td>870</td><td>50460</td></tr> <tr><td>61-65</td><td>63</td><td>12</td><td>756</td><td>47628</td></tr> <tr><td>66-70</td><td>68</td><td>8</td><td>544</td><td>36992</td></tr> <tr><td>71-75</td><td>73</td><td>7</td><td>511</td><td>37303</td></tr> <tr><td></td><td></td><td>60</td><td>3565</td><td>216025</td></tr> </tbody> </table> (b) (i) Mean = $\frac{3565}{60} = 59.417$ (ii) Standard deviation $= \sqrt{\frac{216025}{60} - \left(\frac{3565}{60}\right)^2}$ $= \sqrt{70.08}$ $= 8.371$	Mark	x	f	fx	fx <sup>2</sup>	41-45	43	3	129	5547	46-50	48	8	384	18432	51-55	53	7	371	19663	56-60	58	15	870	50460	61-65	63	12	756	47628	66-70	68	8	544	36992	71-75	73	7	511	37303			60	3565	216025	10	11.	(c) Area of sector CPR $= \frac{1}{2} (7)^2 (1.295)$ $= 31.73 \text{ cm}^2$  Area of sector DQR $= \frac{1}{2} (4)^2 (1.847)$ $= 14.776 \text{ cm}^2$  Area of trapezium CDPQ $= \frac{1}{2} (4 + 7) (10.6)$ $= 58.3 \text{ cm}^2$  Area of the shaded region $= 58.3 - 31.73 - 14.776$ $= 11.79$  (a) (i) $\vec{CB} = 4\vec{x} - 6\vec{y}$ (ii) $\vec{DA} = 8\vec{x} - 6\vec{y}$  (b) (i) $\vec{AE} = 8m\vec{x} + 6m\vec{y}$ (ii) $\vec{AE} = (4-4m)\vec{x} + 6n\vec{y}$  $m = \frac{1}{3}, n = \frac{1}{3}$	10
Mark	x	f	fx	fx <sup>2</sup>																																														
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10.	(a) $\cos \theta = 3/11, \theta = 1.295 \text{ rad}$ $\angle RQD = \pi - 1.295 = 1.847 \text{ rad}$  (b) $S_{CR} = 7(1.295) = 9.065,$ $S_{DR} = 4(1.847) = 7.388$  $CD/3 = \tan \theta$ $CD = 3 \times \tan 1.295$ $= 10.6$ Perimeter of the shaded region $= 9.065 + 7.388 + 10.6$ $= 27.05 \text{ cm}$	10	<p><i>Times SPM 2008</i>  <a href="http://edu.joshuatly.com">http://edu.joshuatly.com</a>  <a href="http://www.joshuatly.com">http://www.joshuatly.com</a></p>																																															



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## Kertas 2

Soalan	Jawapan	Markah	Soalan	Jawapan	Markah
	SECTION C				
12.	(a) I: $x < 40$ II: $x + y < 100$ III: $y - 2x < 25$  (b) (i) $y = 60$ (ii) at $(25, 75)$ , $k = x + 2y$ $= 25 + 2(75)$ $= 175$  (iii) $x = 8$	10		(c) The area of quadrilateral UVWT $= \frac{1}{2} \times 4 \times 8 \times \sin 140 + \frac{1}{2} \times 10 \times 11.36 \times \sin (180 - 40 - 34^\circ 28')$ $= 65.0116$ $= 65.01 \text{ cm}^2$	
13.	(a) $v = ds/dt = 6t^2 - 6t$ , $a = dv/dt = 12t - 6$ , initial acceleration, $t = 0$ $a = -6 \text{ ms}^{-2}$  (b) $v = 6(4)^2 - 6(4) = 72 \text{ m/s}$  (c) When the particle is instantaneously at rest, $v = 0$  $6t^2 - 6t = 0$ $6t(t - 1) = 0$ , $t = 0$ and $t = 1\text{s}$  (d) $12 = 6t^2 - 6t$ $t^2 - t - 2 = 0$ , $(t - 2)(t + 1) = 0$ , $t = 2\text{s}$	10	15.	(a) (i) Let the prices of a pair of shirts of brand P in the years 2001, 2003 and 2005 be $P_0$ , $P_1$ and $P_2$ respectively.  $\frac{P_2}{P_1} \times 100 = 156$ ..... (1) $\frac{P_1}{P_0} \times 100 = 144$ ..... (2) Dividing (1) by (2) $\frac{P_2}{P_0} \times 100 = \frac{156}{144} \times 100 = 108.33$  The price index in 2005 (with 2003 = 100) is 108.33  (ii) Given $P_1 = \text{RM}250$ , From equation (2),  $\frac{250}{P_0} \times 100 = 144$  $P_0 = \frac{250}{144} \times 100 = \text{RM } 173.61$  The price of the shirts in the year 2001 is RM 173.61  (b) (i) $2.50/x \times 100 = 125$ , $x = 2.00$ $y = 4.00/2.50 \times 100 = 160$  (ii) Composite index number $= \frac{120 \times 4 + 125 \times 2 + 110 \times 1 + 160 \times 5}{4 + 2 + 1 + 5}$ $= \frac{1640}{12}$ $= 136.7$	10
14	(a) (i) $\frac{KM}{\sin 107} = \frac{6.8}{\sin 25}$  $KM = 15.39$  (ii) $\frac{1}{2} \times 6.8 \times 15.39 \times \sin 48 = 38$  (b) (i) $VT^2 = 4^2 + 8^2 - 2(4)(8) \cos 140^\circ$ $= 16 + 64 - 64(-0.7660)$ $= 129.024$ $VT = 11.36 \text{ cm}$  (ii) $\frac{\sin \angle TVW}{10} = \frac{\sin 40}{11.36}$  $\angle TVW = 34^\circ 28'$	10			

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