

SULIT
1449/2(GMP)
Mathematics
Kertas 2 (Set 1)
Peraturan
Pemarkahan
2018

1449/2(GMP)



SKEMA PRAKTIS BESTARI

PROJEK JAWAB UNTUK JAYA (JUJ) 2018



MATHEMATICS

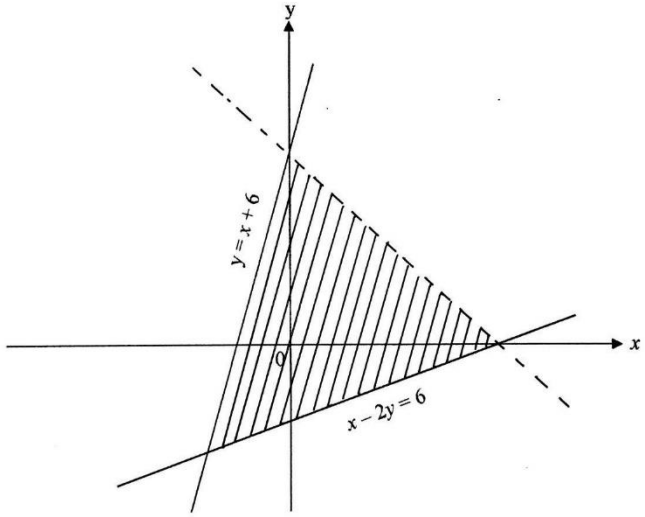
Kertas 2
SET 1

PERATURAN PEMARKAHAN

UNTUK KEGUNAAN GURU MATA PELAJARAN SAHAJA

Peraturan pemarkahan ini mengandungi halaman bercetak

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Question	Solution and Mark Scheme	Sub Mark	Mark
<p>1</p>	<div style="text-align: center;">  </div> <p>Straight line $x + y = 6$ correctly drawn with dotted line</p> <p>Correctly shaded the region that satisfies the three inequalities</p>	<p>K1</p> <p>P2</p>	<p>3</p>
<p>2</p>	<p>$\frac{1}{2}(x - 5)(x + 2) = 30$ <u>or</u> $(x - 5)(x + 2) = 60$ <u>or</u> equivalent</p> <p>$x^2 - 3x - 70 = 0$</p> <p>$(x - 10)(x + 7) = 0$</p> <p>OR</p> <p>$\frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-70)}}{2(1)}$ <u>or</u> equivalent (K1)</p> <p>13 cm</p> <p>Note:</p> <p>1. Accept without “=0” for K1</p> <p>2. Accept three correct terms on the same side, in any order.</p>	<p>P1</p> <p>K1</p> <p>K1</p> <p>N1</p>	<p>4</p>
<p>3</p>	<p>$\angle XSY$ or $\angle YSX$</p> <p>$\tan \angle XSY = \frac{4.5}{6}$ or $\cos \theta = \frac{6}{7.5}$ or or $\sin \theta = \frac{4.5}{7.5}$</p> <p>$36.87^\circ$ or $36^\circ 52'$</p>	<p>P1</p> <p>K1</p> <p>N1</p>	<p>3</p>

Question	Solution and Mark Scheme	Sub Mark	Mark
4	$2 \times 3 \times 10 \times 6$ $\frac{4}{3} \times \frac{22}{7} \times 0.5^3$ $\frac{360}{550}$ $\frac{21}{21}$ 13	K1 K1 K1 N1	4
5 (a)	$8 = -\frac{4}{3}(-1) + c$ $c = \frac{20}{3}$ $y = -\frac{4}{3}x - \frac{20}{3}$ <u>or</u> equivalent $\sqrt{(8-0)^2 + (-1-5)^2}$ <u>or</u> equivalent 10 cm	P1K1 N1 K1	5
(b)	(5,10)	K2	
6	$x = 3 + y$ <u>or</u> $3x - 3y = 9$ <u>or</u> $2x - 2y = 6$ <u>or</u> equivalent $5x = 60$ <u>or</u> $5y = 45$ <u>or</u> equivalent OR $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{3(-1)-2(1)} \begin{pmatrix} -1 & -2 \\ -1 & 3 \end{pmatrix} \begin{pmatrix} 54 \\ 3 \end{pmatrix}$ (K2) $\frac{1}{3(-1)-2(1)} \begin{pmatrix} -1 & -2 \\ -1 & 3 \end{pmatrix}$ <u>or</u> $\begin{pmatrix} \text{inverse} \\ \text{matrix} \end{pmatrix} \begin{pmatrix} 54 \\ 3 \end{pmatrix}$ (K1) $x = 12$ $y = 9$ NOTE: Accept any variable / symbol	K1 K1 N1 N1	4

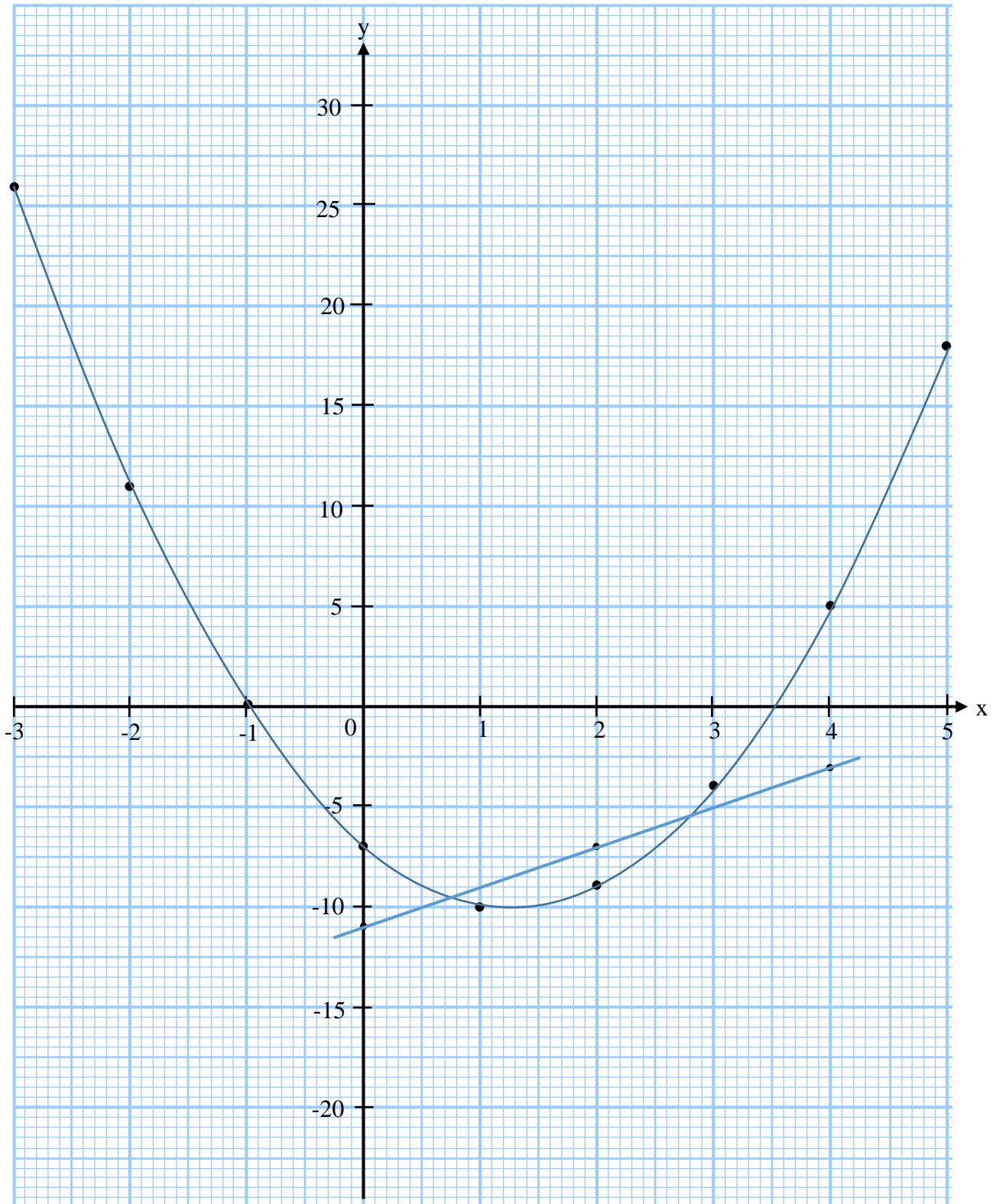
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Question	Solution and Mark Scheme	Sub Mark	Mark
<p>7 (a)</p> <p>$\frac{270}{360} \times 2 \times \frac{22}{7} \times 28$ <u>or</u> $2 \times \frac{22}{7} \times 14$ <u>or</u> equivalent</p> <p>$\frac{270}{360} \times 2 \times \frac{22}{7} \times 28 + 2 \times \frac{22}{7} \times 14 + 28 + 28$ <u>or</u> equivalent</p> <p>276 cm</p> <p>(b)</p> <p>$\frac{270}{360} \times \frac{22}{7} \times 28^2$ <u>or</u> $\frac{22}{7} \times 14^2$ <u>or</u> equivalent</p> <p>$\frac{270}{360} \times \frac{22}{7} \times 28^2 - \frac{22}{7} \times 14^2$ <u>or</u> equivalent</p> <p>1232 cm²</p> <p><u>NOTE:</u> 1. Accept π for K mark 2. Accept correct value for incomplete substitution for K mark. 3. Correct answer from incomplete working award Kk2</p>		<p>K1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>K1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p>6</p>
<p>8</p> <p>a) All</p> <p>b) If $Q \subset P$ then $P \cap Q = Q$</p> <p>c) If $2y - 1 = 9$, then $y = 5$</p> <p>d) $3n^2 - 4, n = 0, 1, 2, 3, \dots$</p>		<p>K1</p> <p>K1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p>4</p>
<p>9(a) (i)</p> <p>12ms^{-1}</p> <p>(ii)</p> <p>$\frac{16-12}{0-5}$ <u>or</u> equivalent</p> <p>- 0.8 ms⁻²</p> <p>(b)</p> <p>$240 - [\frac{1}{2}(12 + 16)5 + \frac{1}{2}(7 + 19)12]$</p> <p>Note: $\frac{1}{2}(12 + 16)5$ <u>or</u> $\frac{1}{2}(7 + 19)12]$ seen award K1</p> <p>14m</p>		<p>P1</p> <p>K1</p> <p>N1</p> <p>K2</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p>6</p>

Question	Solution and Mark Scheme	Sub Mark	Mark
10	$2p + q = 120$ or equivalent $2p - q = 0$ or equivalent $\begin{pmatrix} 2 & 1 \\ 2 & -1 \end{pmatrix} \begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 120 \\ 0 \end{pmatrix}$ or equivalent $\frac{1}{2(-1)-2(1)} \begin{pmatrix} -1 & -1 \\ -2 & 2 \end{pmatrix} \begin{pmatrix} 120 \\ 0 \end{pmatrix}$ or $\begin{matrix} \text{(inverse)} \\ \text{matrix} \end{matrix} \begin{pmatrix} 120 \\ 0 \end{pmatrix}$ or equivalent $p = 30$ $q = 60$ <u>Note:</u> 1. Do not accept or $\begin{matrix} \text{(inverse)} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 2 & 1 \\ 2 & -1 \end{pmatrix}$ or $\begin{matrix} \text{(inverse)} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ 2. $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 30 \\ 60 \end{pmatrix}$ as final answer, award N1. 3. Do not accept any solutions solved not using matrix method.	P1 P1 P1 K1 N1 N1	<hr/> 6
	11	(a) { (4,B), (5,B), (3,G), (5,G), (3,P), (7,P), (1,R), (3,R), (6,R) } <u>Note</u> : Allow two mistake in listing the sample space for P1 (b) (i) { (1,G), (3,G), (4,G), (5,G) } $\frac{4}{24} = \frac{1}{6}$ (ii) { (3,B), (3,G), (3,P), (3,R), (6,B), (6,G), (6,P), (6,R), (1,R), (4,R), (5, R), (7,R) } $\frac{12}{24} = \frac{1}{2}$ <u>Note:</u> Accept answer without working for K1N1 provided P2 obtained.	P1 K1 N1 K1 N1

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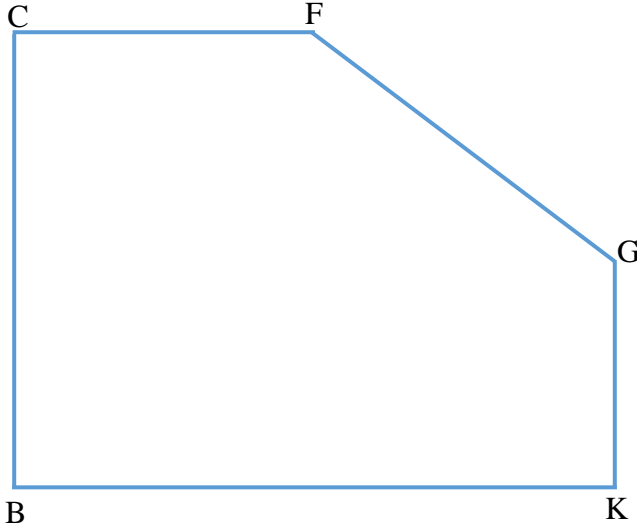
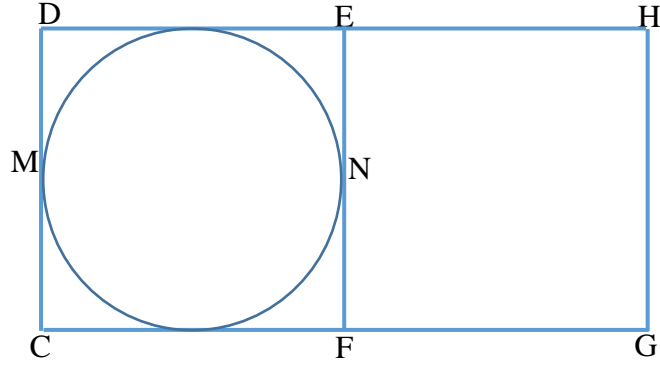
Question	Solution and Mark Scheme	Sub Mark	Mark
12(a)	<p>11</p> <p>-4</p> <p><u>(b Graph</u> Axes drawn in the correct directions with uniform scales for $-3 \leq x \leq 5$ and $-10 \leq y \leq 26$.</p> <p>All 7 points and *2 points correctly plotted or curve passes through all the points for $-3 \leq x \leq 5$ and $-10 \leq y \leq 26$.</p> <p><u>Note:</u> 7 or 8 points correctly plotted, award K1</p> <p>Smooth and continuous curve without any straight line passing through all 9 correct points using the given scales.</p> <p>(c) (i) $16 \leq y \leq 18$</p> <p>(ii) $2.5 \leq x \leq 4.5$</p> <p>(d) Straight line $y = -2x - 11$ correctly drawn. (Check any two point plotted or straight line passes through any of Two (0,-11), (2,-7), (4,-3), ... and accurate to $\pm \frac{1}{2}$ square grid vertically)</p> <p><u>Note:</u> Identify equation $y = -2x - 11$ award K1</p> <p>$0 \leq x \leq -2$ $2.5 \leq x \leq 4.5$</p> <p>NOTE</p> <ol style="list-style-type: none"> 1. Allow P mark or N mark if values of x and y shown on graph 2. Values of x and of y obtained by calculation, award P0 or N0 3. Valus of x and of y obtained from wrong graph, award P0 or N0 	<p>K1</p> <p>K1</p> <p>P1</p> <p>K2</p> <p>N1</p> <p>P1</p> <p>P1</p> <p>K2</p> <p>N1</p> <p>N1</p>	<p>2</p> <p>4</p> <p>2</p> <p>4</p>
			12



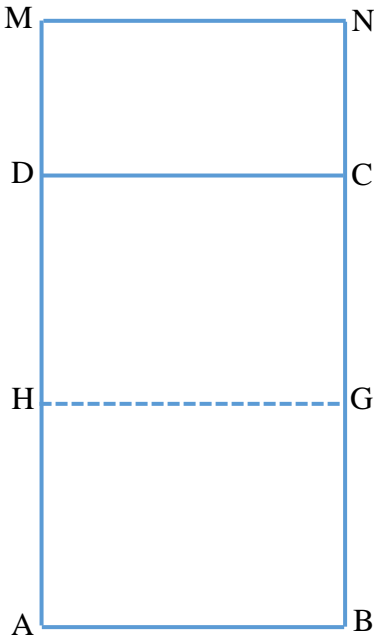
Question	Solution and Mark Scheme	Sub Mark	Mark
13(a)	(i) (5 , -1) Note: (5,-1) marked on diagram or (3, -3) seen or (3, -3) marked on diagram, award P1 (ii) (7, 1) Note: (7,1) marked on diagram or (1,5) seen or (1,5) marked on diagram, award P1	P2	4
(b) (i)	(a) U = Reflection at line $y = 1$ <u>Note:</u> 1. Reflection, award P1 . (b) V = Enlargement, centre F(4,0), scale factor 2 <u>Note:</u> 1. Enlargement, centre F(4,0) or Enlargement, scale factor 2 award P2 2. Enlargement, award P1	P2	5
	(ii) $180 + \text{area of object} = 2^2 \times \text{area of object}$ or equivalent $3 \text{ area of object} = 180$ $\text{Area of object} = 60$ <u>OR</u> $\frac{180}{9} \times 3$ (K2) 60	K2	3
		N1	12

Question	Solution and Mark Scheme	Sub Mark	Mark																											
<p>(a)</p>	<table border="1" data-bbox="448 304 1107 770"> <thead> <tr> <th>Mass (g) <i>Jisim (g)</i></th> <th>Frequency <i>Kekerapan</i></th> <th>Midpoint <i>Titik tengah</i></th> </tr> </thead> <tbody> <tr> <td>30 – 34</td> <td>0</td> <td>32</td> </tr> <tr> <td>35 – 39</td> <td>2</td> <td>37</td> </tr> <tr> <td>40 – 44</td> <td>6</td> <td>42</td> </tr> <tr> <td>45 - 49</td> <td>7</td> <td>47</td> </tr> <tr> <td>50 - 54</td> <td>10</td> <td>52</td> </tr> <tr> <td>55 - 59</td> <td>8</td> <td>57</td> </tr> <tr> <td>60 - 64</td> <td>4</td> <td>62</td> </tr> <tr> <td>65 - 69</td> <td>3</td> <td>67</td> </tr> </tbody> </table> <p data-bbox="453 822 778 927"> Mass : III to VII Frequency : I to VII Midpoint : I to VII </p>	Mass (g) <i>Jisim (g)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>	30 – 34	0	32	35 – 39	2	37	40 – 44	6	42	45 - 49	7	47	50 - 54	10	52	55 - 59	8	57	60 - 64	4	62	65 - 69	3	67	<p>P1 P2 P1</p>	<p>4</p>
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55 - 59	8	57																												
60 - 64	4	62																												
65 - 69	3	67																												
<p>(b)</p>	<p>(i) 50 – 54</p> <p>(ii)</p> $\frac{0 \times 32 + 2^* \times 37 + 6^* \times 42 + 7^* \times 47 + 10^* \times 52 + 8^* \times 57 + 4^* \times 62 + 3^* \times 67}{40^*}$ <p>= 52</p>	<p>P1 K2 N1</p>	<p>4</p>																											
<p>(c)</p>	<p><u>Frequency Polygon</u> Axes drawn in correct directions with uniform scale for $32 \leq x \leq 72$ and $0 \leq y \leq 11$</p> <p>*8 points correctly plotted using correct values of midpoint.</p> <p>Note: *4 or *5 points correctly plotted, award K1.</p> <p>Frequency Polygon correctly drawn</p>	<p>P1 K2 N1</p>	<p>4</p>																											
			<p>2</p> <p>12</p>																											



Question	Solution and Mark Scheme	Sub Mark	Mark
<p>15(a)</p>	<div style="text-align: center;">  </div> <p>Correct shape with trapezium BCFGK . All solid lines. $BK > BC > CF > GK$ Measurements correct to ± 0.2 cm (one way) and all angles at vertices = $90^\circ \pm 1^\circ$</p>	<p>K1 K1 N1</p>	<p>3</p>
<p>(b) (i)</p>	<div style="text-align: center;">  </div> <p>Correct shape with rectangles CDHG, CDEF, EFGH and circle MN All solid lines. $CG > GH = EH = ED = DC = CF$</p> <p>Measurements correct to ± 0.2 cm (one way) and all angles at vertices of rectangles = $90^\circ \pm 1^\circ$</p>	<p>K1 K1 N2</p>	<p>4</p>

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Question	Solution and Mark Scheme	Sub Mark	Mark
(ii)	<div style="text-align: center;">  </div> <p>Correct shape with rectangles ABMN, ABCD and CDMN All solid lines.</p> <p><u>Note:</u> Ignore dashed line</p> <p>H – G joined by a dashed line to form a rectangle ABGH and CDHG</p> <p>$MA > AB > BG = GC > CN$</p> <p>Measurements correct to ± 0.2 cm (one way) and All angles at vertices of rectangles = $90^\circ \pm 1^\circ$</p>	<p>K1</p> <p>K1</p> <p>K1</p> <p>N2</p>	<p>5</p> <p style="text-align: right;">12</p>

Question	Solution and Mark Scheme	Sub Mark	Mark
16(a)	(55°N/U, 35°E/T)	P2	
(b)	$(70 + 35) \times 60 \times \cos 55^\circ$ <u>Note:</u> (105° X 60°) or $\cos 55^\circ$ correctly used, award K1 3613.53 n.m	K2	4
(c)	$(35 + 35) \times 60$ 4200 n.m	K1 N1	2
(d)(i)	750×2.5 1875 n.m	K1 N1	3
(ii)	$55 \sim \frac{1875}{60}$ 23.75°N/U	K1K1 N1	<hr/> 12
PERATURAN PEMARKAHAN TAMAT			