

**1449/1 & 2  
Matematik  
Kertas 1/2  
2020**



**JABATAN PELAJARAN TERENGGANU**

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**MPP 3 / TAHUN 2020**

**SIJIL PELAJARAN MALAYSIA**

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**MATEMATIK 1449/1/2**

**Kertas 1 & 2**

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**PERATURAN PEMARKAHAN**

$$\text{Markah} = \frac{\text{Kertas 1} + \text{Kertas 2}}{140}$$

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Peraturan Pemarkahan ini mengandungi 15 halaman bercetak

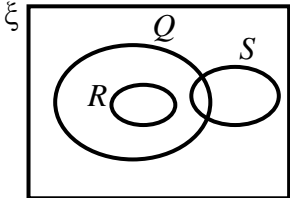
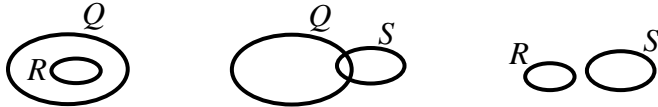
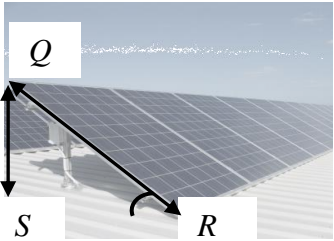
**SKEMA PERMARKAHAN**  
**MPP 3 / TAHUN 2020**  
**SIJIL PELAJARAN MALAYSIA**

**MATEMATIK KERTAS 1**

1	<b>B</b>	11	<b>C</b>	21	<b>A</b>	31	<b>C</b>
2	<b>C</b>	12	<b>C</b>	22	<b>D</b>	32	<b>B</b>
3	<b>C</b>	13	<b>A</b>	23	<b>D</b>	33	<b>C</b>
4	<b>A</b>	14	<b>B</b>	24	<b>D</b>	34	<b>D</b>
5	<b>A</b>	15	<b>A</b>	25	<b>D</b>	35	<b>A</b>
6	<b>B</b>	16	<b>C</b>	26	<b>C</b>	36	<b>C</b>
7	<b>B</b>	17	<b>C</b>	27	<b>B</b>	37	<b>A</b>
8	<b>D</b>	18	<b>A</b>	28	<b>D</b>	38	<b>A</b>
9	<b>B</b>	19	<b>D</b>	29	<b>B</b>	39	<b>B</b>
10	<b>D</b>	20	<b>A</b>	30	<b>A</b>	40	<b>D</b>

## MATEMATIK KERTAS 2

## Bahagian A

Soalan	Peraturan Permarkahan	Markah	
<p>1(a) <math>J \cap K'</math> or equivalent</p> <p>(b)</p>	 <p>Note:</p> <ol style="list-style-type: none"> <li>Accept any shape for <math>Q</math>, <math>R</math> and <math>S</math></li> <li>Do not accept answer without label</li> <li>Any two sets correctly drawn, award P1</li> </ol> <p>e.g.</p> 	<p>P1</p> <p>P2</p>	<p style="text-align: center;"><u>3</u></p>
<p>2(a)</p>	 <p>Mark on the diagram</p> <p>(b) <math>\sin 41^\circ 42' = \frac{QS}{2.6}</math></p> <p style="text-align: center;">1.73</p>	<p>P1</p> <p>K1</p> <p>N1</p>	<p style="text-align: center;"><u>3</u></p>
<p>3</p>	<p><math>a^2 - 5a - 84 = 0</math></p> <p><math>(a - 12)(a + 7) = 0</math></p> <p>Perimeter = 64</p> <p>Note:</p> <p>Accept <math>a = 12</math> for N1</p>	<p>K1</p> <p>K1</p> <p>N2</p>	<p style="text-align: center;"><u>4</u></p>

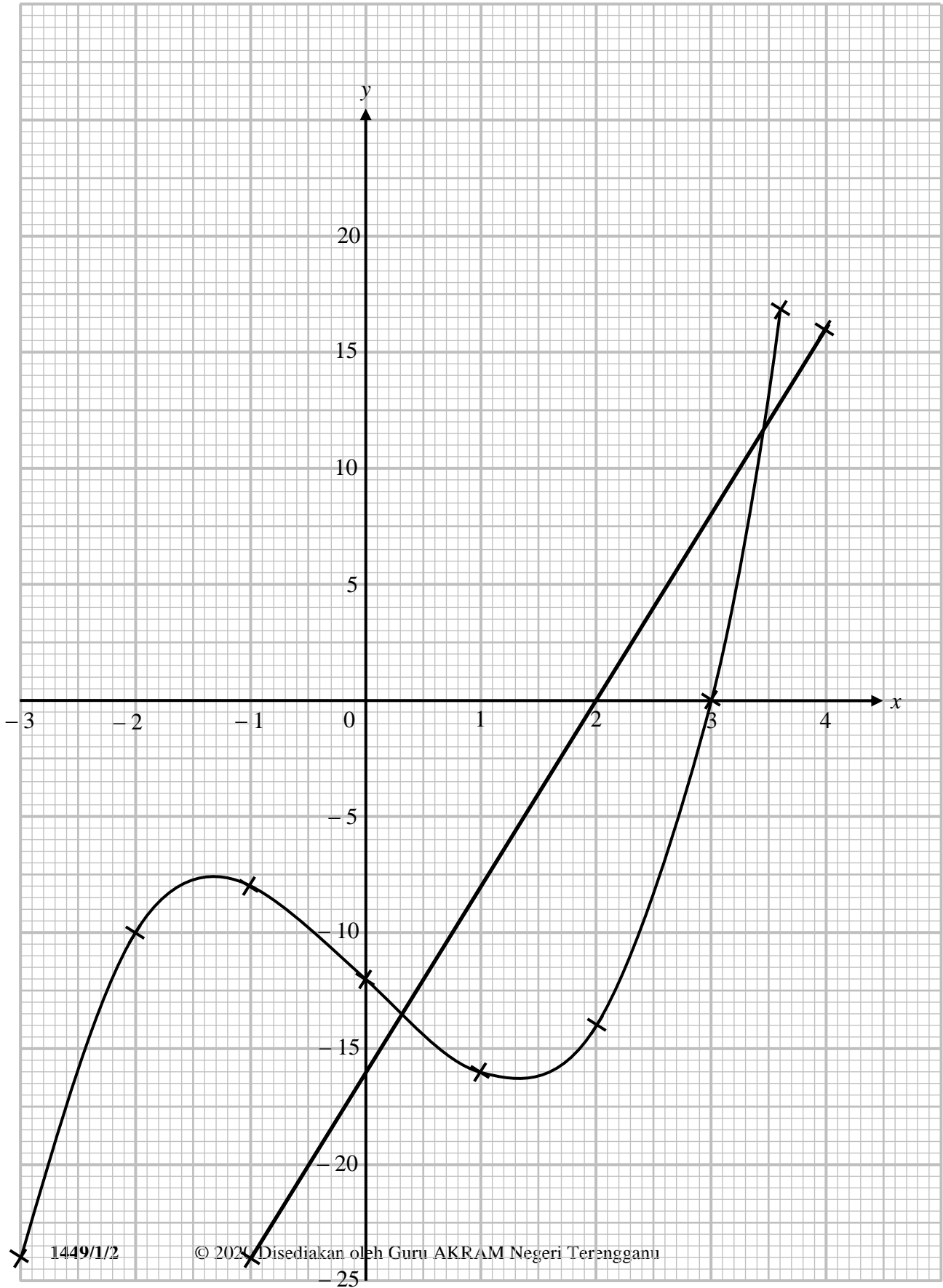
Soalan	Peraturan Permarkahan	Markah	
<p><b>4</b></p>	$\left(\frac{4}{3} \times \frac{22}{7} \times r^3\right)$ $3 \times \left(\frac{1}{3} \times \frac{22}{7} \times 2^2 \times 9\right)$ $\left(\frac{4}{3} \times \frac{22}{7} \times r^3\right) = 3 \times \left(\frac{1}{3} \times \frac{22}{7} \times 2^2 \times 9\right)$ <p>3</p>	K1	
		K1	
		K1	
		N1	<u>4</u>
<p><b>5</b></p>	$2x + 4y = 200$ $4x + 2y = 160$ <p><math>x = 100 - 2y</math> or <math>y = 80 - 2x</math> or equivalent</p> <p><math>x = 20</math> or <math>y = 40</math></p> <p>Badminton racket = 40</p> <p>Squash racket = 45</p>	P1	
		P1	
		K1	
		N1	<u>6</u>
<p><b>6(a)</b></p>	<p>True/<i>Benar</i></p>	P1	
<p>(b)</p>	$6 \times p \neq 42$	P1	
<p>(c)</p>	$n^2 + 2n$ <p><math>n = 1, 2, 3, 4, \dots</math></p>	K1	
		N1	<u>4</u>
<p><b>7(a)</b></p>	$m = \frac{3}{2}$ $1 = \frac{3}{2}(-5) + c$ or $c = \frac{17}{2}$ or equivalent $y = \frac{3}{2}x + \frac{17}{2}$ or equivalent	P1	
		K1	
		N1	
<p>(b)</p>	$0 = \frac{3}{2}x + \frac{17}{2}$ <p><math>x</math>-intercept = <math>-\frac{17}{3}</math></p>	K1	
		N1	<u>5</u>

Soalan	Peraturan Permarkahan	Markah	
<p><b>8</b></p>	<p><math>x + y = 60</math> or <math>5x + 7y = 364</math></p> $\begin{pmatrix} 1 & 1 \\ 5 & 7 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 60 \\ 364 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{(1)(7) - (1)(5)} \begin{pmatrix} 7 & -1 \\ -5 & 1 \end{pmatrix} \begin{pmatrix} 60 \\ 364 \end{pmatrix} \text{ or equivalent}$ <p><math>x = 28,</math> <math>y = 32</math></p> <p><u>Notes:</u></p> <ol style="list-style-type: none"> <li>Do not accept <math>\begin{matrix} * \\ \text{Inverse} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 1 &amp; 1 \\ 5 &amp; 7 \end{pmatrix}</math> or <math>\begin{matrix} * \\ \text{Inverse} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 1 &amp; 0 \\ 0 &amp; 1 \end{pmatrix}</math></li> <li><math>\begin{pmatrix} x \\ y \end{pmatrix} = \begin{matrix} * \\ \text{Inverse} \\ \text{matrix} \end{matrix} \begin{pmatrix} 60 \\ 364 \end{pmatrix}</math>, award K1</li> <li><math>\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 28 \\ 32 \end{pmatrix}</math> as final answer, award N1</li> <li>Do not accept any solution solved not using matrix method.</li> </ol>	<p><b>P1</b></p> <p><b>P1</b></p> <p><b>K1</b></p> <p><b>N1</b></p> <p><b>N1</b></p>	<p style="text-align: center;"><u>5</u></p>
<p><b>9 (a)</b></p> <p><b>(b)</b></p> <p><b>(c)</b></p>	<p>28</p> $\frac{28 - 18}{6 - 0}$ <p><math>\frac{5}{3}</math> or 1.67</p> $\frac{1}{2} \times (18 + 28)6 + (t - 6)28 = 278$ <p><u>Notes:</u></p> $\frac{1}{2} \times (18 + 28)6 \quad \text{or} \quad (t - 6)28$ <p>award K1</p> <p><math>t = 11</math></p>	<p><b>P1</b></p> <p><b>K1</b></p> <p><b>N1</b></p> <p><b>K2</b></p> <p><b>N1</b></p>	<p style="text-align: center;"><u>6</u></p>

Soalan	Peraturan Permarkahan	Markah	
<p><b>10(a)</b></p> <p>(i) {(Red,Blue), (Red,Green), (Red, Yellow), (Blue,Red), (Blue,Green), (Blue, Yellow), (Green,Red), (Green,Blue), (Green, Yellow), (Yellow,Red), (Yellow,Blue), (Yellow,Green)}</p> <p>(ii) {(Red, Blue), (Red, Green), (Red, Yellow), (Blue,Red), (Green,Red), (Yellow,Red)}</p> <p><math>\frac{6}{12}</math> or <math>\frac{1}{2}</math></p> <p><b>(b)</b></p> <p>(i) {(Ali,Badri), (Ali,Chong), (Ali,Dhilip), (Badri,Chong), (Badri,Dhilip), (Chong,Dhilip)}</p> <p>(ii) {(Badri,Chong), (Badri,Dhilip), (Chong,Dhilip)}</p> <p><math>\frac{3}{6}</math> or <math>\frac{1}{2}</math></p>		<b>P1</b>	
		<b>K1</b>	
		<b>N1</b>	
		<b>P1</b>	
<p><b>11(a)</b></p> <p><math>\frac{150}{360} \times 2 \times \frac{22}{7} \times 14</math> or <math>\frac{180}{360} \times 2 \times \frac{22}{7} \times 7</math> or <math>\frac{90}{360} \times 2 \times \frac{22}{7} \times 5</math></p> <p><math>\frac{150}{360} \times 2 \times \frac{22}{7} \times 14 + \frac{180}{360} \times 2 \times \frac{22}{7} \times 7 + 9 + 5 + \frac{90}{360} \times 2 \times \frac{22}{7} \times 5</math></p> <p><math>80\frac{11}{21}</math> or <math>\frac{1691}{21}</math> or 80.52</p> <p><b>(b)</b></p> <p><math>\frac{150}{360} \times \frac{22}{7} \times 14^2</math> or <math>\frac{180}{360} \times \frac{22}{7} \times 7^2</math> or <math>\frac{90}{360} \times \frac{22}{7} \times 5^2</math></p> <p><math>\frac{150}{360} \times \frac{22}{7} \times 14^2 - \frac{180}{360} \times \frac{22}{7} \times 7^2 - \frac{90}{360} \times \frac{22}{7} \times 5^2</math></p> <p><math>160\frac{1}{42}</math> or <math>\frac{6721}{42}</math> or 160.02</p> <p><b>NOTE:</b></p> <p>1. Accept <math>\pi</math> for KN mark.</p> <p>2. Accept correct value from incomplete substitution for K mark.</p> <p>3. Correct answer from incomplete working, award Kk2</p>		<b>K1</b>	
		<b>K1</b>	
		<b>N1</b>	
		<b>K1</b>	
		<b>N1</b>	<b>6</b>

## Bahagian B

Soalan	Peraturan Permarkahan	Markah	
<p><b>12 (a)</b> <math>y = -24</math> <math>y = -14</math></p> <p><b>(b)</b> <u>Graph</u> : Axis drawn in correct directions with uniform scales for <math>-3 \leq x \leq 3.6</math></p> <p>All 8 points and *2 points correctly plotted or curve passes through all the points for <math>-3 \leq x \leq 3.6</math></p> <p><u>Note</u>: 1. 7 or 6 points correctly plotted, award K1 2. Ignore curve out of range.</p> <p>Smooth and continuous curve without any straight line passing through all 8 correct points using the given scales for <math>-3 \leq x \leq 3.6</math></p> <p><b>(c)</b> (i) <math>3.3 \leq x \leq 3.4</math></p> <p>(ii) <math>-14.0 \leq y \leq -16.0</math></p> <p><b>(d)</b> Straight line <math>y = 8x - 16</math> correctly drawn. Checked any two points plotted or straight line passes through any two of the (0, -16), (1, 8), (2, 0) ... accurate to <math>\pm \frac{1}{2}</math> square grid vertically)</p> <p><u>Note</u>: Identify equation <math>y = 8x - 16</math> award K1</p> <p><math>3.3 \leq x \leq 3.6</math> <math>0.25 \leq x \leq 0.35</math></p> <p><u>NOTE</u>: 1. Allow <b>P</b> mark or <b>N</b> mark if values of <math>x</math> and <math>y</math> are shown on graph 2. Values of <math>x</math> and of <math>y</math> obtained by calculations, award <b>P0</b> or <b>N0</b>. 3. Values of <math>x</math> and of <math>y</math> obtained from wrong graph, award <b>P0</b></p>		<p><b>K1</b> <b>K1</b></p> <p><b>P1</b></p> <p><b>K2</b></p> <p><b>N1</b></p> <p><b>P1</b></p> <p><b>P1</b></p> <p><b>K2</b></p> <p><b>N1</b> <b>N1</b></p>	<p><b>2</b></p> <p><b>4</b></p> <p><b>2</b></p> <p><b>4</b></p> <hr/> <p><b>12</b></p>



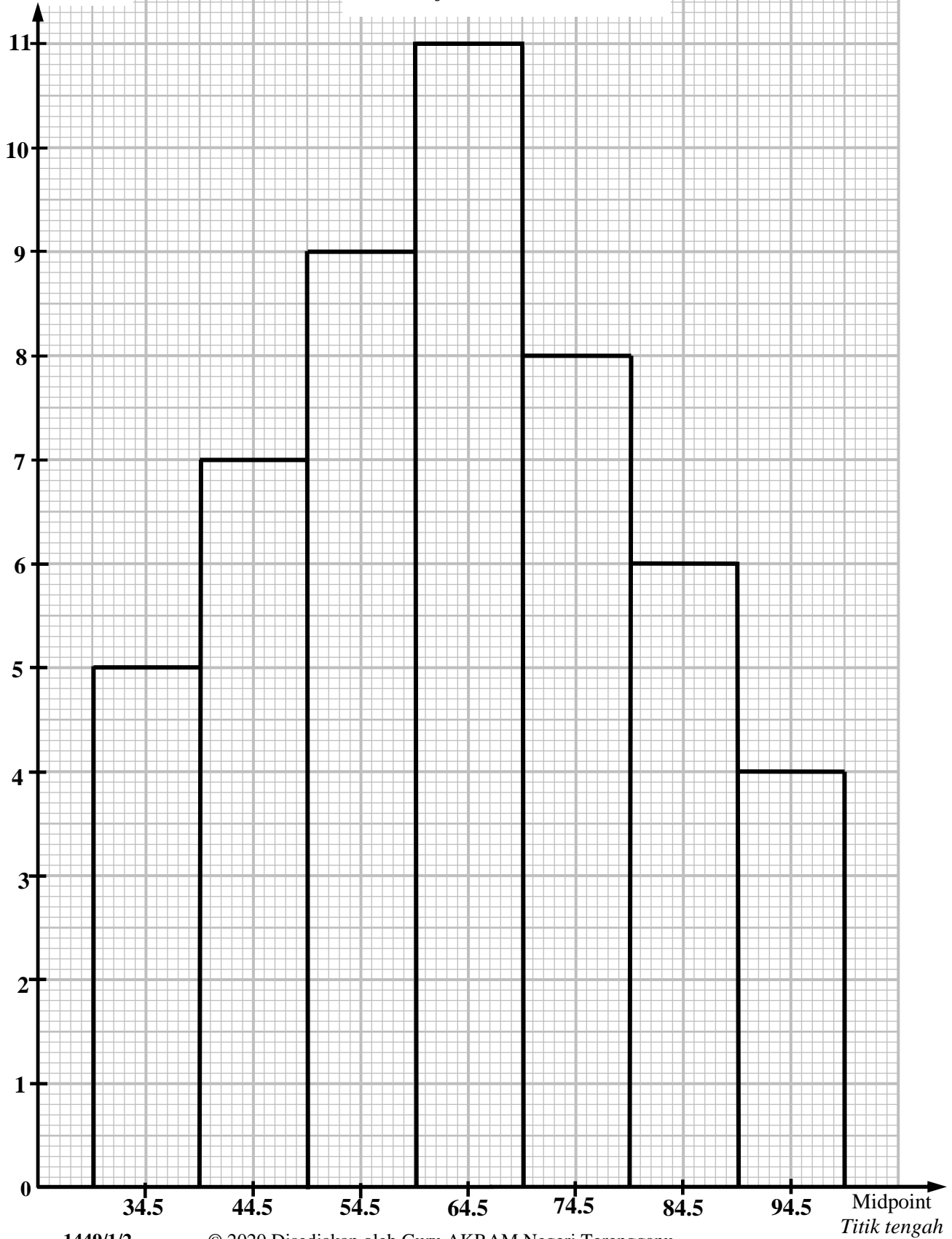


Soalan	Peraturan Permarkahan	Markah	
<p><b>13(a)</b></p> <p>(i) (8, 1)</p> <p>(ii) (3, 6)</p> <p>Note :</p> <p>(3, 6) is marked on the diagram <u>or</u> (0, 8) is seen <u>or</u> (0, 8) is marked on the marked on the diagram, award P1</p> <p>(b) (i) L = Rotation, centre (3, 7) , 90° clockwise //</p> <p><i>Putaran, pusat (3, 7) , 90° ikut arah jam</i></p> <p><u>Note:</u></p> <p>1. Rotation, centre (3, 7) <i>or</i> Rotation, 90° clockwise // <i>Putaran, pusat (3, 7) atau Putaran, 90° ikut arah jam</i>, award P2</p> <p>2. Rotation // <i>Putaran</i> award P1</p> <p>G = Enlargement, scale factor 2, centre (-3, 6) //</p> <p><i>Pembesaran, faktor skala 2, pusat (-3, 6)</i></p> <p><u>Note:</u></p> <p>1. Enlargement, scale factor 2 // <i>Pembesaran, faktor skala 2</i>, award P2</p> <p>2. Enlargement, centre (-3, 6) // <i>Pembesaran, pusat O (-3, 6)</i>, award P2</p> <p>3. Enlargement // <i>Pembesaran</i>, award P1</p> <p>(ii) <math>*(2)^2 \times 100 - 100</math></p> <p><math>*(2)^2 \times 100</math> award K1</p> <p>300</p>		<p>P1</p> <p>P2</p> <p>P3</p> <p>P3</p> <p>K2</p> <p>N1</p>	<p>3</p> <p>9</p> <hr/> <p>12</p>

Soalan	Peraturan Permarkahan	Markah																								
<p>14(a)</p>	<p>(i)</p> <table border="1" data-bbox="409 275 1235 720"> <thead> <tr> <th>Age</th> <th>Frequency</th> <th>Midpoint</th> </tr> </thead> <tbody> <tr> <td>30 – 39</td> <td>5</td> <td>34.5</td> </tr> <tr> <td>40 – 49</td> <td>7</td> <td>44.5</td> </tr> <tr> <td>50 – 59</td> <td>9</td> <td>54.5</td> </tr> <tr> <td>60 – 69</td> <td>11</td> <td>64.5</td> </tr> <tr> <td>70 – 79</td> <td>8</td> <td>74.5</td> </tr> <tr> <td>80 – 89</td> <td>6</td> <td>84.5</td> </tr> <tr> <td>90 – 99</td> <td>4</td> <td>94.5</td> </tr> </tbody> </table> <p>(ii) 10</p> <p>(b) <math>Mean = \frac{(*5 \times 34.5) + (*7 \times 44.5) + (*9 \times 54.5) + (*11 \times 64.5) + (*8 \times 74.5) + (*6 \times 84.5) + (*4 \times 94.5)}{50}</math>  <math>= 63.3</math></p> <p><u>Note:</u></p> <p>1. Allow two mistakes for the multiplication of *frequency and midpoint for K1  <math>\frac{633}{10}</math> or <math>63\frac{3}{10}</math> or 63.3</p> <p>2. Correct answer from incomplete working, award Kk2  e.g <math>\frac{3165}{50}</math> @ <math>\frac{633}{10} = 63.3</math></p> <p>(c) <u>Histogram</u>  Axes drawn in the correct directions with uniform scale for  <math>34.5 \leq x \leq 94.5</math> dan <math>0 \leq y \leq *11</math>.</p> <p>* 6 bars correctly drawn using correct values of class boundary /  class interval / midpoint</p> <p><u>Note:</u>  *5 or *6 bars correctly drawn, award K1</p> <p>Correct histogram using the given scale</p> <p>(d) <math>11 + 8 + 6 + 4 = 29</math> orang</p>	Age	Frequency	Midpoint	30 – 39	5	34.5	40 – 49	7	44.5	50 – 59	9	54.5	60 – 69	11	64.5	70 – 79	8	74.5	80 – 89	6	84.5	90 – 99	4	94.5	<p>P1 P1 P1</p> <p>P1</p> <p>K2 N1</p> <p>P1</p> <p>K2</p> <p>N1</p> <p>K1</p> <hr/> <p>12</p>
Age	Frequency	Midpoint																								
30 – 39	5	34.5																								
40 – 49	7	44.5																								
50 – 59	9	54.5																								
60 – 69	11	64.5																								
70 – 79	8	74.5																								
80 – 89	6	84.5																								
90 – 99	4	94.5																								

Frequency  
Kekerapan

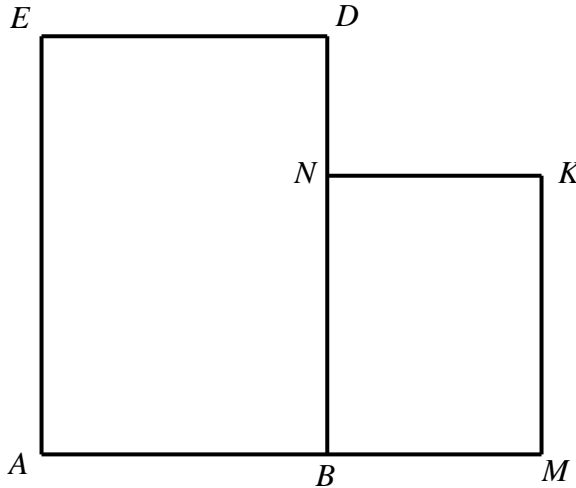
Graph for Question 14  
Graf untuk Soalan 14



Soalan	Peraturan Permarkahan	Markah
15	<p><u>Note:</u></p> <ol style="list-style-type: none"> <li>(1) Accept drawing only (not sketch)</li> <li>(2) Accept diagrams without labels and ignore wrong labels.</li> <li>(3) Accept correct rotation of diagrams.</li> <li>(4) Lateral inversions are not accepted.</li> <li>(5) If more than 1 diagram are drawn, award mark to the correct ones only.</li> <li>(6) For extra lines (dotted/dashed or solid) except construction lines, no <b>KN</b> mark is awarded.</li> <li>(7) If other scales are used with accuracy of <math>\pm 0.2</math> cm one way, deduct 1 mark from the <b>N</b> mark obtained, for each part attempted.</li> <li>(8) Accept small gaps or extensions at the corners. For each part attempted:               <ol style="list-style-type: none"> <li>(i) If <math>0.1 \text{ cm} \leq \text{small gaps/extension} \leq 0.4 \text{ cm}</math>, deduct 1 mark from <b>N</b> mark obtained.</li> <li>(ii) If small gaps/extensions <math>&gt; 0.4 \text{ cm}</math>, no <b>N</b> mark is awarded.</li> </ol> </li> <li>(9) If the construction line cannot be differentiated from the actual lines:               <ol style="list-style-type: none"> <li>(i) <u>Dotted line</u> If outside the diagram, award the <b>N</b> mark. If inside the diagram, award <b>N0</b>.</li> <li>(ii) <u>Solid line</u> If outside the diagram, no <b>KN</b> mark is awarded.</li> </ol> </li> <li>(10) For double lines, non –collinear lines, bold lines or crooked lines, deduct 1 mark from the <b>N</b> mark obtained, for each part attempted.</li> <li>(11) If drawn on graph paper, no <b>KN</b> mark is awarded.</li> </ol>	

Soalan	Peraturan Permarkahan	Markah
15(a)	<div data-bbox="365 262 1079 819" data-label="Diagram"> </div> <p data-bbox="272 892 1136 966">Correct shape with rectangle <math>DKHF</math> and <math>DEF</math> right angled triangle. All solid lines,</p> <p data-bbox="272 1018 649 1050"><math>EK &gt; KH &gt; ED &gt; DK = FH</math></p> <p data-bbox="272 1102 1323 1144">Measurements correct to <math>\pm 0.2</math> cm (one way) and all angles at vertices = <math>90^\circ \pm 1^\circ</math></p>	<p data-bbox="1360 892 1404 924"><b>K1</b></p> <p data-bbox="1360 1008 1404 1039"><b>K1</b></p> <p data-bbox="1360 1102 1404 1134"><b>N1</b></p>

(b) (i)



Correct shape with rectangles *ABDE* and *BMKN*.  
All solid lines.

$$AM > AE > KM > KN > ND$$

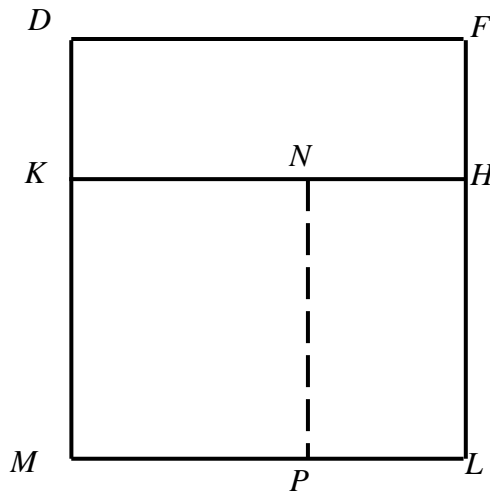
Measurements correct to  $\pm 0.2$  cm (one way) and all angles at vertices =  $90^\circ \pm 1^\circ$

**K1**

**K1**

**N2**

(ii)



Correct shape with rectangles *KMLH* and *DFHK*.  
All solid lines.  
(Ignore *NP*)

*N - P* joined by a dashed line to form rectangle *KMLH*.

$$DM > ML > LH > KN > HF = HN$$

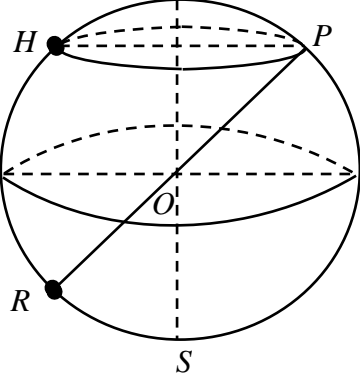
Measurements correct to  $\pm 0.2$  cm (one way) and all angles at vertices =  $90^\circ \pm 1^\circ$

**K1**

**K1**

**K1**

**N2**

Soalan	Peraturan Permarkahan	Markah	
16(a)		P1	
(b)	$60^\circ \times 60'$ 3600 n.m	K1	
(c)	$\frac{4500}{60}$ or 75 $\frac{4500}{60} - 60$ $15^\circ S$	K1	
(d)	(i) $120 \times 60 \times \cos 60^\circ$	K2	
	<u>Note :</u> Using $\cos 60^\circ$ award K1  3600	N1	
(ii)	$\frac{3600 + 4500}{580}$  13.97	K1	
		N1	5
			<u>12</u>

**SKEMA PEMARKAHAN TAMAT**