PROGRAM GEMPUR KECEMERLANGAN
SIJIL PELAJARAN MALAYSIA 2018

SIJIL PELAJARAN MALAYSIA 2018

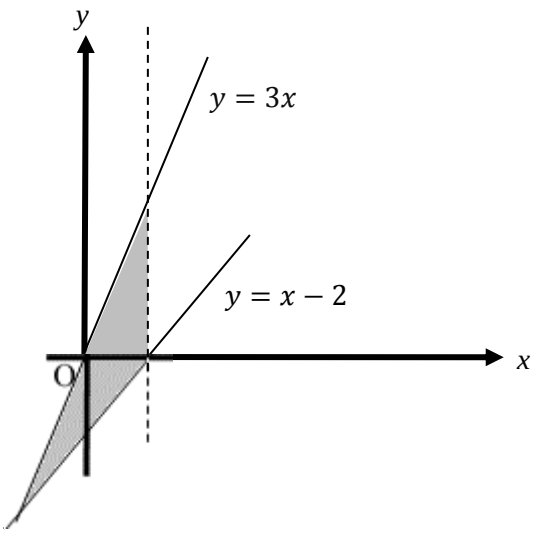
MATHEMATICS **1449/2**

Kertas 2

Peraturan Pemarkahan

Ogos

PERATURAN PEMARKAHAN

Question		Solution and Mark Scheme	Mark	Total
1		 Straight line $x = 2$, is drawn correctly The region is shaded correctly Note: 1. $x = 2$ is drawn in full line, give K1P1 2. Award P1 to shaded region bounded by two correct lines. (Check one vertex from any two correct lines)	 P1 P2	3
2		$\frac{1}{2}[(x+1)+(2x+4)]\times(x+3)-\frac{1}{2}(x+3)(x+2)=85$ $\frac{1}{2}(3x+5)(x+3)-\frac{1}{2}(x+3)(x+2)=85$ $3x^2+14x+15-(x^2+5x+6)=170$ $2x^2+9x-161=0$ $(x-7)(2x+23)=0$ $x=7 \qquad x=-\frac{23}{2}$ $\therefore\ x=7$ Note: $\frac{1}{2}[(x+1)+(2x+4)]\times(x+3)$ or $\frac{1}{2}(x+3)(x+2)$ seen award K1	 K1 K1 K1 N1	4

Question		Solution and Mark Scheme	Mark	Total
3		A + C = 125 or 16 A + 10 C = 1820 or equivalent 16 A + 16 C = 2000 or 10 A + 10 C = 1250 or equivalent **OR** A = 125 – C or C = 125 – A or equivalent P1 6 C = 180 or 6 A = 570 or equivalent **OR** $\begin{pmatrix} A \\ C \end{pmatrix} = \frac{1}{1\times10-1\times16}\begin{pmatrix} 10 & -1 \\ -16 & 1 \end{pmatrix}\begin{pmatrix} 125 \\ 1820 \end{pmatrix}$ K2 Adult = 95 Children = 30 Note: $\begin{pmatrix} 10 & -1 \\ -16 & 1 \end{pmatrix}\begin{pmatrix} A \\ C \end{pmatrix} = \begin{pmatrix} 125 \\ 1820 \end{pmatrix}$ or correct inverse seen K1	P1 K1 K1 N1 N1	5
4	(*a*) (*b*)	$\angle FGH$ or $\angle HGF$ tan $\angle FGH = \frac{1\cdot5}{2\cdot5}$ or equivalent $30\cdot96^o$ or $30^o\ 58'$	P1 K1 N1	3
5		$150\times45\times60$ or $\frac{1}{2}\times40\times50\times60$ $\frac{150\times45\times60+\frac{1}{2}\times40\times50\times60}{90}$ 5167 Note: $150\times45\times60 + \frac{1}{2}\times40\times50\times60$ or 465000 seen, award K1.	K1 K2 N1	4

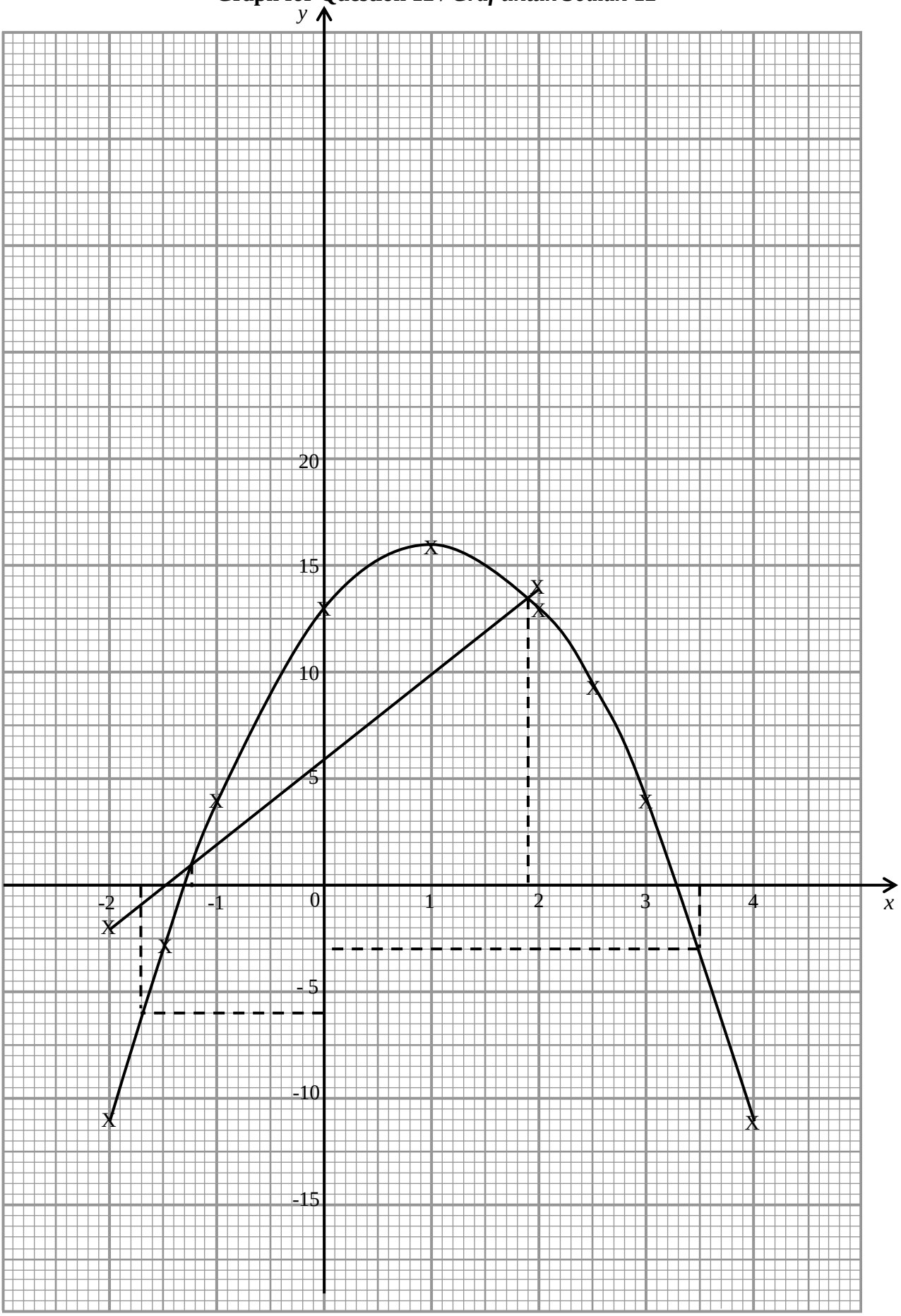
Question		Solution and Mark Scheme	Mark	Total
6	(*a*)	$\frac{1}{3}(x+0)=1$	K1	5
		$x=3$	N1	
	(*b*)	$m_{RS}=m_{PQ}=-1$	P1	
		$-5=-1(3)+c$ or	K1	
		$y-(-5)=-1(x-3)$		
		or equivalent		
		$y=-x-2$	N1	
		or equivalent		
7	(*a*)	Statement	P1	5
	(*b*)	<	P1	
	(*c*)	$S\cup T=S$	P1	
	(*d*)	$\frac{(7-2)\times 180}{7}$	K1	
		$128\cdot 57$	N1	
8	(*a*)	$36x+5y=297$	P1	6
		$45x+8y=387$	P1	
		or equivalent		
	(*b*)	$\begin{pmatrix}36 & 5\\ 45 & 8\end{pmatrix}\begin{pmatrix}x\\ y\end{pmatrix}=\begin{pmatrix}297\\ 387\end{pmatrix}$	K1	
		$\begin{pmatrix}x\\ y\end{pmatrix}=\frac{1}{36(8)-5(45)}\begin{pmatrix}8 & -5\\ -45 & 36\end{pmatrix}\begin{pmatrix}297\\ 387\end{pmatrix}$	K1	
		$x=7$	N1	
		$y=9$	N1	

Question		Solution and Mark Scheme	Mark	Total
9	(*a*)	$2\times\frac{22}{7}\times 35$	K1	6
		220×12	K1	
		2640	N1	
	(*b*)	$7\times 16=112$	K1	
		$112-\left[\left(\frac{90}{360}\times\frac{22}{7}\times 7^2\right)+\left(\frac{90}{360}\times\frac{22}{7}\times 7^2\right)\right]=35$ or $\frac{35}{10000}\times 18$	K1	
		RM 0.063	N1	
10	(*a*)	$\left\{\begin{array}{l}(Ariff, Shahir),(Ariff, Emma),(Ariff, Gunalan),(Ariff, Filzah)\\(Ben, Shahir),(Ben, Emma),(Ben, Gunalan),(Ben, Filzah),\\(Chua, Shahir),(Chua, Emma),(Chua, Gunalan),(Chua, Filzah)\\(Janet, Shahir),(Janet, Emma),(Janet, Gunalan),(Janet, Filzah)\end{array}\right\}$	P2	6
	(*b*)	(i) $\left\{\begin{array}{l}(Ariff, Emma),(Ariff, Filzah),(Ben, Emma),\\(Ben, Filzah),(Chua, Emma),(Chua, Filzah),\\(Shahir, Janet),(Gunalan, Janet)\end{array}\right\}$	K1	
		$\frac{8}{16}$ or $\frac{1}{2}$	N1	
		(ii) $\left\{\begin{array}{l}(Ariff, Emma),(Ariff, Filzah),(Ben, Emma),\\(Ben, Filzah),(Chua, Emma),(Chua, Filzah),\\(Janet, Shahir),(Janet, Emma),(Janet, Gunalan)\\(Janet, Filzah)\end{array}\right\}$	K1	
		$\frac{10}{16}$ or $\frac{5}{8}$	N1	
		Note: 1. Allow two mistakes for P1 2. Accept answer without listing with complete sample space in 10 (*a*)		

Question		Solution and Mark Scheme	Mark	Total
11	(*a*)	15	P1	5
	(*b*)	$\frac{20-0}{25-30}$ or $\frac{0-20}{30-25}$	K1	
		-4	N1	
	(*c*)	$\frac{1}{2}(v+20)\times 10+15\times 20+\frac{1}{2}\times 5\times 20=525$	K1	
		15	N1	
		Note:		
		$\frac{1}{2}(v+20)\times 10$ seen, award K1		

Question		Solution and Mark Scheme	Mark	Total
12	(*a*)	-11	K1	
		13	K1	2
	(*b*)	Axes drawn in correct directions with uniform scale for $-2 \le x \le 4$ and $-11 \le y \le 16$. *Paksi dilukis dalam arah yang betul dengan skala yang seragam bagi* $-2 \le x \le 4$ *dan* $-11 \le y \le 16$.	P1	
		All 9 points correctly plotted or curve passes through all the points for $-2 \le x \le 4$ and $-11 \le y \le 16$. *Semua* 9 *titik diplotkan dengan betul atau graf lengkung melalui semua titik bagi* $-2 \le x \le 4$ *dan* $-11 \le y \le 16$.	K2	
		A smooth and continuous curve without any straight line passes through all 9 correct points using the given scale for $-2 \le x \le 4$ and $-11 \le y \le 16$. *Satu lengkung yang licin dan berterusan tanpa garis lurus melalui kesemua 9 titik yang betul menggunakan skala yang diberi bagi* $-2 \le x \le 4$ *dan* $-11 \le y \le 16$.	N1	4
	(*c*)	(i) $-3 \cdot 0 \le y \le -2 \cdot 0$	P1	
		(ii) $-1 \cdot 8 < x \le -1 \cdot 7$	P1	2
	(*d*)	Straight line $y = 4x + 6$ is drawn correctly. *Garis lurus* $y = 4x + 6$ *dilukis dengan betul.* **Note**: Identify equation $y = 4x + 6$ award K1 *Kenal pasti persamaan* $y = 4x + 6$.	K2	
		Values of *x*: *Nilai-nilai x*: $-1 \cdot 30 \le x \le -1 \cdot 10$	N1	
		$1 \cdot 85 \le x \le 1 \cdot 95$ **Note**: Values of x obtained by calculation, award N0	N1	4

Graph for Question 12 / *Graf untuk Soalan* 12



Question		Solution and Mark Scheme	Mark	Total
13	(*a*)	(i) (4, -1)	P1	
		(ii) (1 , 0)	P2	3
		Note: (0, 3) marked on the diagram or $(1, 0)$ seen or (0, 3) marked on the diagram, award P1.		
	(*b*)	(i) (*a*) **U** = Rotation , 90^0 anticlockwise, at point *A* (5, 3) or equivalent **U =** *Putaran* 90^o *lawan arah jam pada pusat A* (5, 3) *atau setara*	P3	
		(*b*) **V** = Enlargement, scale factor of 2, at point *D* (7,1) or equivalent **V =** *Pembesaran dengan faktor skala* 2 *pada pusat D* (7,1) atau setara	P3	
		OR *(a)* **U** = Enlargement, scale factor of 2, at point A (5, 3) or equivalent (P3) **U =** *Pembesaran dengan faktor skala* 2 *pada pusat* A (5,3) atau setara (P3)		
		(b) **V** = Rotation , 90^0 anticlockwise, at point B (3, 3) or equivalent (P3) **V =** *Putaran* 90^o *lawan arah jam pada pusat* B (3, 3) *atau Setara* (P3)		
		(ii) $60 \times (2^*)^2 - 60$	K2	
		Note: $60 \times (2^*)^2$ seen, award K1		
		180	N1	9
				12

Question		Solution and Mark Scheme	Mark	Total
14				

	Donation (RM) *Derma (RM)*	Midpoint *Titik tengah*	Frequency *Kekerapan*
I	10 – 14	12	0
II	15 – 19	17	5
III	20 – 24	22	10
IV	25 – 29	27	9
V	30 – 34	32	11
VI	35 – 39	37	5

(*a*)

Class Interval	:	II to VI	P1	
Midpoint	:	II to VI	P1	
Frequency	:	II to VI	P2	4

(b)

$$\frac{17\times5+22\times10+27\times9+32\times11+37\times5}{5+10+9+11+5}$$ K2

$27\cdot125$ N1 3

(*c*) Frequency Polygon

Uniform scale for $12 \le x \le 42$ and $0 \le y \le 11$ P1

7^* points correctly plotted K2

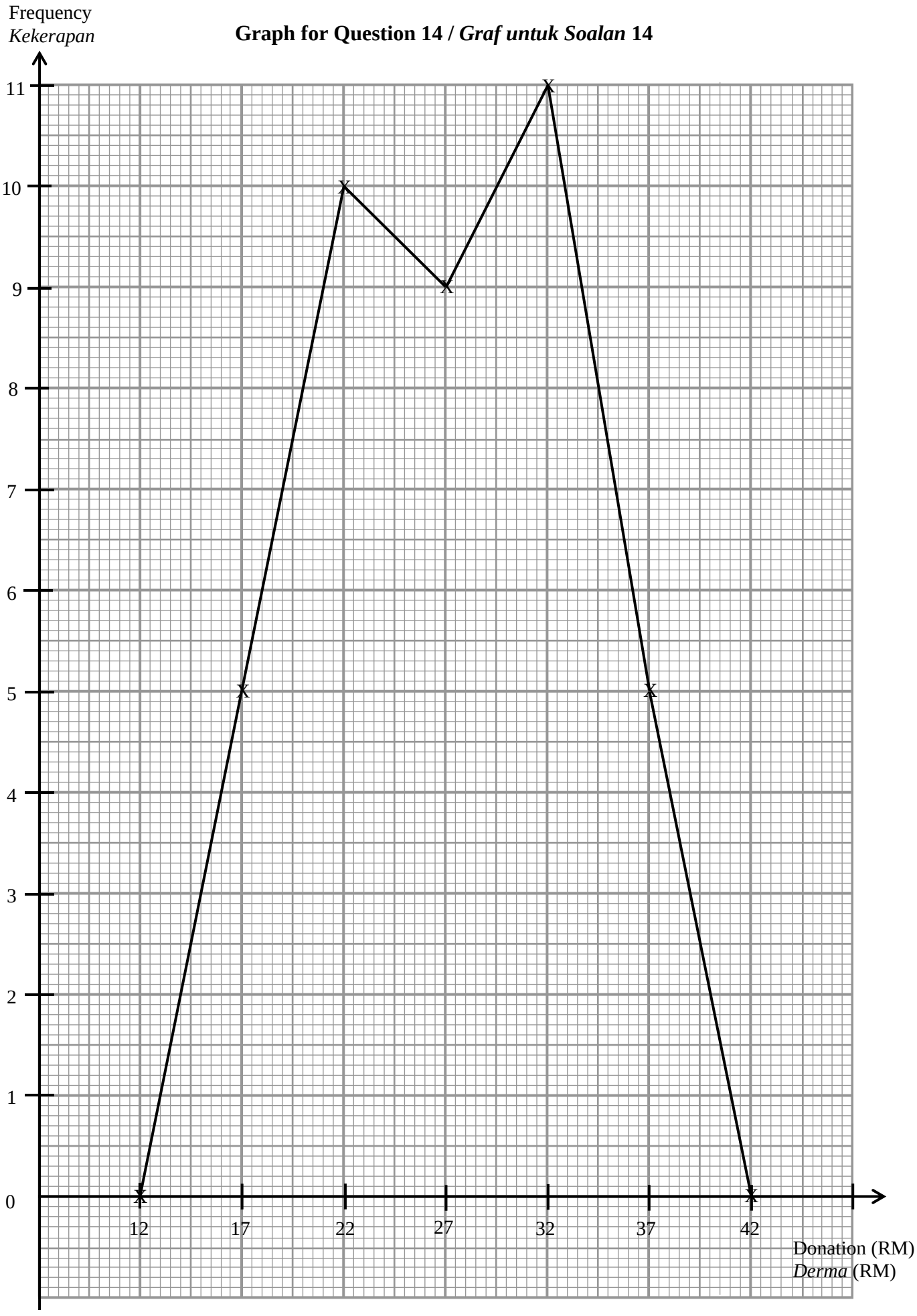
Note: 5^* or 6^* points correctly plotted, award K1

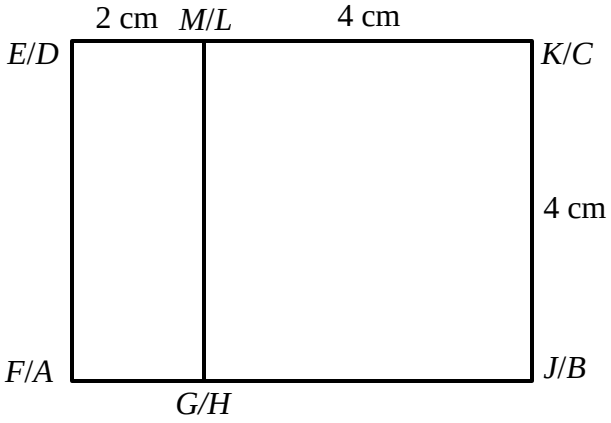
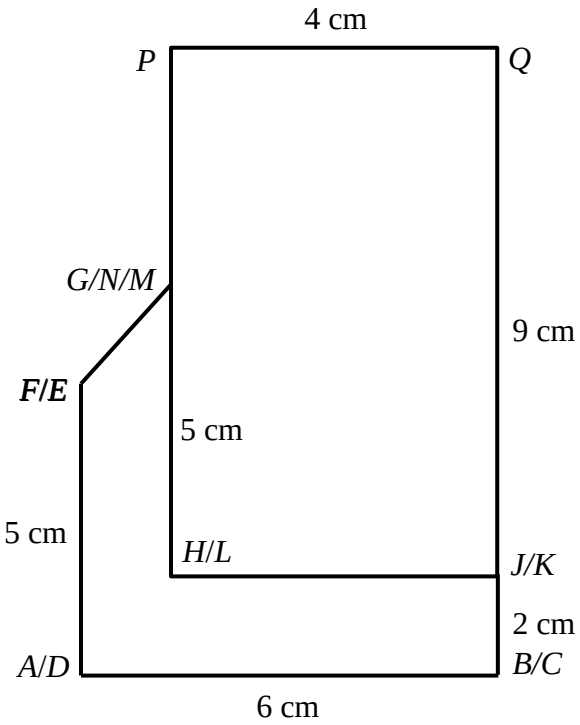
Continuos straight line passes through all points including point (12,0) dan (42, 0) N1 4

(d) Any information from the correct frequency polygon P1 1

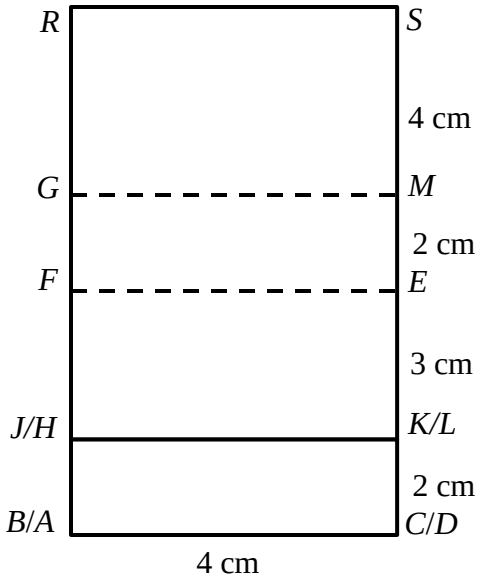
12

Graph for Question 14 / *Graf untuk Soalan* 14



Question		Solution and Mark Scheme	Mark	Total
15	(*a*)			
		Correct shape with rectangle FJ > JK = KL > ME	K1	
		Measurement correct to $\pm 0.2cm$ (one way) and right-angles at vertices = $90° \pm 1°$	K1	
		Note: Ignore label	N1	3
	(*b*)	(i) 		
		Correct shape with rectangle HJPQ and hexagon ABJHGF All solid line	K1	
		BQ > JQ > AB > AF = HG > GP = PQ	K1	
		Measurement correct to $\pm 0.2cm$ (one way) and all angle at a vertices = $90° \pm 1°$	N2	4
		Note: Ignore label		

Question		Solution and Mark Scheme	Mark	Total
15	(*b*)	(ii)		



Correct shape with rectangle BCSR	K1	
All solid lines (ignore FE or GM)		
F – E joined by dashed line to form rectangle BCEF and G – M joined by dashed line to form rectangle BCMG	K1	
BR > BG > BF > BC = RG > JF > BJ = FG	K1	
Measurements correct to $\pm 0.2cm$ (one way) and all angles at vertices = $90° \pm 1°$	N2	5
Note: Ignore label		
		12

Question		Solution and Mark Scheme	Mark	Total
16	(*a*)	$120° - 30°$	P1	
		(40º S, 90º E/*T*)	P2	3
	(*b*)	$\theta \times 60 \times \cos 40^{o} = 3\,447 \cdot 2$	K1	
		$90° - 75°$	K1	
		15º E/*T*	N1	3
	(*c*)	$105^{o} \times 60 \times \cos 40^{o}$	K1	
		$\frac{105^{o} \times 60 \times \cos 40°}{650}$	K1	
		$\frac{105^{o} \times 60 \times \cos 40°}{800}$	K1	
		0545 + 0726 or equivalent / *atau setara*	K1	
		0700 + 0603 or equivalent / *atau setara*	K1	
		Space Airline	N1	6
				12