

SULIT
1449/2(GMP)
Mathematics
Kertas 2
Peraturan
Pemarkahan
2014

1449/2(GMP)



SKEMA PRAKTIS BESTARI
PROJEK JAWAB UNTUK JAYA (JUJ) 2014



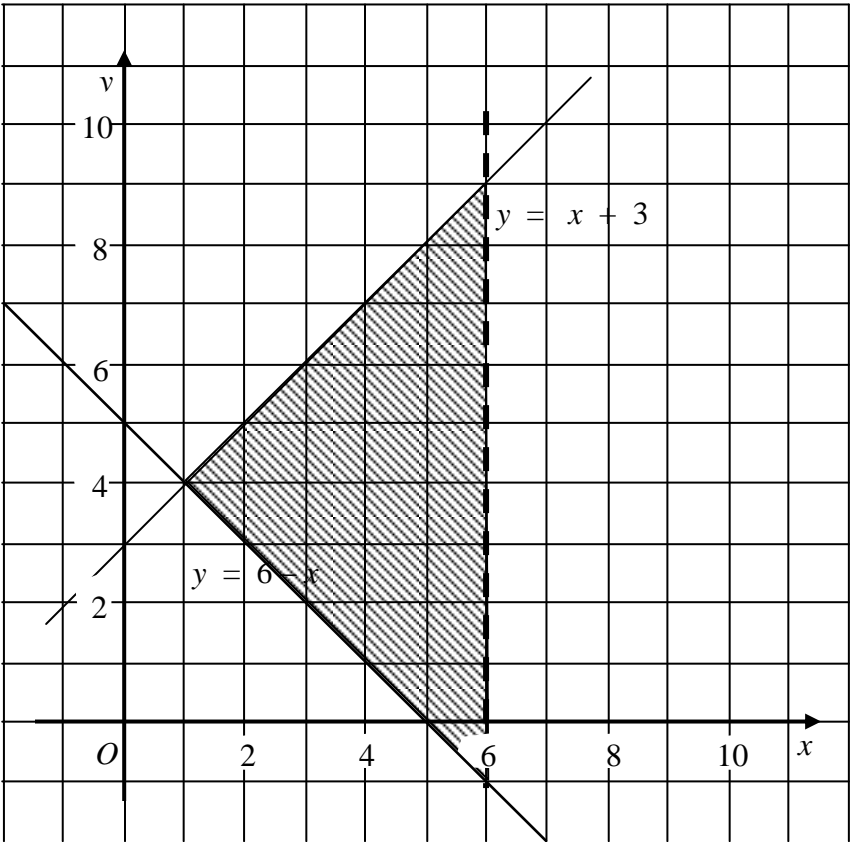
MATHEMATICS

Kertas 2
SET 1
PERATURAN PEMARKAHAN

UNTUK KEGUNAAN GURU MATA PELAJARAN SAHAJA

Peraturan pemarkahan ini mengandungi 17 halaman bercetak

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Question	Solution and Mark Scheme	Marks
<p>1</p>	 <p>The line $x = 6$ correctly drawn.</p> <p>The region correctly shaded.</p> <p><u>Note:</u></p> <p>Award P1 to shaded region bounded by two correct lines satisfy any two inequalities. (Check one vertex from any two correct lines)</p>	<p>K1</p> <p>P2</p> <hr/> <p>3</p>

Question	Solution and Mark Scheme	Marks	
2	$2x + 12y = 24$ or $6x + 3y = 39$ <u>or</u> equivalent	K1	
	<u>Note</u> Attempt to equate the coefficient one the unknowns, award K1 $11y = 11$ <u>or</u> $\frac{11}{2}x = 33$ <u>or</u> equivalent	K1	
	<u>OR</u> $x = \frac{13-y}{2}$ <u>or</u> $y = 13-2x$ <u>or</u> equivalent (K1) <u>Note</u> Attempt to make one of the unknowns as the subject, with two terms on other side, award K1		
	$11y = 11$ <u>or</u> $\frac{11}{2}x = 33$ <u>or</u> equivalent (K1) <u>OR</u> $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{(2 \times 3) - (1 \times \frac{1}{2})} \begin{pmatrix} 3 & -1 \\ -\frac{1}{2} & 2 \end{pmatrix} \begin{pmatrix} 13 \\ 6 \end{pmatrix}$ <u>or</u> equivalent (K2) <u>Note</u> Attempt to write matrix equation, award K1 $x = 6$ $y = 1$		N1
<u>Note:</u> If $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 6 \\ 1 \end{pmatrix}$ as final answer, award N1		N1	4

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Question	Solution and Mark Scheme	Marks	
3	$2m^2 - 11m + 12 = 0$ $(2m - 3)(m - 4) = 0 \text{ or equivalent}$ <p><u>OR</u></p> $m = \frac{-(-11) \pm \sqrt{(-11)^2 - 4(2)(12)}}{2(2)} \text{ or equivalent (K1)}$ $m = \frac{3}{2}$ $m = 4$ <p><u>Note:</u></p> <ol style="list-style-type: none"> 1. Accept without “ = 0” 2. Accept three terms on the same side, in any order 3. Accept $(m - \frac{3}{2})(m - 4) = 0$ with $m = \frac{3}{2}$, $m = 4$ for Kk2 4. Accept correct answers from three correct terms without factorization for Kk2. 	K1	
		K1	
		N1	
		N1	
			4
4(a)	$\angle JGP \text{ or } \angle PGJ$	P1	
(b)	$\tan \theta = \frac{3}{*10} \text{ or equivalent}$ $16.70^\circ \text{ or } 16^\circ 42'$	K1	
		N1	
			3

Question	Solution and Mark Scheme	Marks	
<p>5(a)</p> <p>(b)</p> <p>(c)</p>	$x = 10$ $m_{PS} = m_{QR} = \frac{8-4}{10-2} \text{ or } \frac{1}{2}$ $0 = \left(\frac{1}{2}\right)(10) + c \text{ or } y - 0 = \left(\frac{1}{2}\right)(x - 10) \text{ or equivalent}$ <p>Note : $0 = * \left(\frac{1}{2}\right)(10) + c \text{ or } y - 0 = * \left(\frac{1}{2}\right)(x - 10) \text{ or equivalent award K1}$</p> $y = \frac{1}{2}x - 5 \text{ or equivalent}$ $y = \frac{1}{2}(0) - 5$ $y = -5$	<p>P1</p> <p>P1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p>6</p>
<p>6(a)</p> <p>(b) (i)</p> <p>(ii)</p> <p>(c)</p>	<p>31</p> <p>8.13 am atau iam 0813</p> <p>50</p> $\frac{80}{100} \times 60$ <p>48</p>	<p>P1</p> <p>P1</p> <p>P1</p> <p>K1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p>5</p>

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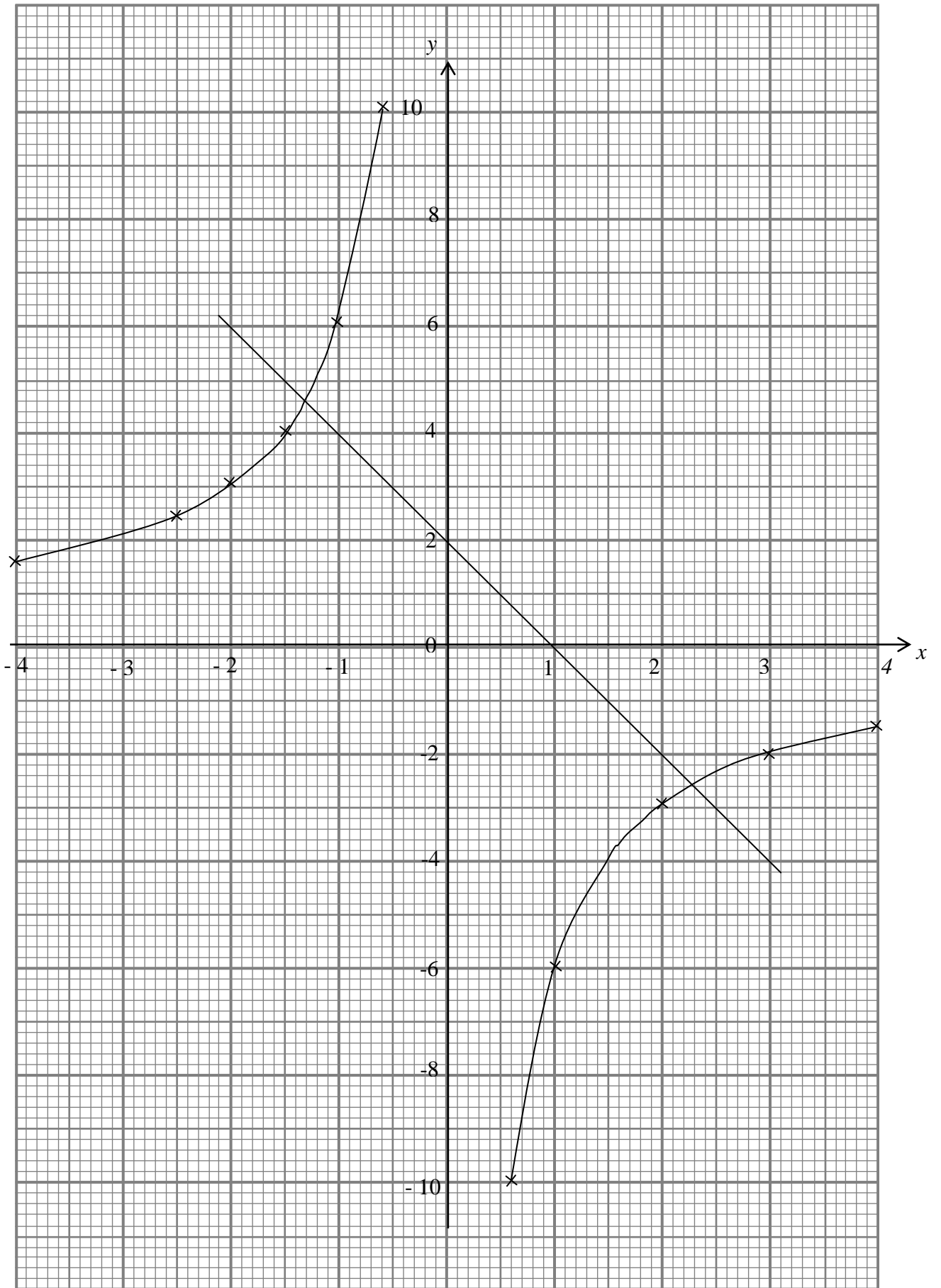
Question	Solution and Mark Scheme	Marks	
<p>7(a) (i)</p> <p>(ii)</p> <p>(b)</p> <p>(c)</p>	<p>Sebilangan</p> <p>Semua</p> <p>$P \cap Q \neq P$</p> <p>$2n^2 + 2$, $n = 1, 2, 3, 4, \dots$</p>	<p>P1</p> <p>P1</p> <p>P1</p> <p>K1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p style="text-align: center;">5</p>
<p>8(a)</p> <p>(b)</p>	<p>$k = \frac{1}{11}$</p> <p>$m = 1$</p> <p>$\begin{pmatrix} 2 & -3 \\ 3 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 12 \\ 7 \end{pmatrix}$</p> <p>$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{(2)(1) - (-3)(3)} \begin{pmatrix} 1 & 3 \\ -3 & 2 \end{pmatrix} \begin{pmatrix} 12 \\ 7 \end{pmatrix}$</p> <p>$x = 3$</p> <p>$y = -2$</p> <p><u>Note:</u></p> <p>1. Do not accept $\begin{matrix} * \\ \text{inverse} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 2 & -3 \\ 3 & 1 \end{pmatrix}$ <u>or</u></p> <p>$\begin{matrix} * \\ \text{inverse} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$.</p> <p>2. $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ as final answer, award N1.</p> <p>3. Do not accept solutions solved not using matrix method.</p>	<p>P1</p> <p>P1</p> <p>P1</p> <p>K1</p> <p>N1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p style="text-align: center;">6</p>

Question	Solution and Mark Scheme	Marks	
9	$\frac{1}{2} \times (4+10) \times 8 \times 7$ $\frac{1}{2} \times \frac{22}{7} \times 3.5^2 \times 10$ $\frac{1}{2} \times (4+10) \times 8 \times 7 + \frac{1}{2} \times \frac{22}{7} \times 3.5^2 \times 10$ $584 \frac{1}{2} \text{ or } \frac{1169}{2} \text{ or } 584.5$	K1 K1 K1 N1	4
10(a)	$\frac{160}{360} \times 2 \times \frac{22}{7} \times 10$ $\frac{160}{360} \times 2 \times \frac{22}{7} \times 10 + 10 + 10 + 16$ $63 \frac{59}{63} \text{ or } \frac{4028}{63} \text{ or } 63.94$	K1 K1 N1	6
(b)	$\frac{160}{360} \times \frac{22}{7} \times 10^2 \text{ or } \frac{1}{2} \times 6 \times 16$ $\frac{160}{360} \times \frac{22}{7} \times 10^2 - \frac{1}{2} \times 6 \times 16$ $91 \frac{43}{63} \text{ or } \frac{5776}{63} \text{ or } 91.68$ <p data-bbox="358 1591 431 1625"><u>Note:</u></p> <ol data-bbox="358 1629 1198 1738" style="list-style-type: none"> Accept π for mark. Accept correct value from incomplete substitution for K mark. Correct answer from incomplete working, award Kk2 	K1 K1 N1	

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Question	Solution and Mark Scheme	Marks	
<p>11(a)</p> <p>Sampel space, $S = \{HH, HO, HU, HS, HE, OH, OO, OU, OS, OE, UH, UO, UU, US, UE, SH, SO, SU, SS, SE, EH, EO, EU, ES, EE\}$ Note : Allow one mistake in listing the sample space for P1</p> <p>(b)(i)</p> <p>$\{ SH, SO, SU, SS, SE \}$</p> <p>$\frac{5}{25}$ or $\frac{1}{5}$</p> <p>(ii)</p> <p>$\{ HH, HS, OO, OU, OE, UO, UU, UE, SH, SS, EO, EU, EE \}$</p> <p>$\frac{13}{25}$</p>		<p>P2</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>	
	<p><u>Note:</u></p>		6
	<p>1. Accept answer without working for K1N1</p>		

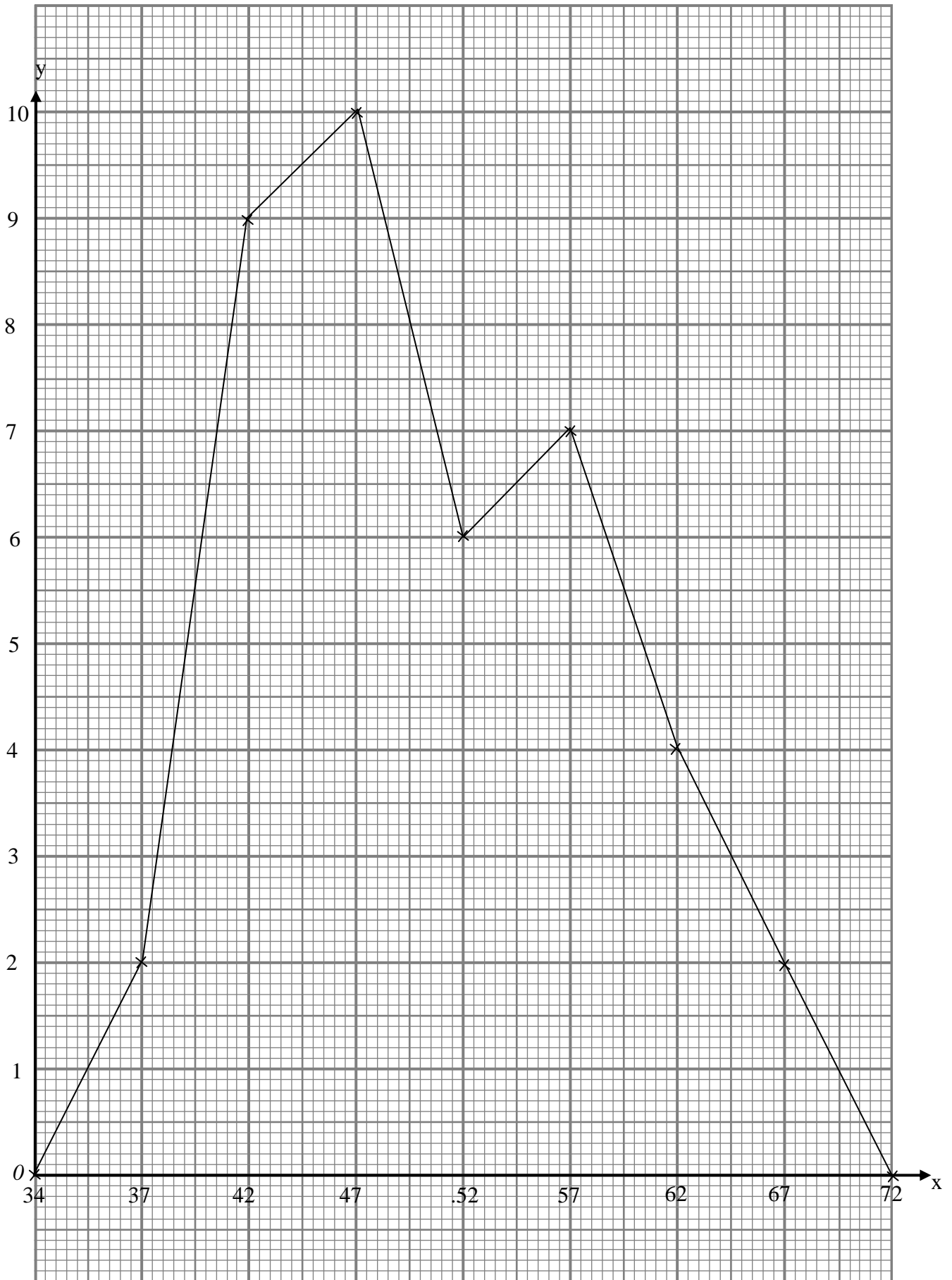
Question	Solution and Mark Scheme	Marks		
12(a)	2.4	K1	2	
	-2	K1		
(b)	<u>Graph</u> Axes drawn in the correct directions with uniform scale for $-4 \leq x \leq 4$ and $-10 \leq y \leq 10$	P1	4	
	All 8 points and *2 point correctly plotted or curve passes through all the points for $-4 \leq x \leq 4$ and $-10 \leq y \leq 10$	K2		
	A smooth and continuous curve without any straight line passes through all 10 correct points using the given scale for $-4 \leq x \leq 4$ and $-10 \leq y \leq 10$	N1		
(c)(i)	<u>Note:</u> 1. 8 or 9 points plotted correctly, award K1 2. Ignore curve out of range.			
	(ii)	$4.6 \leq y \leq 4.8$	P1	2
	(ii)	$-1.7 \leq x \leq -1.8$	P1	
(d)	Identify equation $y = -2x + 2$ or $-\frac{6}{x} = -2x + 2$	K1	4	
	Straight line $y = -2x + 2$ correctly drawn	K1		
	<u>Values of x:</u>			
	$-1.25 \leq x \leq -1.35$ $2.25 \leq x \leq 2.35$	N1 N1		
	<u>Note:</u> 1. Allow N marks if values of x are shown on the graph. 2. Values of x obtained by calculation, award N0		12	

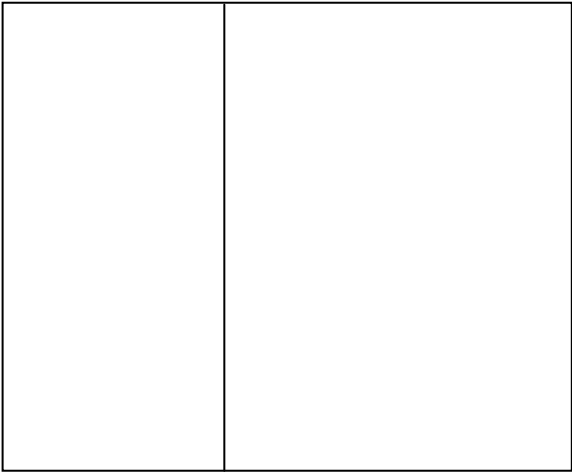


Question	Solution and Mark Scheme	Marks	
13(a)(i)	(-8 , 6) (-5, 4) or point (-8,6) marked or point (-5, 4) marked, award P1	P2	4
(ii)	(5, -1) <u>Note:</u> (-1, 1) or point (5,-1) marked or point (-1, 1) marked, award P1	P2	
(b)(i)(a)	Reflection on line $x = -1$ <u>Note:</u> 1. Reflection award P1	P2	
(b)	Enlargement with scale factor $\frac{1}{2}$ at centre E or (-3,2) <u>Note:</u> 1. Enlargement centre E or (-3,2) <u>or</u> Enlargement scale factor 2, award P2 . 2. Enlargement, award P1 .	P3	
(ii)	$24.5 = \frac{1}{2} \times \text{luas objek}$ $24.4 \times 2^2 = 24.5$ 73.5	K2	
		N1	8
			12

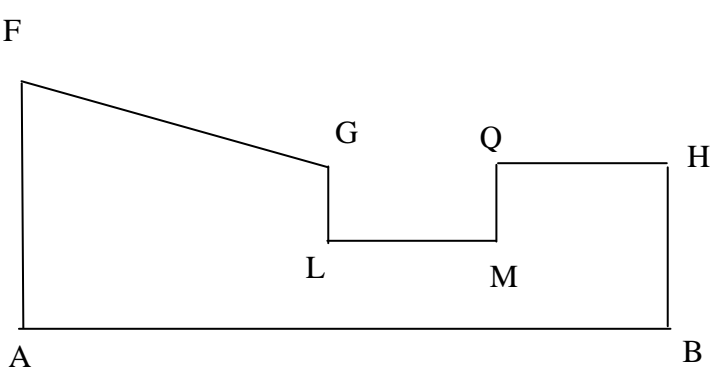
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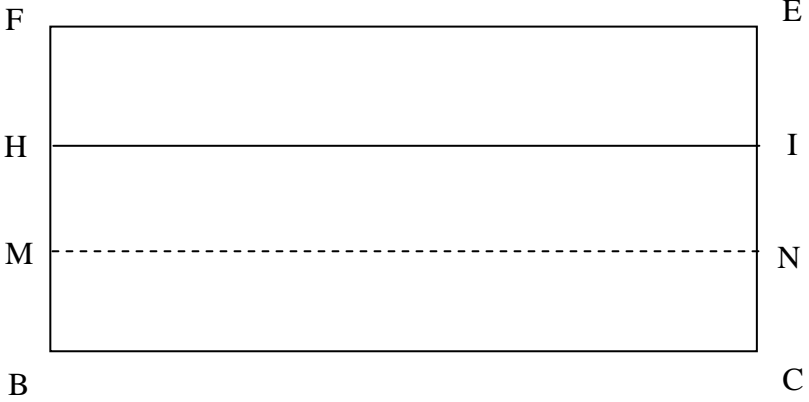
Question	Solution and Mark Scheme	Marks																																	
14(a)	<table border="1" data-bbox="467 317 1052 699"> <thead> <tr> <th></th> <th>Class Interval <i>Selang Kelas</i></th> <th>Midpoint <i>Titik tengah</i></th> <th>Frequency <i>Kekerapan</i></th> </tr> </thead> <tbody> <tr> <td></td> <td>35 – 39</td> <td>37</td> <td>2</td> </tr> <tr> <td>II</td> <td>40 – 44</td> <td>42</td> <td>9</td> </tr> <tr> <td>III</td> <td>45 – 49</td> <td>47</td> <td>10</td> </tr> <tr> <td>IV</td> <td>50 – 54</td> <td>52</td> <td>6</td> </tr> <tr> <td>V</td> <td>55 – 59</td> <td>57</td> <td>7</td> </tr> <tr> <td>VI</td> <td>60 – 64</td> <td>62</td> <td>4</td> </tr> <tr> <td>VII</td> <td>65 – 69</td> <td>67</td> <td>2</td> </tr> </tbody> </table> <p data-bbox="394 737 987 772">Class interval : (II to VII)</p> <p data-bbox="394 810 987 846">Midpoint : (II to VII)</p> <p data-bbox="394 884 997 919">frequency : (II to VIII)</p> <p data-bbox="394 919 963 955"><u>Note:</u> Allow one mistake frequency for P1.</p>		Class Interval <i>Selang Kelas</i>	Midpoint <i>Titik tengah</i>	Frequency <i>Kekerapan</i>		35 – 39	37	2	II	40 – 44	42	9	III	45 – 49	47	10	IV	50 – 54	52	6	V	55 – 59	57	7	VI	60 – 64	62	4	VII	65 – 69	67	2	P1	
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VII	65 – 69	67	2																																
(b)	$\frac{37(*2)+42(*9)+47(*10)+52(*6)+57(*7)+62(*4)+67(*4)}{40}$ <p data-bbox="451 1125 540 1161">53.725</p>	K2	N1																																
(c)	<p data-bbox="354 1199 605 1234"><u>Frequency polygon</u></p> <p data-bbox="383 1234 1097 1270">Axes drawn in correct directions with uniform scale for</p> <p data-bbox="383 1270 792 1306">$37 \leq x \leq 67$ and $0 \leq y \leq 40$</p> <p data-bbox="383 1312 1003 1348">Horizontal axes labeled with values of midpoint</p> <p data-bbox="383 1386 824 1421">* 7 points plotted using midpoint.</p> <p data-bbox="383 1459 1062 1495"><u>Note:</u> * 5 or * 6 points plotted correctly, award K1</p> <p data-bbox="383 1533 1203 1568">Smooth curve passes all 7 correct points and (34, 0) and (72,0)</p>	P1	K2																																
(d)	<p data-bbox="383 1612 423 1648">19</p> <p data-bbox="383 1654 1097 1690"><u>Note:</u> Do not accept answer without frequency polygon</p>	K1	N1																																
			<p data-bbox="1458 1640 1490 1707" style="text-align: center;">1 12</p>																																



Question	Solution and Mark Scheme	Marks	
15(a)	<div style="text-align: center;">  </div> <p>Correct shape with rectangles $ADJG$ and $BCJG$. All solid lines.</p> <p>$DJ < JC < DA$</p> <p>Measurements correct to ± 0.2 cm (one way) and all angles at vertices = $90^\circ \pm 1^\circ$</p>		
		K1	
		K1	
		N1	3

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Question	Solution and Mark Scheme	Marks	
<p>(b)(i)</p>	 <p>Correct shape ABHQMLGF All solid lines.</p> <p>$FA > BH = HQ = LM$</p> <p>Measurements correct to ± 0.2 cm (one way) and $\angle A, \angle B, \angle H, \angle M, \angle Q, \angle L = 90^\circ \pm 1^\circ$</p>		
		K1	
		K1	
		N2	4

Question	Solution and Mark Scheme	Marks	
<p>(ii)</p>			
	<p>Correct shape with rectangles FEIH and HICB. All solid lines.</p> <p><u>Note:</u> Ignore MN</p>	K1	
	<p>M and N joined with dashed line to form rectangle BCNM M and N lies between HB and IC.</p>	K1	
	<p>$BC > BF > BM = MH = HF$</p>	K1	
<p>Measurements correct to ± 0.2 cm (one way) and All angles at vertices of rectangles = $90^\circ \pm 1^\circ$</p>	N2	5	
		12	

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Question	Solution and Mark Scheme	Marks	
16(a)	100° W <u>Note:</u> 100° <u>or</u> θ° W , award P1	P2	2
(b)	$180 \times 60 \times \cos 55$ 6194.63 <u>Note:</u> 180 <u>or</u> using $\cos 55^\circ$, award K1	K2 N1	3
(c)(i)	$(180 - 110) \times 60 + 5400$ 9600	K2 N1	3
(ii)	$9600 \div 580$ 16.55 2253 hour <u>Note :</u> $*(180 - 110) \times 60 + 5400$ award K1	K2 N1 N1	4
		12	