

SULIT
1449/2(GMP)
Mathematics
Kertas 2 (Set 1)
Peraturan
Pemarkahan
2019

1449/2(GMP)



SKEMA PRAKTIS BESTARI

PROJEK JAWAB UNTUK JAYA (JUJ) 2019



MATHEMATICS

Kertas 2
SET 1

PERATURAN PEMARKAHAN

UNTUK KEGUNAAN GURU MATA PELAJARAN SAHAJA

YAYASAN
PAHANG

Peraturan pemarkahan ini mengandungi 14 halaman bercetak

[Lihat halaman sebelah
SULIT

Question	Solution and Mark Scheme	Sub Mark	Mark
1	$y \leq 2x$ $y > x$ $y < 5$	P1	3
		P1	
2	$(2x+12)(2x+5) - (12 \times 5) = 18$ <u>or</u> $4x^2 + 34x - 18 = 0$ <u>or</u> equivalent $2x^2 + 17x - 9 = 0$ $(2x-1)(x+9) = 0$ OR $\frac{-(17) \pm \sqrt{(17)^2 - 4(2)(-9)}}{2(2)}$ <u>or</u> equivalent (K1) 0.5 cm Note: 1. Accept without “=0” for K1 2. Accept three correct terms on the same side, in any order.	P1	4
		K1	
3	$\angle PTQ$ or $\angle QTP$ $\tan \theta = \frac{3x}{5x}$ or $\theta = \tan^{-1} \frac{3x}{5x}$ 30.96° or $30^\circ 58'$	K1	3
		N1	

Question	Solution and Mark Scheme	Sub Mark	Mark
4	$\frac{24}{9} = \frac{16}{x}, \quad x = 6$ $\frac{1}{3} \times \frac{22}{7} \times 9^2 \times 24$ $\frac{1}{3} \times \frac{22}{7} \times 6^2 \times 16$ $\frac{1}{3} \times \frac{22}{7} \times 9^2 \times 24 - \frac{1}{3} \times \frac{22}{7} \times 6^2 \times 16$ 1 433.14	K1 K1 K1 N1	4
5 (a)	$m_{JK} = m_{OL} = 2$ $9 = 2(-1) + C \quad \text{or} \quad C = 11$ $y = 2x + 11$	P1 K1 N1	5
(b)	$*(2x + 11) = 0$ $x = -\frac{11}{2}$	K1 N1	
6	$2x + 2y = 11 \quad \text{or} \quad x + 3y = 12.5$ $2x + 6y = 25 \quad \text{or} \quad x = 12.5 - 3y \quad \text{or} \quad y = \frac{11 - 2x}{2} \quad \text{or} \quad 4y = 14 \quad \text{or} \quad \text{equivalent}$ OR $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{2(3) - 2(1)} \begin{pmatrix} 3 & -2 \\ -1 & 2 \end{pmatrix} \begin{pmatrix} 11 \\ 12.5 \end{pmatrix} \quad (\text{K2})$ $\text{or} \quad \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} \text{inverse} \\ \text{matrix} \end{pmatrix} \begin{pmatrix} 11 \\ 12.5 \end{pmatrix} \quad \text{award} \quad (\text{K1})$ $x = \text{RM } 2$ $y = \text{RM } 3.50$	K1 K1 N1 N1	4

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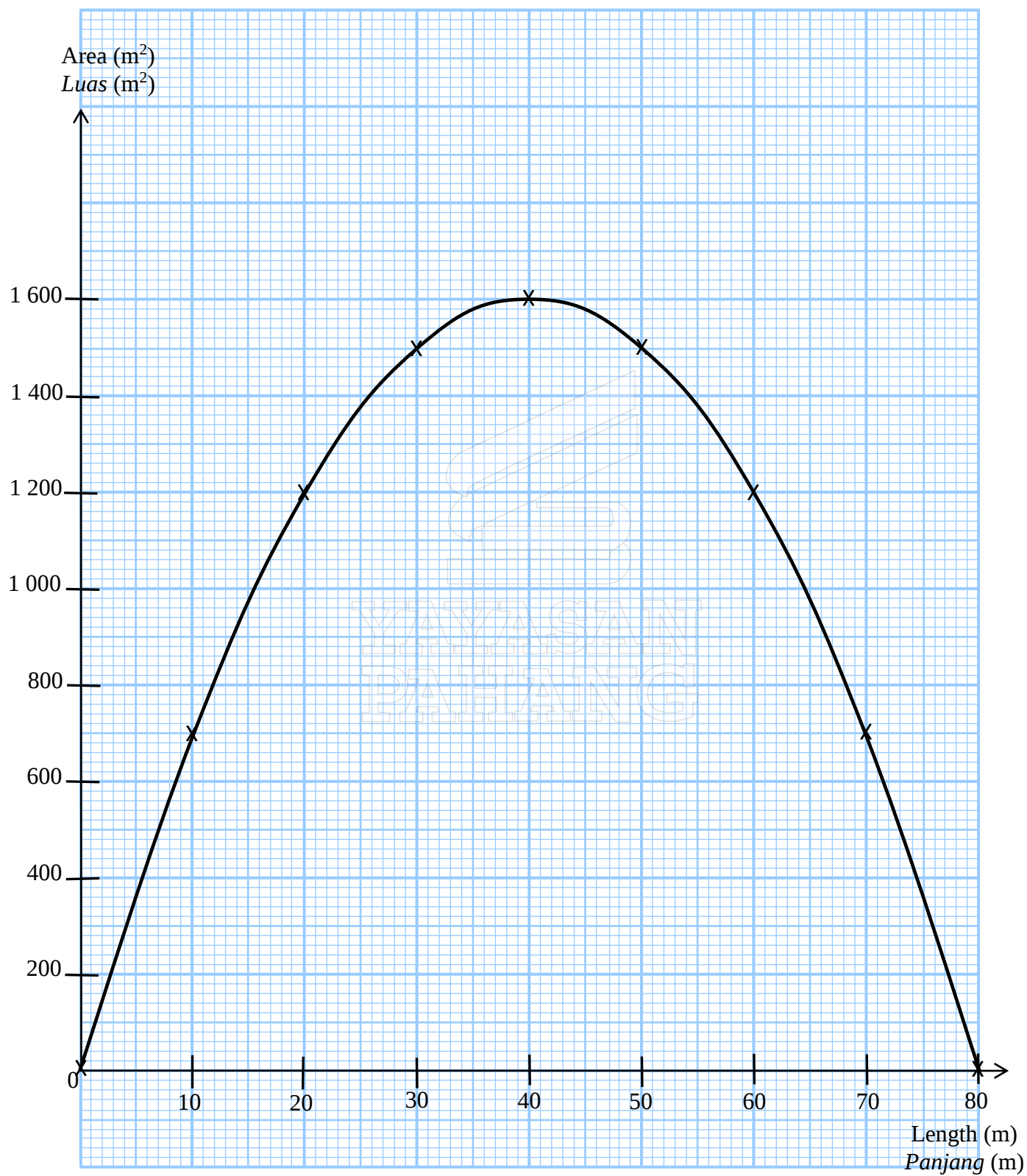
SULIT

Question	Solution and Mark Scheme	Sub Mark	Mark
7 (a)	$\frac{60^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 10.5$	K1	
	$\frac{60^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 10.5 + 10.5 + 10.5 + 10.5 + 10.5$ <u>or</u> equivalent	K1	
	53	N1	
(b)	$\frac{60^\circ}{360^\circ} \times \frac{22}{7} \times 10.5^2$ <u>or</u> $\frac{90^\circ}{360^\circ} \times \frac{22}{7} \times 10.5^2$ <u>or</u> 10.5×10.5	K1	
	$10.5 \times 10.5 - \frac{90^\circ}{360^\circ} \times \frac{22}{7} \times 10.5^2 + \frac{60^\circ}{360^\circ} \times \frac{22}{7} \times 10.5^2$ <u>or</u> equivalent	K1	
	81.38	N1	
	<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		
			6
8	a) Non-statement // <i>Bukan pernyataan</i>	P1	
	b) If x is an even number, then x is divisible by 8. // <i>Jika x ialah nombor genap, maka x boleh dibahagi dengan 8.</i>	P1	
	False // Palsu	P1	
	c) 32	K2	
	Note: 2^5 seen, award K1		
			5

Question	Solution and Mark Scheme	Sub Mark	Mark
9			
(a)	28	P1	
(b)	$\frac{28-0}{8-0}$ <u>or</u> equivalent	K1	
	3.5	N1	
(c)	$\frac{1}{2} \times 28 \times (2T - 8) - \frac{1}{2} \times 28 \times T = 42$	K2	
	Note:		
	$\frac{1}{2} \times 28 \times (2T - 8)$ <u>or</u> $\frac{1}{2} \times 28 \times T$ seen award K1		
	11	N1	
			6
10 (a)	$2m + 6v = 72$ or equivalent	P1	
	$m + v = 16$ or equivalent	P1	
(b)	$\begin{pmatrix} 2 & 6 \\ 1 & 1 \end{pmatrix} \begin{pmatrix} m \\ v \end{pmatrix} = \begin{pmatrix} 72 \\ 16 \end{pmatrix}$ or equivalent	P1	
	$\frac{1}{2(1) - 6(1)} \begin{pmatrix} 1 & -6 \\ -1 & 2 \end{pmatrix} \begin{pmatrix} 72 \\ 16 \end{pmatrix}$ <u>or</u> $\begin{pmatrix} inverse \\ matrix \end{pmatrix} \begin{pmatrix} 72 \\ 16 \end{pmatrix}$ <u>or</u> equivalent	K1	
	$m = 6$	N1	
	$v = 10$	N1	
	Note:		
	1. Accept any variable or symbol.		
	2. Do not accept $\begin{pmatrix} inverse \\ matrix \end{pmatrix} = \begin{pmatrix} 2 & 6 \\ 1 & 1 \end{pmatrix}$ <u>or</u> $\begin{pmatrix} inverse \\ matrix \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$		
	2. $\begin{pmatrix} m \\ v \end{pmatrix} = \begin{pmatrix} 6 \\ 10 \end{pmatrix}$ as final answer, award N1.		
	3. Do not accept any solutions solved not using matrix method.		6

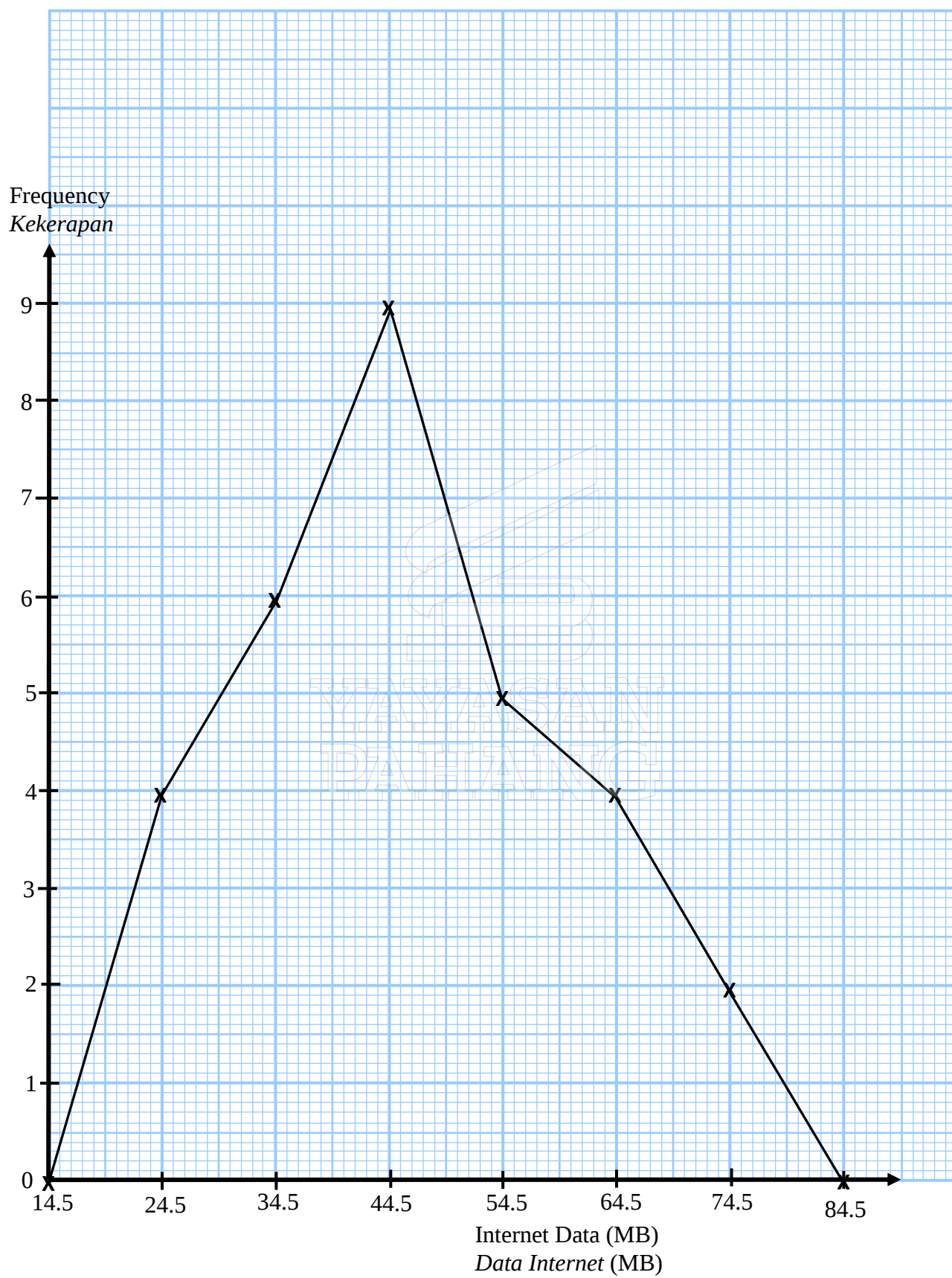
Question	Solution and Mark Scheme	Sub Mark	Mark
11	(a) { (2,2), (2,6), (2,7), (2,8), (2,9), (4,4), (4,6), (4,7), (4,8), (4,9), (5,6), (5,7), (5,8), (5,9) }	P2	
	<u>Note</u> : Allow two mistake in listing the sample space for P1		
	(b) (i) { (2,2), (2,6), (2,8), (4,4), (4,6), (4,8), (5,6), (5,8) }	K1	
	$\frac{8}{14}$ <i>or</i> $\frac{4}{7}$	N1	
	(ii) { (5,6), (5,7), (5,8), (5,9) }	K1	
	$\frac{4}{14}$ or $\frac{2}{7}$	N1	
	<u>Note</u> : Accept answer without working for K1N1 provided P2 obtained.		6

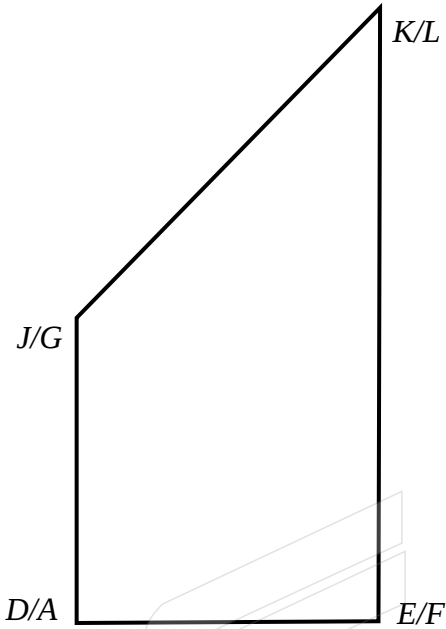
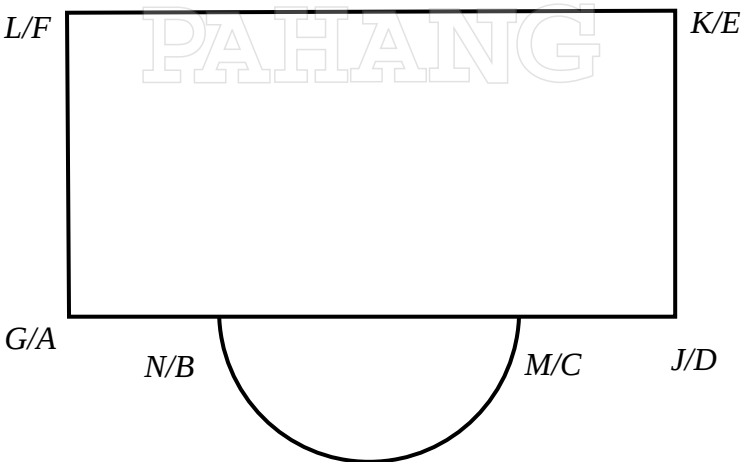
Question	Solution and Mark Scheme	Sub Mark	Mark
12(a)	(a) $ST = \frac{160 - 2x}{2}$ or $ST = 80 - x$	P1	
	$y = x(80 - x)$	P1	
	$y = 80x - x^2$	P1	
	(b) 1 200	K1	
	700	K1	
	(c) <u>Graph</u>		
	Axes drawn in the correct directions with uniform scales for $0 \leq x \leq 80$ and $0 \leq y \leq 1600$	P1	
	All 7 points and *2 points correctly plotted or curve passes through all the points for $0 \leq x \leq 80$ and $0 \leq y \leq 1600$.	K2	
	<u>Note:</u> 7 or 8 points correctly plotted, award K1	N1	
	Smooth and continuous curve without any straight line passing through all 9 correct points using the given scales.	K1	
	(d) (i) $1\,600\text{ m}^2$	N1N1	
	(ii) $24 \leq x \leq 26$ or $53 \leq x \leq 55$		
NOTE			
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. Value of x and of y obtained from wrong graph, award P0 or N0			
			12



Question	Solution and Mark Scheme	Sub Mark	Mark
13(a)	(i) (-2 , 1)	P2	
	Note: (-2 , 1) marked on diagram or (4, -1) seen or (4, -1) marked on diagram, award P1		
	(ii) (5, 5)	P2	
	Note: (5, 5) marked on diagram or (0, 6) seen or (0, 6) marked on diagram, award P1		
(b) (i)	(a) N= Reflection at line $y = 6$	P2	
	Note: 1. Reflection, award P1 .		
	(b) M= Enlargement, scale factor 2 at centre of enlargement $P(1, 4)$	P3	
	Note: 1. Enlargement, centre $P(1, 4)$ or Enlargement, scale factor 2 award P2 2. Enlargement, award P1		
(ii)	$* 2^2 \times 31.25 - 31.25$	K2	
	$* 2^2 \times 31.25$ seen award K1		
	OR		
	$\frac{31.25}{5} \times 15$ 93.75	(K2)	
		N1	12

Question	Solution and Mark Scheme	Sub Mark	Mark																					
14	(a) <table><tr><th>Internet Data (MB) <i>Data Internet (MB)</i></th><th>Frequency <i>Kekerapan</i></th><th>Midpoint <i>Titik tengah</i></th></tr><tr><td>20 - 29</td><td>4</td><td>24.5</td></tr><tr><td>30 - 39</td><td>6</td><td>34.5</td></tr><tr><td>40 - 49</td><td>9</td><td>44.5</td></tr><tr><td>50 - 59</td><td>5</td><td>54.5</td></tr><tr><td>60 - 69</td><td>4</td><td>64.5</td></tr><tr><td>70 - 79</td><td>2</td><td>74.5</td></tr></table> Internet Data : II to VI Frequency : I to VI Midpoint : I to VI (b) $\frac{*4 \times 24.5 + *6 \times 34.5 + *9 \times 44.5 + *5 \times 54.5 + *4 \times 64.5 + *2 \times 74.5}{4 + 6 + 9 + 5 + 4 + 2}$ 46.17 (c) <u>Frequency Polygon</u> Axes drawn in correct directions with uniform scale for $14.5 \leq x \leq 84.5$ and $0 \leq y \leq 9$ *8 points correctly plotted using correct values of midpoint. Note: *4 or *5 points correctly plotted, award K1. Frequency Polygon correctly drawn (d) 66.67%	Internet Data (MB) <i>Data Internet (MB)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>	20 - 29	4	24.5	30 - 39	6	34.5	40 - 49	9	44.5	50 - 59	5	54.5	60 - 69	4	64.5	70 - 79	2	74.5	P1 P2 P1 K2 N1 P1 K2 N1 K1	12
Internet Data (MB) <i>Data Internet (MB)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>																						
20 - 29	4	24.5																						
30 - 39	6	34.5																						
40 - 49	9	44.5																						
50 - 59	5	54.5																						
60 - 69	4	64.5																						
70 - 79	2	74.5																						



Question	Solution and Mark Scheme	Sub Mark	Mark
15	(a)  Correct shape with trapezium $DEKJ$. All solid lines. $EK > KJ > JD = DE$ Measurements correct to ± 0.2 cm (one way) and all angles at vertices $= 90^\circ \pm 1^\circ$ (b) (i)  Correct shape with rectangle ADEF and semi circle BC All solid lines. $AD > DE = BC > AB = CD$ Measurements correct to ± 0.2 cm (one way) and all angles at vertices of rectangles $= 90^\circ \pm 1^\circ$	K1 K1 N1 K1 K1 N2	

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Question	Solution and Mark Scheme	Sub Mark	Mark
	(ii) Correct shape with rectangles $ADKL$, $BCMN$, $ABHG$ and $CDJI$ All solid lines. <u>Note:</u> Ignore dashed line $H - I$ joined by a dashed line to form a rectangle $BCIH$ $BN > AL = AD > BC > AB = CD$ Measurements correct to ± 0.2 cm (one way) and All angles at vertices of rectangles = $90^\circ \pm 1^\circ$	K1 K1 K1 N2	12

Question	Solution and Mark Scheme	Sub Mark	Mark
16	(a) (23°N/U, 138°W/B)	P3	
	(b) $\frac{2200}{60} \sim 37^\circ$	K1	
	37° - 23°	K1	
	14°	N1	
	(c) (42° + 12°) x 60' x cos 23°	K2	
	<u>Note:</u> (54° X 60') or cos 23° correctly used, award K1		
	2982.44 b.n	N1	
	(d) $\frac{2220 + *2982.44}{580}$	K2	
	8.97 jam	N1	
			12
	PERATURAN PEMARKAHAN TAMAT		