SKEMA PEMARKAHAN
SPM(U) 2020

MATEMATIK KERTAS 1

No	Jawapan	No	Jawapan	No	Jawapan	No	Jawapan
1	D	11	B	21	B	31	D
2	C	12	A	22	C	32	C
3	B	13	B	23	B	33	A
4	D	14	C	24	B	34	C
5	B	15	A	25	C	35	B
6	C	16	B	26	B	36	A
7	D	17	C	27	D	37	B
8	A	18	A	28	D	38	B
9	D	19	A	29	C	39	A
10	A	20	D	30	C	40	D

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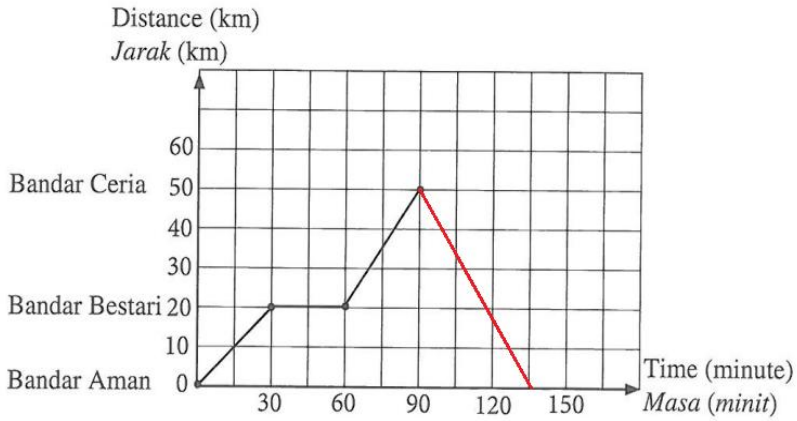
MATEMATIK KERTAS 2

Bahagian A

No. Soalan	Peraturan Pemarkahan	Markah	
1	(i) $y < x + 7$ *or* equivalent (ii) $y \geq -\frac{1}{2}x - 2$ *or* equivalent (iii) $x \leq 1$ *or* equivalent	**P1** **P1** **P1**	**4**
2	(a) $\measuredangle GHL$ (b) $Sin\,30^o = \frac{x}{55}$ $x = 55\,Sin\,30^o$ $\therefore$ *Jarak tegak dari titik F ke garis EK* $= 27.50\,cm$	**P1** **K1** **N1**	**3**
3	$(8\times 8) - 4\left(\frac{1}{2}\times p(8-p)\right) = 34$ $64 - (2p^2 - 16p) = 34$ $2p^2 - 16p + 30 = 0$ $(p-5)(p-3) = 0$ $p = 5, \quad p = 3$ $\therefore$ *Nilai* $p = 5\,cm$	**K1K1** **K1** **K1** **N1** **N1**	**6**

No. Soalan	Peraturan Pemarkahan	Markah	
4	*Isipadu yang tinggal = Isipadu Prisma - IsipaduKon* $=(72\times10)-\left(\frac{1}{3}\left[\frac{22}{7}\times3^2\times10\right]\right)$ $=(720)-(94.286)$ $=625.71 @ 625\frac{5}{7}$	**K1K1** **N1**	**3**
5	$70M+30D=66.50$ $35M+60D=49.00$ atau setara $140M+60D=133$ atau setara $105M=84$ $\therefore$ *Sebiji Mufin*, $M=0.80$*sen* *Sebiji Donut*, $D=0.35$*sen*	K1 K1 K1 N1 N1	**5**
6	(a) Bukan pernyataan (b) Semua pentagon mempunyai 5 sisi (c) $2(n+1)^n+4,\quad n=0,1,2,3,\ldots$ <u>or</u> equivalent	**P1** **P1** **K1N1**	**4**
7	$\begin{pmatrix}30 & 80\\ 20 & 60\end{pmatrix}\begin{pmatrix}x\\ y\end{pmatrix}=\begin{pmatrix}72.50\\ 53.00\end{pmatrix}$ $\begin{pmatrix}x\\ y\end{pmatrix}=\frac{1}{30(60)-20(80)}\begin{pmatrix}60 & -80\\ -20 & 30\end{pmatrix}\begin{pmatrix}72.50\\ 53.00\end{pmatrix}$ $\begin{pmatrix}x\\ y\end{pmatrix}=\begin{pmatrix}0.55\\ 0.70\end{pmatrix}$ *Seunit Pemadam*, $x=0.55$ *sen* *Seunit Pensil*, $y=0.70$ *sen*	**P1** **K1** **N1** **N1**	**4**

No. Soalan	Peraturan Pemarkahan	Markah	
8	(a) *Persamaan garis lurus KL*, $y = -15$	**K1**	
	(b) (i) $y - 9 = -3(x + 2)$	**K1K1**	
	$y = -3x - 6 + 9$		
	$\therefore$ *Persamaan garis lurus PQ*, $y = -3x + 3$	**N1**	
	(ii) $0 = -3x + 3$	**K1**	
	$x = 1$		
	$\therefore$ *Koordinat Q*, $(1, 0)$	**N1**	**6**
9	(a) 	**P1** **K1** **K1N1** **K1**	
	(b) (i) 30 *minit*	**N1**	**6**
	(ii) $Laju = \dfrac{20}{\left(30/60\right)} = 40\ kmj^{-1}$		
	(iii) $Purata\ laju = \dfrac{50 + 50}{\left(135/60\right)}$		
	$= 44.44 \text{ @ } 44\dfrac{4}{9}\ kmj^{-1}$		

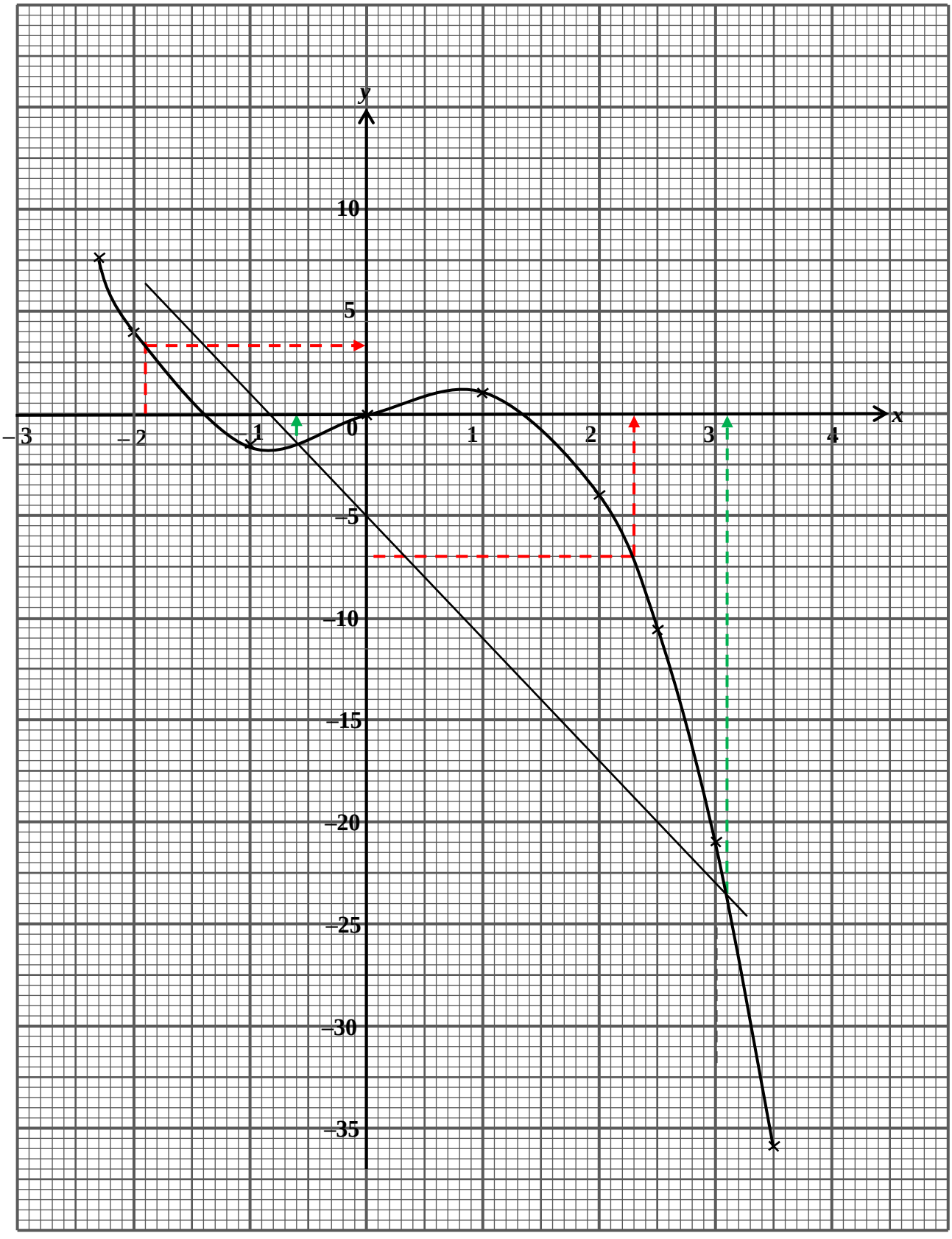
No. Soalan	Peraturan Pemarkahan	Markah	
10	(a) $\textit{Perimeter kawasan tidak berlorek} = 5(11) + 3\left(\frac{60}{360} \times 2 \times \frac{22}{7} \times 11\right)$	**K1K1**	
	$= 55 + 34.572$		
	$= 89.57 \quad \textit{atau} \quad 89\frac{4}{7} \quad \textit{atau} \quad \frac{627}{7}$	**N1**	
	(b) *Luas kaws. berlorek* $= \left(\frac{22}{7} \times 11^2\right) - 2\left(\frac{60}{360} \times \frac{22}{7} \times 11^2\right) - \left[\left(\frac{60}{360} \times \frac{22}{7} \times 11^2\right) - \left(\frac{1}{2} \times 11 \times 9.53\right)\right]$	**K1K1**	
	$= (380.286) - (126.762) - (10.966)$		
	$= 242.558$	**N1**	**6**
11	*(a)* { (9,9), (9,2), (9,E), (9,D), (2,9), (2,2), (2,E), (2,D), (E,9),(E,2), (E,E), (E,D), (D,9),(D,2), (D,E), (D,D) }	**P2**	
	(b)i) { (9,2), (2,9), (2,2), (2,E), (2,D), (E,2), (D,2) }	**K1**	
	$= \frac{7}{16}$	**N1**	
	ii) { (E,E), (E,D), (D,E), (D,D) }	**K1**	
	$= \frac{4}{16} @ \frac{1}{4}$	**N1**	**6**

Bahagian B

No. Soalan	Peraturan Pemarkahan	Markah	
12	(a) $y = 4$ $y = -21$	**K1** **K1**	
	(b) *Graf :* Paksi dilukis dalam arah yang betul dengan skala yang seragam. $-2.3 \le x \le 3.5$ dan $-35.88 \le y \le 7.57$.	**P1**	
	Semua 7 titik ditanda dengan betul	**K2**	
	Lengkung yang licin dan berterusan dalam julat $-2.3 \le x \le 3.5$ dengan tiada garis lurus dan melalui semua 7 titik yang betul.	**N1**	
	(c) (i) $3.1 \le y \le 3.8$ (ii) $2.2 \le x \le 2.4$	**P1** **P1**	
	(d) Persamaan $y = -6x - 5$ Garis lurus dilukis dengan betul dan merentasi lengkung utama.	**K1** **K1**	
	Nila-nilaii $x = -0.6$, 3.1	**N1N1**	**12**

12*(b)*

Graph for Question 12/*Graf untuk Soalan* 12



<table>
<tr><th>No. Soalan</th><th>Peraturan Pemarkahan</th><th colspan="2">Markah</th></tr>
<tr><td>13</td><td>(a) (i) (5, 1) ⟶ (1, 5)
(ii) (–3, –2) ⟶ (4, –4)

(b) (i) a) V = Pantulan pada garis $x = -4$ @ Garis CE

b) W = Pembesaran dengan faktor skala 2 pada pusat D/(–6, 5)

(ii) Luas imej LMHGKN, 168 = $(2)^2$ × Luas objek

Maka, Luas objek = 42

∴ Luas kawasan berlorek = 168 + 42 = 210 cm^2</td><td>P2
P2

P1P1

P1P1P1

K1

K1

N1</td><td>12</td></tr>
<tr><td>14</td><td>(a)
<table><tr><th>Height (cm)
Tinggi (cm)</th><th>Frequency
Kekerapan</th><th>Midpoint
Titik tengah</th></tr><tr><td>120 – 129</td><td>0</td><td>124.5</td></tr><tr><td>130 – 139</td><td>2</td><td>134.5</td></tr><tr><td>140 – 149</td><td>5</td><td>144.5</td></tr><tr><td>150 – 159</td><td>8</td><td>154.5</td></tr><tr><td>160 – 169</td><td>6</td><td>164.5</td></tr><tr><td>170 – 179</td><td>5</td><td>174.5</td></tr><tr><td>180 – 189</td><td>4</td><td>184.5</td></tr><tr><td>190 – 199</td><td>0</td><td>194.5</td></tr></table>
(b)
$Min = \frac{2(134.5)+5(144.5)+8(154.5)+6(164.5)+5(174.5)+4(184.5)}{2+5+8+6+5+4}$
$= \frac{4825}{30} = 160.83 \text{ @ } 160\frac{5}{6} \text{ @ } \frac{965}{6}$

(c) Rujuk Histogram

(d) Bilangan murid yg. tingginya lebih daripada 164cm
= 6 + 5 + 4 = 15 orang</td><td>P1
P2
P1

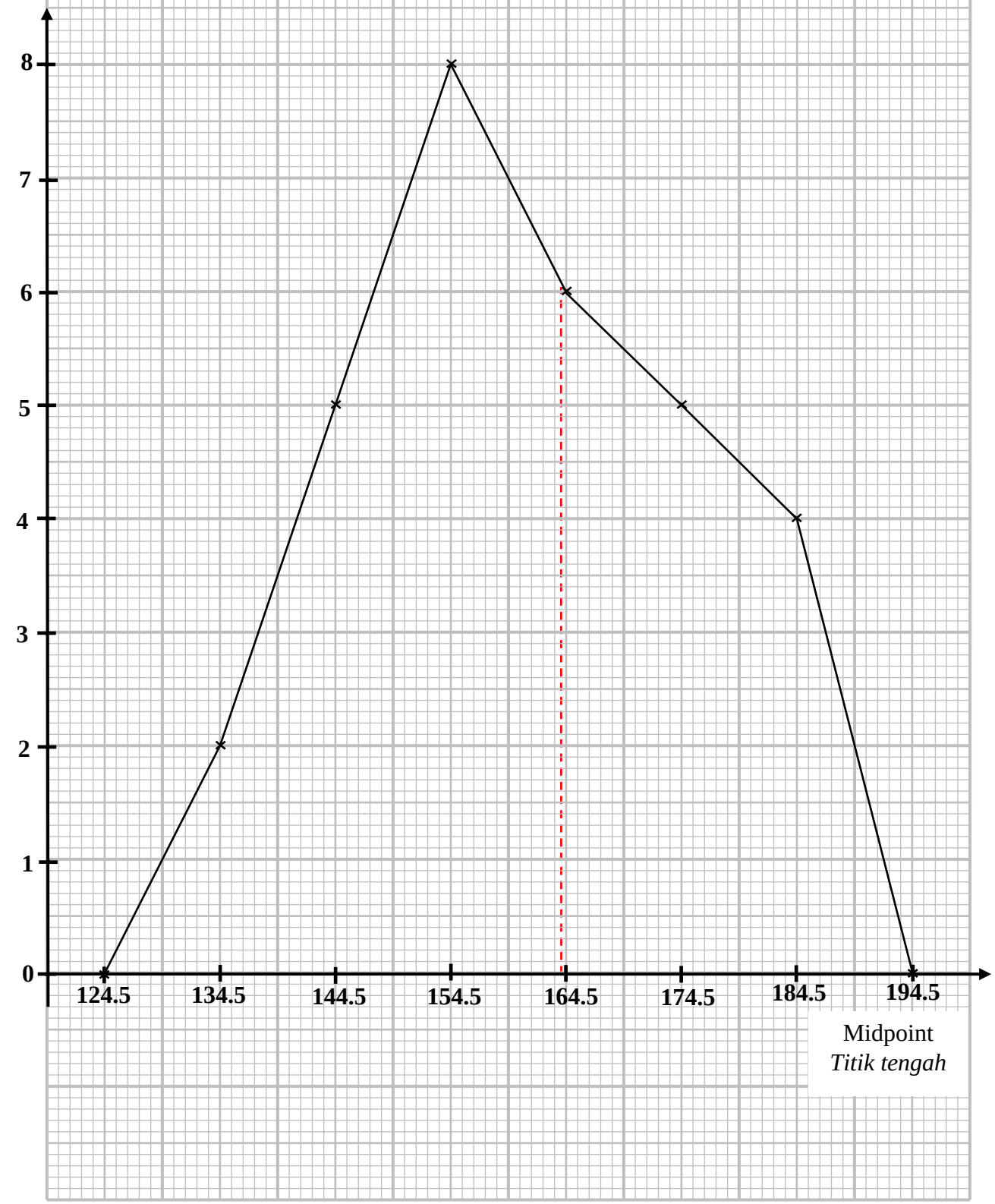
K2

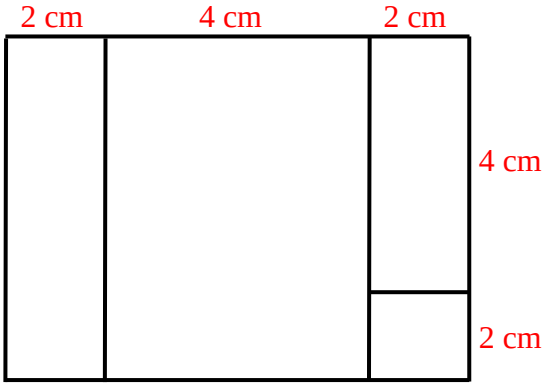
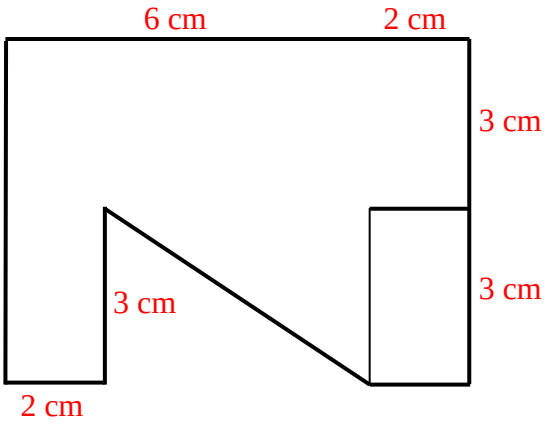
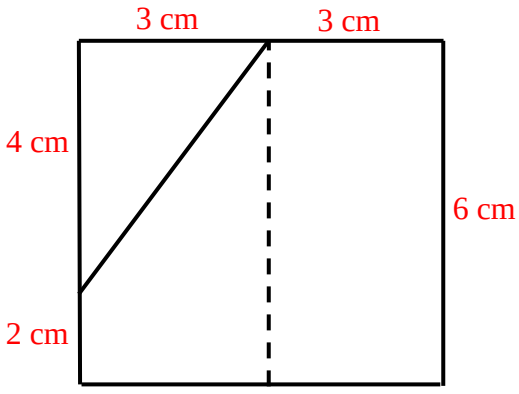
N1

P1K2N1

P1</td><td>12</td></tr>
</table>

Graf untuk Soalan 14



No. Soalan	Peraturan Pemarkahan	Markah	
15	(a) 	**K1** **K1** **N1**	
	(b) 	**K1** **K1** **K1** **N1**	
	(c) 	**K1** **K1** **K1** **N2**	**12**

No. Soalan	Peraturan Pemarkahan	Markah	
16	(a) i) $\theta = 90^o - 47^o = 43^o$	**P2**	
	ii) Longitud P = $125^o - 53^o = 72^o$B	**K1N1**	
	ii) Kedudukan R (47^oS, 127^oB)	**K1N1N1**	
	(b) $Masa\ Kapal\ Terbang\ G = \frac{125^o \times 60' \times Kos\ 47^o}{550} = 9.30\ jam$	**K1N1**	
	$Masa\ Kapal\ Terbang\ H = \frac{43^o \times 60'}{550} = 4.70\ jam$	**K1N1**	
	$\therefore$ Beza masa penerbangan = 9.30 – 4.70 = 4.6 *jam*	**N1**	**12**