

**SKEMA JAWAPAN  
SPM(U) JUN 2019**

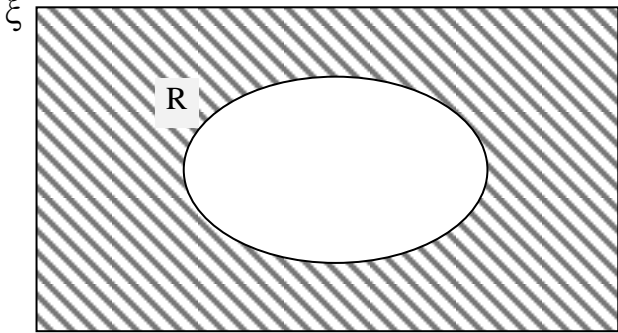
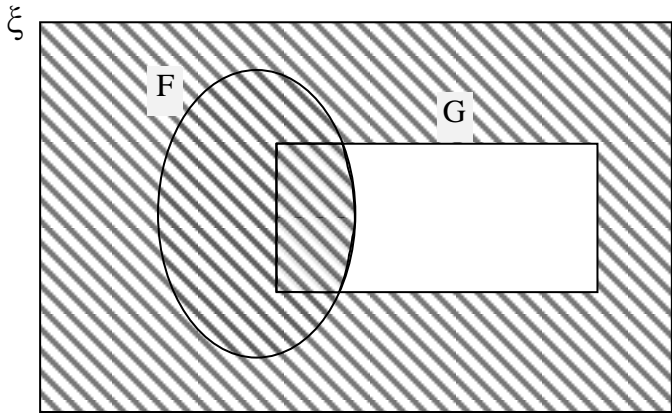
**MATEMATIK KERTAS 1**

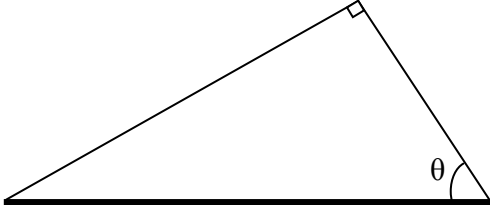
No	Jawapan	No	Jawapan	No	Jawapan	No	Jawapan
1	A	11	C	21	D	31	D
2	A	12	A	22	C	32	D
3	A	13	A	23	B	33	A
4	C	14	D	24	D	34	D
5	C	15	B	25	D	35	B
6	D	16	B	26	D	36	C
7	D	17	D	27	C	37	D
8	A	18	A	28	C	38	C
9	B	19	B	29	C	39	C
10	D	20	B	30	A	40	B

**SKEMA PERMARKAHAN  
SPM(U) JUN TAHUN2019**

**MATEMATIK KERTAS 2**

**Bahagian A**

No. Soalan	Peraturan Pemarkahan	Markah	
1	<p>(a)</p>  <p>(b)</p> 	P2	4

No. Soalan	Peraturan Pemarkahan	Markah	
2	<p>(a)</p>  <p>(b)</p> $\tan \theta = \frac{8}{6}$ $\theta = 53.13^\circ @ 53^\circ 7'$	P1  K1  N1	3
3	$3x^2 - 2x - 8 = 0$ $(x - 2)(3x + 4) = 0$ $x = 4, \quad x = -\frac{4}{3}$	K1  K1  N1N1	4
4	<p><i>Baki isipadu = Isipadu Jag - 5(Isipadu Cawan)</i></p> $= \left( \frac{22}{7} \times 6.5^2 \times 21 \right) - 5 \left( \frac{3}{4} \times \frac{1}{2} \left[ \frac{4}{3} \times \frac{22}{7} \times 4^3 \right] \right)$ $= (2788.50) - (502.86)$ $= 2285.64 @ 2285 \frac{16}{25}$	K1K1 K1  K1 N1	5
5	$5p + 2q = 3p + 8q \quad \text{atau} \quad 2p = 6q \quad \text{atau setara}$ $12q - 2q = 852 \quad \text{atau setara}$ $6q = 852$ $q = 142$ $\therefore p = 426$	K1  K1  N1 N1	4

No. Soalan	Peraturan Pemarkahan	Markah	
6	(a) < (b) Sudut pedalaman polygon ABCDEF ialah $120^\circ$ (c) i) $2^n + 1$ , $n = 1, 2, 3, 4, \dots$ ii) $2^n + 1 = 129$ $\therefore$ Bilangan baris, $n = 7$	P1	
		P1	
		K1N1	
		K1	5
7	(a) $m_{OR} = \frac{4}{3}$ $y = \frac{4}{3}x$ (ii) $OP = OR = \sqrt{3^2 + 4^2} = 5$ Koordinat P = (0,5) $\therefore y = \frac{4}{3}x + 5$ (iii) Koordinat Q, (x,0) $0 = \frac{4}{3}x + 5$ $\therefore Q(-\frac{15}{4}, 0)$	K1	
		K1	
		N1	
		K1	
		N1	5

No. Soalan	Peraturan Pemarkahan	Markah	
8	<p><math>x</math> – Kemeja <math>T</math>  <math>y</math> – Seluar</p> $52x + 52y = 1716$ $60x + 50y = 1800$ $\begin{pmatrix} 52 & 52 \\ 60 & 50 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1716 \\ 1800 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = -\frac{1}{520} \begin{pmatrix} 50 & -52 \\ -60 & 52 \end{pmatrix} \begin{pmatrix} 1716 \\ 1800 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 15 \\ 18 \end{pmatrix}$ $x = 15$ $y = 18$	<p>P1</p> <p>K1</p> <p>N1</p> <p>N1</p>	<p>4</p>
9	<p>(a) <math>Laju = \frac{20 - 10}{\left(\frac{15}{60}\right)} = 40 \text{ kmj}^{-1}</math></p> <p>(b) <math>Tempoh = \frac{135 - 15}{60} = 2 \text{ jam}</math></p> <p>(c) <math>-80 = \frac{0 - 20}{\left(\frac{k - 135}{60}\right)}</math></p> <p><math>\therefore k = 150</math></p>	<p>K1N1</p> <p>K1</p> <p>K1</p> <p>N1</p>	<p>5</p>

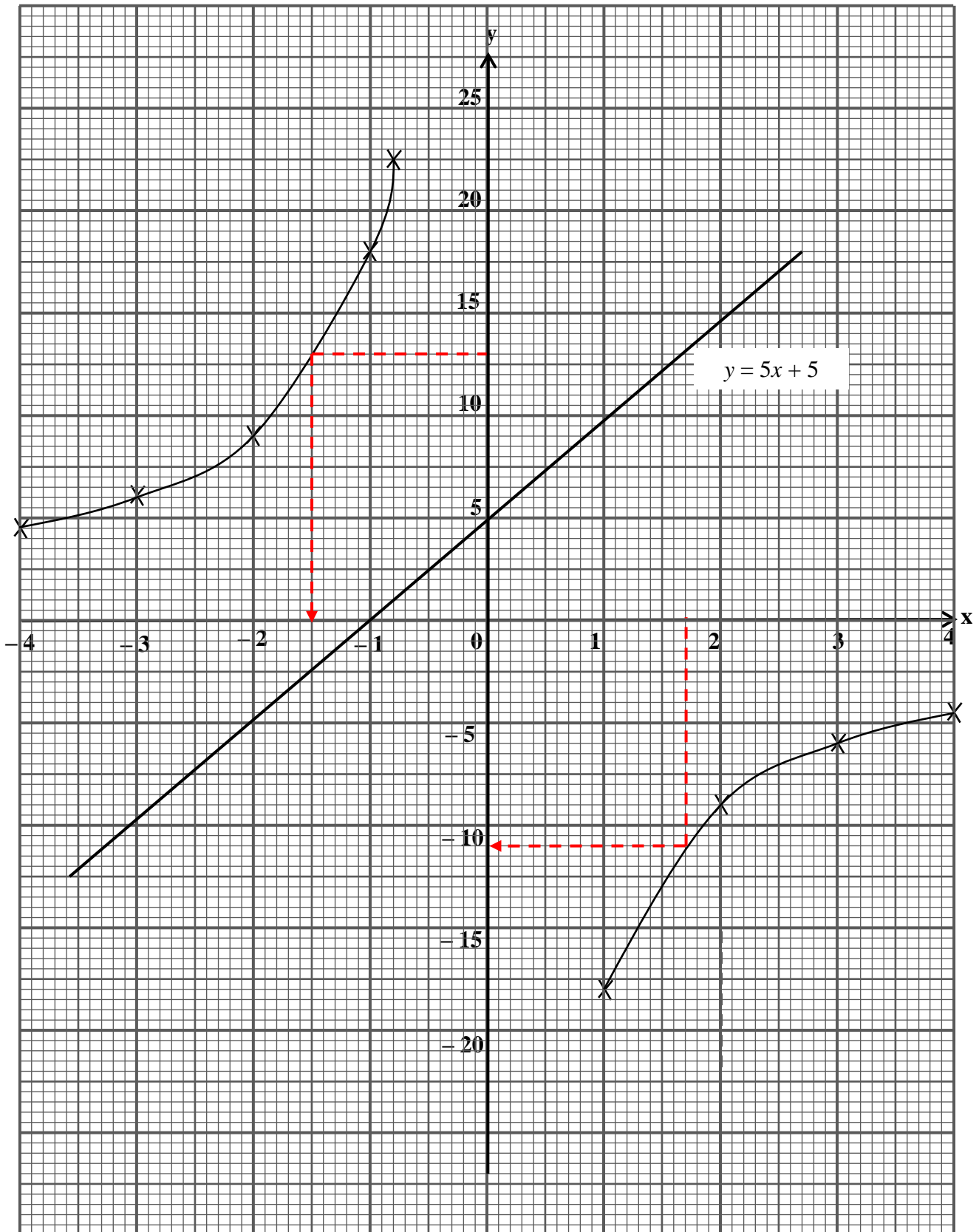
No. Soalan	Peraturan Pemarkahan	Markah	
10	<p>(a)</p> $\text{Luas kaws. berlorek} = \left( \frac{1}{2} \times \frac{22}{7} \times 10.5^2 \right) - \left( \frac{150}{360} \times \frac{22}{7} \times 7^2 \right)$ $= (173.25) - (64.167)$ $= 109.083$ <p>(b)</p> $\text{Perimeter kberlorek} = \left( \frac{1}{2} \times 2 \times \frac{22}{7} \times 10.5 \right) + \left( \frac{150}{360} \times 2 \times \frac{22}{7} \times 7 \right) + 3(7)$ $= 33 + 18.33 + 21$ $= 72.33 \text{ atau } 72\frac{33}{100} \text{ atau } \frac{7233}{100}$	K1K1	
		N1	
		K1K1	6
11	<p>(a) { (4,C), (4,O), (4,S), (4,T), (9,C), (9,O), (9,S), (9,T), (16,C), (16,O), (16,S), (16,T) }</p> <p>(b)i) { (4,O), (16,O) }</p> $= \frac{2}{12} @ \frac{1}{6}$ <p>ii) { (4,S), (9,C), (9,O), (9,S), (9,T), (16,S) }</p> $= \frac{6}{12} @ \frac{1}{2}$	P2	
		K1	
		N1	
		K1	
		N1	6

**Bahagian B**

<b>No. Soalan</b>	<b>Peraturan Pemarkahan</b>	<b>Markah</b>	
<b>12</b>	<p>(a) <math>y = 9</math> <math>y = -6</math></p> <p>(b) <u>Graf</u>: Paksi dilukis dalam arah yang betul dengan skala yang seragam. <math>-4 \leq x \leq 4</math> dan <math>-4.5 \leq y \leq 4.5</math>.</p> <p>Semua 7 titik ditanda dengan betul</p> <p>Lengkung yang licin dan berterusan dalam julat <math>-4 \leq x \leq 4</math> dengan tiada garis lurus dan melalui semua 7 titik yang betul.</p> <p>(c) (i) <math>-10.8 \leq y \leq -11.2</math> (ii) <math>-1.6 \leq x \leq -1.4</math></p> <p>(d) Persamaan <math>y = 5x + 5</math> Garis lurus dilukis dengan betul dan merentasi lengkung utama.</p> <p>Nilai-nilai <math>x</math>     <i>(terdapat masalah pada soalan ini)</i></p>	<b>K1</b> <b>K1</b>	
		<b>P1</b>	
		<b>K2</b>	
		<b>N1</b>	
		<b>P1</b> <b>P1</b>	
		<b>K1</b> <b>K1</b>	
		<b>N1</b> <b>N1</b>	
			<b>12</b>

12(b)

Graph for Question 12/Graf untuk Soalan 12

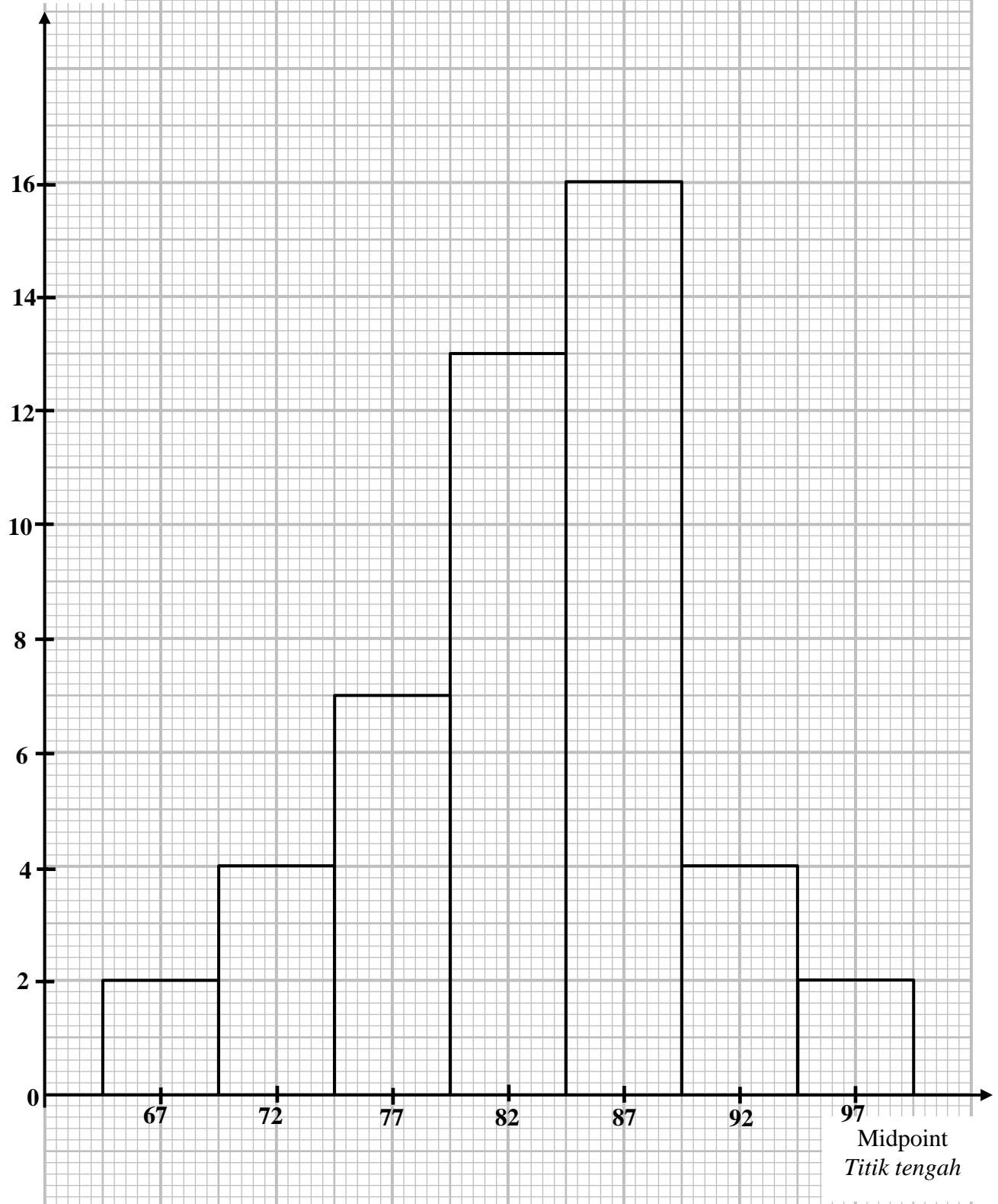


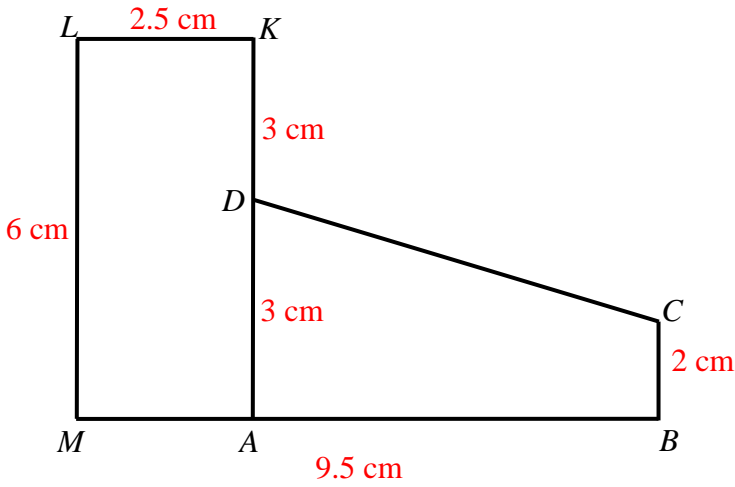
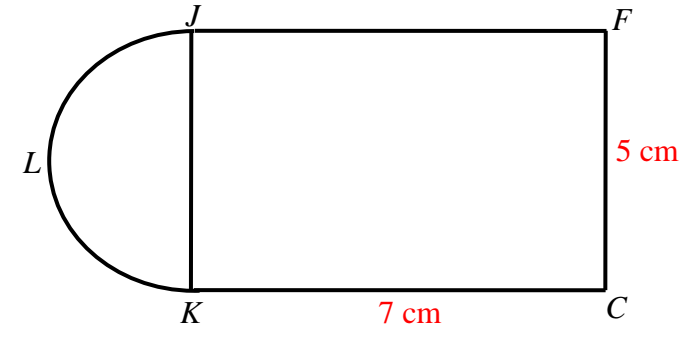
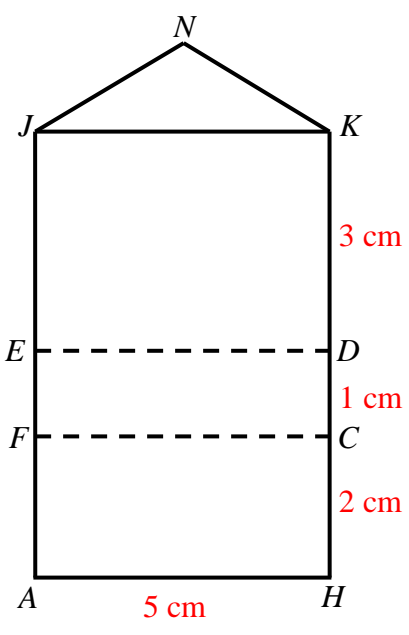


No. Soalan	Peraturan Pemarkahan	Markah																									
13	<p>(a) (i) <math>(3, 4) \longrightarrow (1, 7)</math>  (ii) <math>(5, 5) \longrightarrow (3, 8)</math></p> <p>(b) (i) a) <math>V =</math> Putaran <math>90^\circ</math> ikut arah jam pada pusat <math>P / (-2, 3)</math>  b) <math>W =</math> Pembesaran dengan faktor skala <math>\frac{1}{2}</math> pada pusat <math>(4, 5)</math></p> <p>(ii) Luas <math>JKLMN = \left(\frac{1}{2}\right)^2 \times 290</math>  <math>= 72.5 @ 72\frac{1}{2}</math></p>	<p>P2 P2</p> <p>P1P1P1</p> <p>P1P1P1</p> <p>K1</p> <p>N1</p>	12																								
14	<p>(a)</p> <table border="1" data-bbox="430 947 1144 1430"> <thead> <tr> <th>Mark Markah</th> <th>Frequency Kekerapan</th> <th>Midpoint Titik tengah</th> </tr> </thead> <tbody> <tr> <td>65 – 69</td> <td>2</td> <td>67</td> </tr> <tr> <td>70 – 74</td> <td>4</td> <td>72</td> </tr> <tr> <td>75 – 79</td> <td>7</td> <td>77</td> </tr> <tr> <td>80 – 84</td> <td>13</td> <td>82</td> </tr> <tr> <td>85 – 89</td> <td>16</td> <td>87</td> </tr> <tr> <td>90 – 94</td> <td>4</td> <td>92</td> </tr> <tr> <td>95 – 99</td> <td>2</td> <td>97</td> </tr> </tbody> </table> <p>(b)</p> $Min = \frac{2(67) + 4(72) + 7(77) + 13(82) + 16(87) + 4(92) + 2(97)}{2 + 4 + 7 + 13 + 16 + 4 + 2}$ $= \frac{3981}{48}$ $= 82.94 @ 1\frac{559}{768}$ <p>(d) Rujuk Histogram  (e) Kelas mod = 85 – 89</p>	Mark Markah	Frequency Kekerapan	Midpoint Titik tengah	65 – 69	2	67	70 – 74	4	72	75 – 79	7	77	80 – 84	13	82	85 – 89	16	87	90 – 94	4	92	95 – 99	2	97	<p>P1 P2 P1</p> <p>K2</p> <p>N1</p> <p>P1K2N1 P1</p>	12
Mark Markah	Frequency Kekerapan	Midpoint Titik tengah																									
65 – 69	2	67																									
70 – 74	4	72																									
75 – 79	7	77																									
80 – 84	13	82																									
85 – 89	16	87																									
90 – 94	4	92																									
95 – 99	2	97																									

Frequency  
Kekerapan

**Graf untuk Soalan 14**



No. Soalan	Peraturan Pemarkahan	Markah
15	<p>(a) (i)</p>  <p>(ii)</p>  <p>(b)</p> 	<p>K1 K1 N1</p> <p>K1 K1 K1 N1</p> <p>K1 K1 N2</p> <p style="text-align: center;">4</p>

No. Soalan	Peraturan Pemarkahan	Markah	
<b>16</b>	(a) Longitud R, $75^{\circ}\text{T}$	<b>P2</b>	
	(b) Jarak terpendek = $(90 - 38) \times 60$ $= 3120 \text{ b.n.}$	<b>K1</b> <b>N1</b>	
	(c) $\frac{4680}{60} = 78^{\circ}$  $\therefore \text{Latitud V} = 78^{\circ} - 38^{\circ} = 40^{\circ}\text{S}$	<b>K1</b> <b>K1N1</b>	
	(f) i) Jarak PQ = $(105^{\circ}\text{B} - 40^{\circ}\text{B}) \times 60' \times \text{Kos } 38^{\circ} = 3073.24 \text{ b.n}$	<b>K1K1N1</b>	
	ii) $\text{Masa} = \frac{4680 + 3073.24}{600} = 12.92 \text{ jam}$	<b>K1N1</b>	