



**PENTAKSIRAN DIAGNOSTIK AKADEMIK
SEKOLAH BERASRAMA PENUH 2017**

**PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA
MATEMATIK 1449**

**MATHEMATICS
SKEMA PEMARKAHAN
KERTAS 1 DAN KERTAS 2**

Pengiraan Markah

$$\text{Markah} = \frac{\text{Kertas 1} + \text{Kertas 2}}{140} \times 100$$

PAPER 1

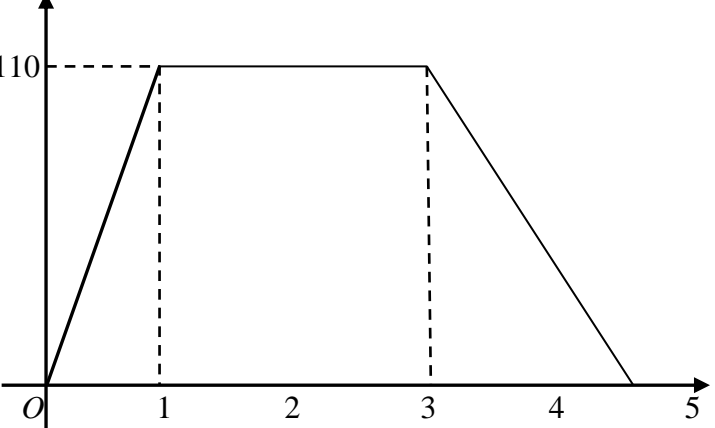
Q	Answer	Q	Answer
1.	D	21.	A
2.	A	22.	B
3.	B	23.	D
4.	C	24.	C
5.	C	25.	D
6.	D	26.	B
7.	C	27.	A
8.	D	28.	C
9.	B	29.	B
10.	D	30.	D
11.	D	31.	A
12.	C	32.	C
13.	B	33.	B
14.	C	34.	C
15.	B	35.	A
16.	A	36.	B
17.	D	37.	B
18.	B	38.	D
19.	D	39.	B
20.	B	40.	B

		<p><u>Nota :</u></p> <p>1. Accept without “ = 0” for K1. <i>Terima tanpa “ = 0” untuk K1.</i></p> <p>2. Accept $(x + \frac{3}{2})(x - 4)$ or equivalent to answer $x = -\frac{3}{2}$ and $x = 4$, give Kk2 <i>Terima $(x + \frac{3}{2})(x - 4)$ atau setara dengan jawaban $x = -\frac{3}{2}$ dan $x = 4$, beri Kk2</i></p>		
3		$x + y = 180$ or / <u>atau</u> $y - 30 = x$ or / <u>atau</u> $y - x = 30$	K1	4
		$2y = 210$ or/ <u>atau</u> equivalent / <u>setara</u>	K1	
		$y = 105$	N1	
		$x = 75$	N1	
4	(a)	$\angle BEA$	P1	3
	(b)	$\tan \angle BEA = \frac{8}{15}$ 28.07° or $28^\circ 4'$	K1 N1	
5		$\frac{1}{3} \times 12 \times 12 \times 12$	K1	4
		$\frac{2}{3} \times \frac{22}{7} \times r^3$	K1	
		$\frac{1}{3} \times 12 \times 12 \times 12 - \frac{2}{3} \times \frac{22}{7} \times r^3 = 519 \frac{3}{7}$	K1	
		$r = 3$	N1	
6	a	$\frac{135}{360} \times 2 \times \frac{22}{7} \times 14$ atau $\frac{225}{360} \times 2 \times \frac{22}{7} \times 21$	K1	6
		$\frac{135}{360} \times 2 \times \frac{22}{7} \times 14 + 21 + 14 + 7 + \frac{225}{360} \times 2 \times \frac{22}{7} \times 21$	K1	
		157.5	N1	
	b	$\frac{135}{360} \times \frac{22}{7} \times 14^2$ atau $\frac{225}{360} \times \frac{22}{7} \times 21^2$	K1	
		$\frac{225}{360} \times \frac{22}{7} \times 21^2 - \frac{135}{360} \times \frac{22}{7} \times 14^2$	K1	
	635.25	N1		

7	a	Statement / Pernyataan	P1	6
	b	If $h < -7$, then $h < -10$, False <i>Jika $h < -7$, maka $h < -10$, Palsu</i>	K1N1	
	c	i. If $4k < 20$, then $k < 5$ / <i>Jika $4k < 20$, maka $k < 5$</i>	K1	
		ii. If $k < 5$, then $4k < 20$ / <i>Jika $k < 5$, maka $4k < 20$</i>	K1	
	d	$24 + 1$ is not an even number/ <i>$24 + 1$ bukan nombor genap</i>	N1	
8	a	{32, 34, 37, 52, 54, 57, 82, 84, 87, 92, 94, 97}	P1	5
	b	{37, 57, 87, 97 }	K1	
		Probability/ <i>Kebarangkalian</i> = $\frac{4}{12} = \frac{1}{3}$	N1	
	c	{37, 57, 82, 84, 97 }	K1	
		Probability / <i>Kebarangkalian</i> = $\frac{5}{12}$	N1	
9	a	$m = 1$ $4 = 1(3) + c$ or $c = 1$ $y = x + 1$	K1 K1 N1	5
	b	$0 = x + 1$	K1	
		x - intercept = -1 Pintasan- $x = -1$	N1	

NO. 8 (Terima Juga Jawapan)

a	{23, 25, 28, 29, 43, 45, 48, 49, 73, 75, 78, 79}	P1	5
b	{23, 25, 29, 43, 45, 49, 73, 75, 79}	K1	
	$\frac{9}{12} = \frac{3}{4}$	N1	
c	{28, 48, 73, 75, 79}	K1	
	$\frac{5}{12}$	N1	

10	(a)	(i) 1.00 tengahari @ 1.00 pm or 13.00	P1	
		<p>(ii)</p> <p>Speed (kmh^{-1}) Laju (kmj^{-1})</p>  <p>Both solid lines correctly drawn. <i>Kedua-dua garis penuh dilukis.</i></p>	P1	
	(b)	$\frac{1}{2}(4.5 + 2)(110)$ or/atau equivalent/ setara	K1	
		357.5 km	N1	
	(c)	$\frac{357.5}{4.5}$	K1	
		79.44	N1	6
11	(a)	$k = -3$ $g = 5$	P1 P1	
	(b)	$\begin{pmatrix} 1 & 1 \\ 2 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 132 \\ 549 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{1(5) - 1(2)} \begin{pmatrix} 5 & -1 \\ -2 & 1 \end{pmatrix} \begin{pmatrix} 132 \\ 549 \end{pmatrix}$ <p>$x = 37$ $y = 95$</p>	P1 K1 N1 N1	6

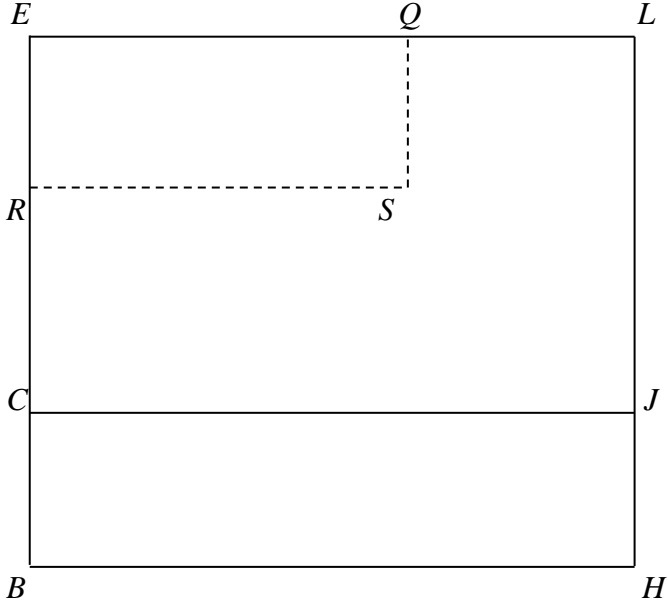
PAPER 2 / Section B

12	(a)	<table style="border-collapse: collapse; width: 100%;"> <tr> <td style="border: 1px solid black; padding: 5px; text-align: center;">x</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">-3</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">4</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px; text-align: center;">y</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">22</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">-41</td> </tr> </table>	x	-3	4	y	22	-41	K1 K1	
	x	-3	4							
	y	22	-41							
	(b)	<p><u>Graph</u> Axes are drawn in the correct direction, uniform scale for <i>Paksi dilukis dengan arah yang betul dan skala seragam bagi</i> $-4 \leq x \leq 4$ and $-41 \leq y \leq 55$</p>	K1							
		<p>7 points and 2 points* plotted accurately <i>7 titik dan 2* titiknya diplot dengan tepat.</i></p> <p><u>Notes</u> : (1) 8 or 7 points plotted correctly, award K1 <i>8 atau 7 titik diplot dengan betul</i></p> <p style="padding-left: 40px;">(2) Other scale being used, subtract 1 mark from the KN marks obtained. <i>Skala lain digunakan, tolak 1 markah daripada markah KN yang diperolehi</i></p>	K2							
		<p>Smooth and continuous curve without straight line(s) and passes through all the 9 correct points for $-4 \leq x \leq 4$ <i>Lengkungan licin dan berterusan tanpa garis lurus dan melalui 9 titik yang betul bagi $-4 \leq x \leq 4$</i></p>	N1							
(c)	<p>(i) -22 ± 1.0 (ii) -2.7 ± 0.1</p> <p><u>Notes</u> : Do not accept the values of x and y obtained by calculation. <i>Jangan terima nilai x dan y diperolehi daripada pengiraan.</i></p>	N1 N1								
(d)	<p>The straight line $y = -10x - 3$ drawn correctly. <i>Garis lurus $y = -10x - 3$ dilukis dengan betul.</i></p> <p><u>Note</u> : Equation $y = -10x - 3$ <i>or</i> equivalent seen, award K1 <i>Persamaan $y = -10x - 3$ atau setara dilihat, beri K1</i></p>	K2								

		-0.8 ± 0.1 -3.3 ± 0.1 <u>Notes :</u> 1. Award N mark(s) if the value(s) of x shown on the graph. <i>Beri markah N jika nilai x ditunjukkan pada graf.</i> 2. Do not accept the value(s) of x obtained by calculation. <i>Jangan terima nilai x yang diperolehi daripada pengiraan.</i>	N1 N1	
13	a.i.	$(-3,-1)$ <u>Notes :</u> $(-3,-1)$ marked in the diagram <u>or</u> $(3,5)$ seen <u>or</u> $(3,5)$ marked in the diagram $(-3,-1)$ ditanda pada rajah <u>atau</u> $(3,5)$ dilihat <u>atau</u> $(3,5)$ ditanda pada rajah beri P1	P2	
	a.ii	$(9,-3)$ <u>Notes :</u> $(9,-3)$ marked in the diagram <u>or</u> $(1,-7)$ seen <u>or</u> $(1,-7)$ marked in the diagram, give P1. $(9,-3)$ ditanda pada rajah <u>atau</u> $(1,-7)$ dilihat <u>atau</u> $(1,-7)$ ditanda pada graf beri P1.	P2	
		b(i) V: Reflection in the line TRQ or equivalent <i>Pantulan pada garis TRQ atau setara</i> <u>Notes:</u> 1. Reflection, give P1 <i>Pantulan, beri P1</i>	P2	
		b(ii) U: Enlargement at centre H, scale factor 3 or equivalent <i>Pembesaran pada pusat H, faktor skala 3 atau setara</i> <u>Notes:</u> 1. Enlargement at centre H, give P2 <i>Pembesaran pada pusat H, beri P2</i> 2. Enlargement, scale factor 3, give P2 <i>Pembesaran, faktor skala 3, beri P2</i> 3. Enlargement, give P1 <i>Pembesaran, beri P1</i>	P3	
	b.ii	Area of $ABCDE + 640 = 3^2 \times$ area of $ABCDE$ <i>Luas $ABCDE + 640 = 3^2 \times$ luas $ABCDE$</i> 80 <u>Notes :</u> $640 +$ area of $ABCDE$ <u>or</u> $*k^2 \times$ area of $ABCDE$, give K1 $640 +$ luas $ABCDE$ <u>atau</u> $* k^2 \times$ luas $ABCDE$, beri K1	K2 N1	
				12

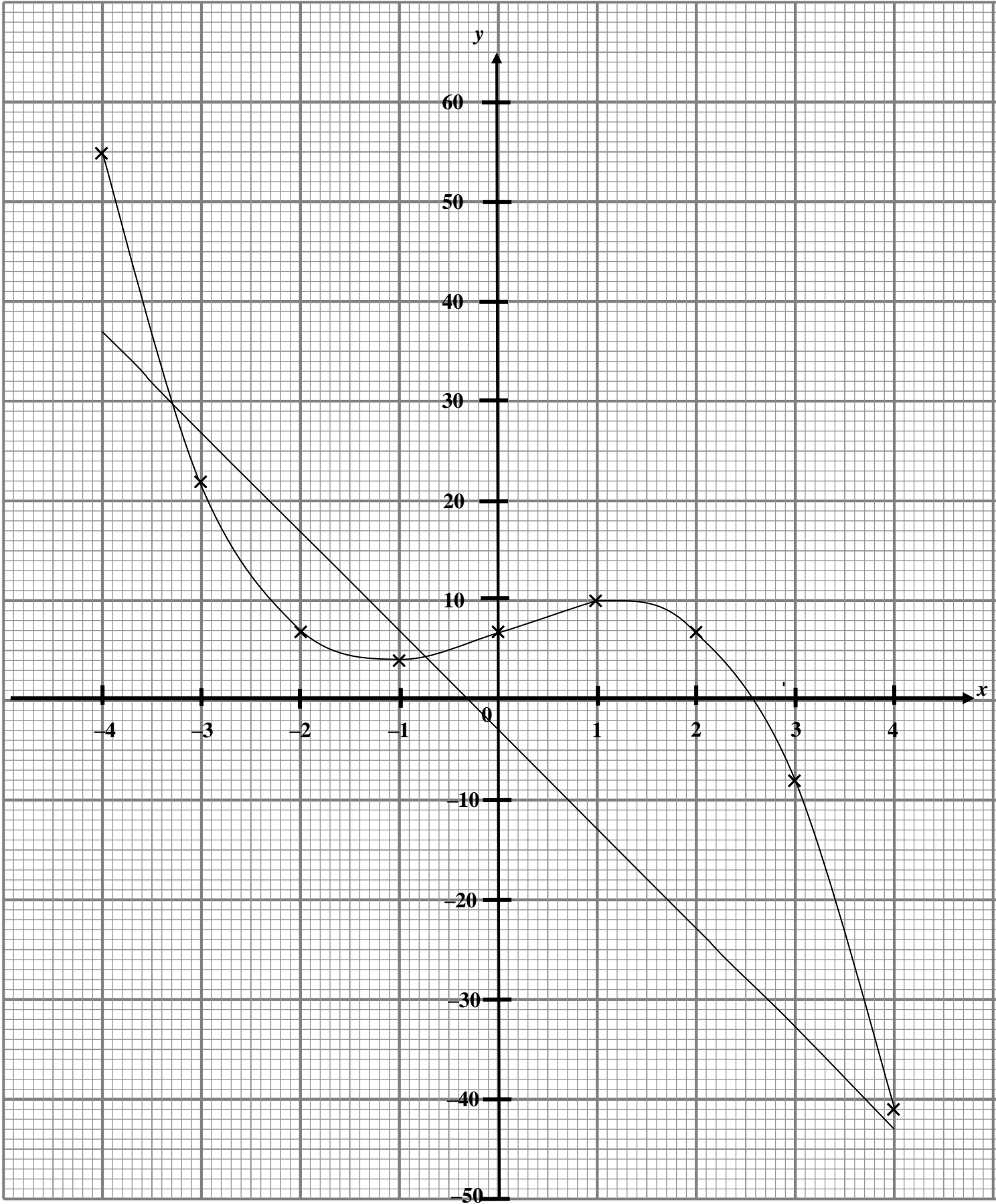
14	(a)	<table border="1"> <thead> <tr> <th>Length of steels <i>Panjang besi</i> (m)</th> <th>Frequency <i>Kekerapan</i></th> <th>Upper Boundary <i>Sempadan Atas</i></th> <th>Cumulative Frequency <i>Kekerapan Longgokan</i></th> </tr> </thead> <tbody> <tr> <td>1 – 10</td> <td>0</td> <td>10.5</td> <td>0</td> </tr> <tr> <td>11 – 20</td> <td>2</td> <td>20.5</td> <td>2</td> </tr> <tr> <td>21 – 30</td> <td>10</td> <td>30.5</td> <td>12</td> </tr> <tr> <td>31 – 40</td> <td>23</td> <td>40.5</td> <td>35</td> </tr> <tr> <td>41 – 50</td> <td>32</td> <td>50.5</td> <td>67</td> </tr> <tr> <td>51 – 60</td> <td>17</td> <td>60.5</td> <td>84</td> </tr> <tr> <td>61 – 70</td> <td>11</td> <td>70.5</td> <td>95</td> </tr> <tr> <td>71 – 80</td> <td>5</td> <td>80.5</td> <td>100</td> </tr> </tbody> </table>	Length of steels <i>Panjang besi</i> (m)	Frequency <i>Kekerapan</i>	Upper Boundary <i>Sempadan Atas</i>	Cumulative Frequency <i>Kekerapan Longgokan</i>	1 – 10	0	10.5	0	11 – 20	2	20.5	2	21 – 30	10	30.5	12	31 – 40	23	40.5	35	41 – 50	32	50.5	67	51 – 60	17	60.5	84	61 – 70	11	70.5	95	71 – 80	5	80.5	100	P1 P1 P1 P1	
	Length of steels <i>Panjang besi</i> (m)	Frequency <i>Kekerapan</i>	Upper Boundary <i>Sempadan Atas</i>	Cumulative Frequency <i>Kekerapan Longgokan</i>																																				
	1 – 10	0	10.5	0																																				
	11 – 20	2	20.5	2																																				
	21 – 30	10	30.5	12																																				
31 – 40	23	40.5	35																																					
41 – 50	32	50.5	67																																					
51 – 60	17	60.5	84																																					
61 – 70	11	70.5	95																																					
71 – 80	5	80.5	100																																					
(b)	<p>Mean / <i>Min</i> =</p> $\frac{15.5(2) + 25.5(10) + 35.5(23) + 45.5(32) + 55.5(17) + 65.5(11) + 75.5(5)}{100}$ $= \frac{4600}{100} = 46$	K2 N1																																						
(c)	Class mode / <i>Kelas mod</i> = 41 – 50	P1																																						
(d)	<p>Axes drawn in the correct directions with uniform scales for $10.5 \leq x \leq 80.5$ and $0 \leq y \leq 100$.</p> <p><i>Paksi dilukis dengan arah yang betul dan skala seragam bagi $10.5 \leq x \leq 80.5$ dan $0 \leq y \leq 100$.</i></p> <p>All 7 points plotted correctly (without point (10.5, 0) or curve passes through 7 the points for $10.5 \leq x \leq 80.5$.</p> <p><i>Semua 7 titik ditanda dengan betul (tanpa titik (10.5, 0) atau lengkungan graf melalui 7 titik bagi $10.5 \leq x \leq 80.5$ dan $0 \leq y \leq 100$.</i></p> <p>A smooth and continuous curve and passes through all 8 points using given scale $10.5 \leq x \leq 80.5$ and $0 \leq y \leq 100$.</p> <p><i>Lengkungan yang licin dan berterusan melalui semua 8 titik menggunakan skala $10.5 \leq x \leq 80.5$ and $0 \leq y \leq 100$.</i></p>	P1 K2 N1																																						

15	a(i)	<div data-bbox="507 286 1061 952" data-label="Diagram"> </div> <p data-bbox="395 1003 1133 1142">Correct shape with rectangular <i>ABJG</i>, <i>DELK</i> and <i>CDKJ</i>. <i>Bentuk betul dengan segiempat tepat ABJG, DELK dan CDKJ.</i></p> <p data-bbox="395 1164 1029 1198">$AG = BH > AB = GH > AE = ML > LK = KJ$</p> <p data-bbox="395 1220 1181 1288">Accurate measurement $\pm 0.2 \text{ cm}$ and angle at the vertices of the rectangles = $90^\circ \pm 1^\circ$.</p> <p data-bbox="395 1299 1181 1355"><i>Ukuran tepat $\pm 0.2 \text{ cm}$ dan sudut pada bucu segiempat tepat = $90^\circ \pm 1^\circ$.</i></p>	K1	
	a(ii)	<div data-bbox="526 1400 1013 1993" data-label="Diagram"> </div>		

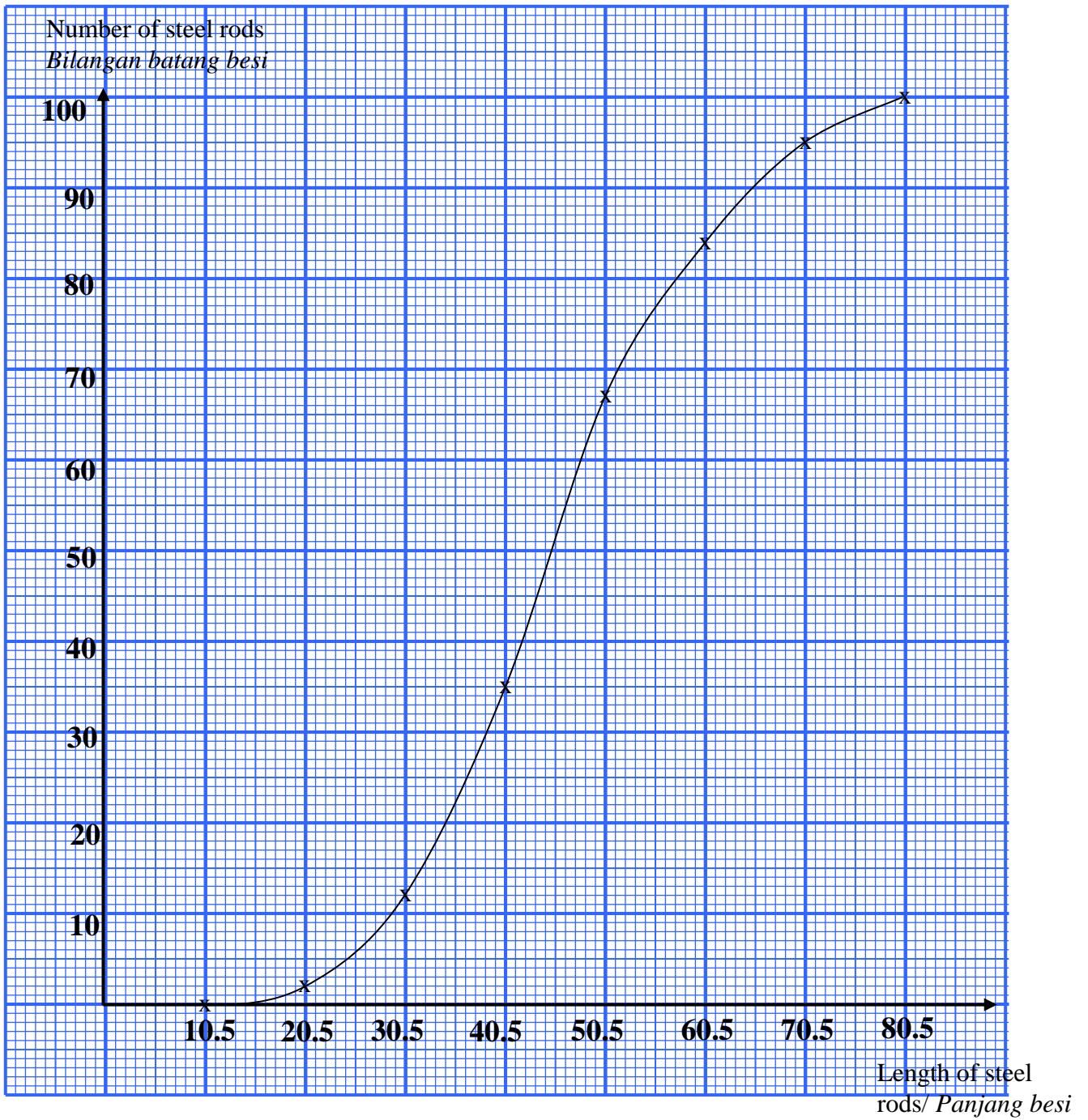
	<p>Correct shape with hexagon <i>ABCDEF</i> <i>Bentuk betul dengan heksagon ABCDEF.</i></p> <p>$FA > AB > FE > BC > CD$</p> <p>Accurate measurement ± 0.2 cm and angles <i>A, B, F</i> $= 90^\circ \pm 1^\circ$. <i>Ukuran tepat ± 0.2 cm dan sudut <i>A, B, F</i> = $90^\circ \pm 1^\circ$.</i></p>	<p>K1</p> <p>K1</p> <p>N2</p>	
<p>b</p>	 <p>Correct rectangular shape <i>BHJC</i> and <i>JCEL</i>. All solid lines (ignore line <i>RS</i> and <i>QS</i>)</p> <p><i>Bentuk segi empat tepat BHJC dan JCEL betul.</i> <i>Semua garisan penuh. (Abaikan garis RS dan QS)</i></p> <p><i>R – S</i> and <i>Q – S</i> connected with dotted lines. <i>R – S dan Q – S disambungkan dengan garis putus-putus.</i></p> <p>$BH = EL = CJ > BE = HL > JL = CE = RS > CR = QL > QS$</p> <p>Accurate measurement ± 0.2 cm and angle at the vertices of the rectangles $= 90^\circ \pm 1^\circ$. <i>Ukuran tepat ± 0.2 cm dan sudut pada bucu segiempat tepat</i> $= 90^\circ \pm 1^\circ$.</p>	<p>K1</p> <p>K1</p> <p>K1</p> <p>N2</p>	<p>12</p>

16	a	i.		P1P1	12
		ii. (30°S, 60°W/B)	P1P1		
	b	<div style="border: 1px solid red; padding: 2px; display: inline-block;"> $(60+60) \times 60$ 7200 n.m. </div>	K1 N1		
	c	500×5 2500 n.m.	K1		
		$\theta \times 60 \cos 30 = 2500$	K1		
$\theta = \frac{2500}{60 \cos 30^\circ}$ $= 48.11^\circ$		K1			
	$\text{Longitude/longitud} = 120 - 48.11$ $= 71.89^\circ \text{ E/T}$	K1 N1N1			

Graph for Question 12



Graph for Question 14



END OF MARKING SCHEME