

**MODUL PINTAS
TINGKATAN 5**

1449/2

**MATEMATIK
Kertas 2**

$2\frac{1}{2}$ jam

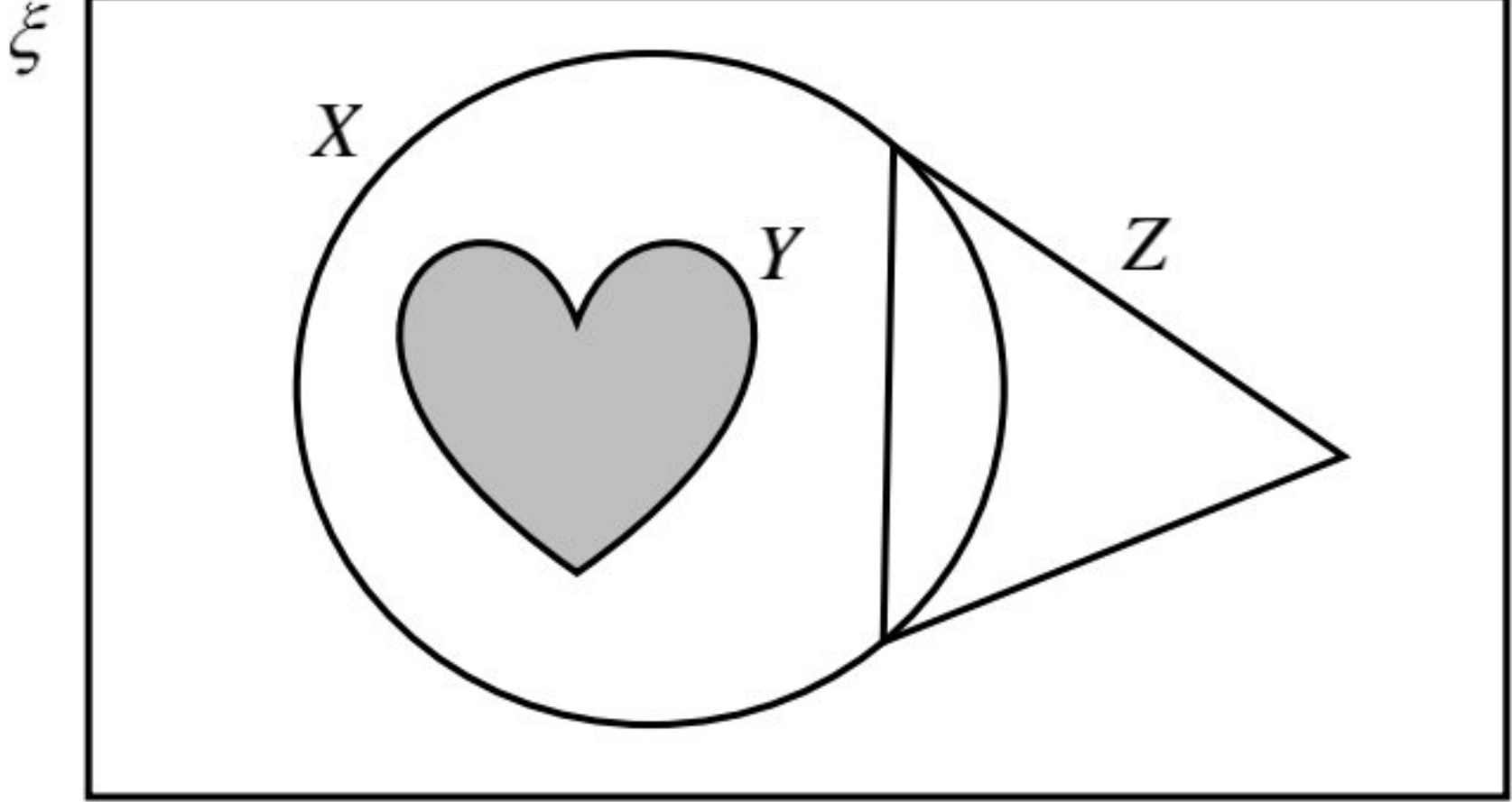
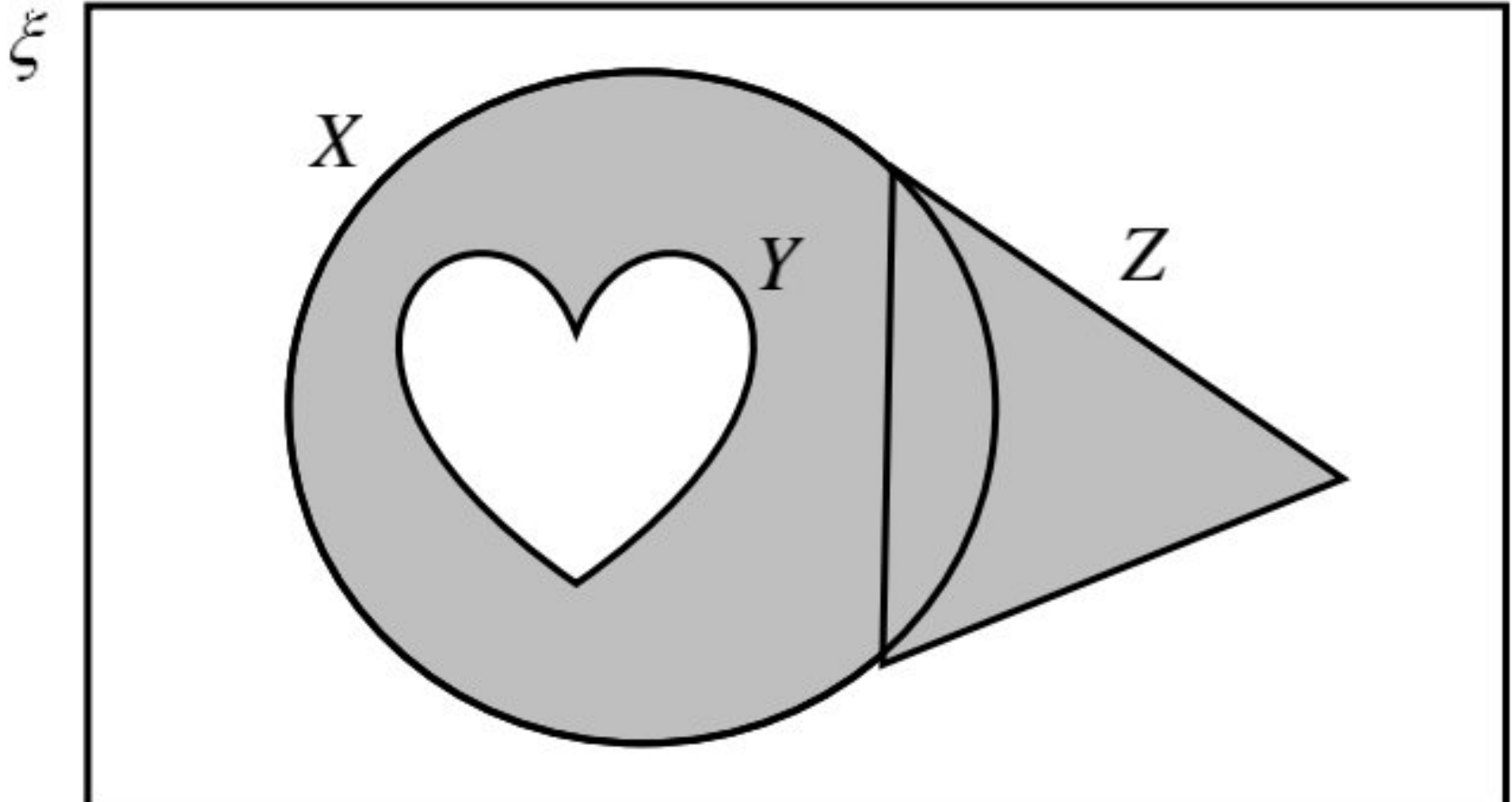
Dua jam tiga puluh minit

**PERATURAN PEMARKAHAN
MATEMATIK**

1449/2

SKEMA PEMARKAHAN MATEMATIK KERTAS 2 PERCUBAAN SPM 2023

Soalan <i>Question</i>	Cadangan Jawapan <i>Suggested answer</i>	Markah <i>Marks</i>	Jumlah <i>Total</i>
1	(a) $a = -1$ $b = -6$ (b) Titik maksimum / <i>Maximum point</i> $(-3, 1)$	1 1 1	3
2	(a) Jika $2 \times 4 = 8$, maka 2 dan 4 ialah faktor bagi 8. <i>If $2 \times 4 = 8$, then 2 and 4 are the factors of 8.</i> Benar / <i>True</i> (b) Hujah ini kuat dan meyakinkan. <i>The argument is strong and cogent.</i> Semua premis dan kesimpulan adalah benar. <i>All the premises and conclusion are true.</i>	1 1 1 1	4
3	(a)(i) $\{(M, N), (M, L), (L, Q), (R, Q), (P, R), (Q, P), (P, M)\}$ (ii) 14 (b) <div style="text-align: center;"> </div> atau setara / <i>or equivalent</i>	1 1 1	3

Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
4	<p>(a) $5 + x + 8 = (4x - 1) + 11$ $x = 1$</p> <p>(b) (i) $(X \cap Y)$</p>  <p>(ii) $Y \cap (X \cup Z)$</p>  <p>Nota: $(X \cup Z)$ dilihat beri 1 markah. Note: $(X \cup Z)$ seen award 1 mark.</p>	<p>1 1</p> <p>1</p> <p>2</p> <p>5</p>	
5	<p>(a) $1\ 850 + 3\ 550 - 4\ 000$ $1\ 400$</p> <p>(b) Tercapai / ya atau setara <i>Achieve / yes or equivalent</i></p> <p>RM1 850 \times 12 atau/or RM22 200 atau/or $\frac{14\ 400}{12}$ atau/or 1 200</p>	<p>1 1 1 1</p>	4
6	<p>(a) $2 = k(64)$ $x = \frac{d}{32}$ atau setara / or equivalent</p> <p>(b) (i) 9×5 atau / or 45 dilihat / seen 1.406</p> <p>(ii) 50</p>	<p>1 1 1 1 1</p>	5

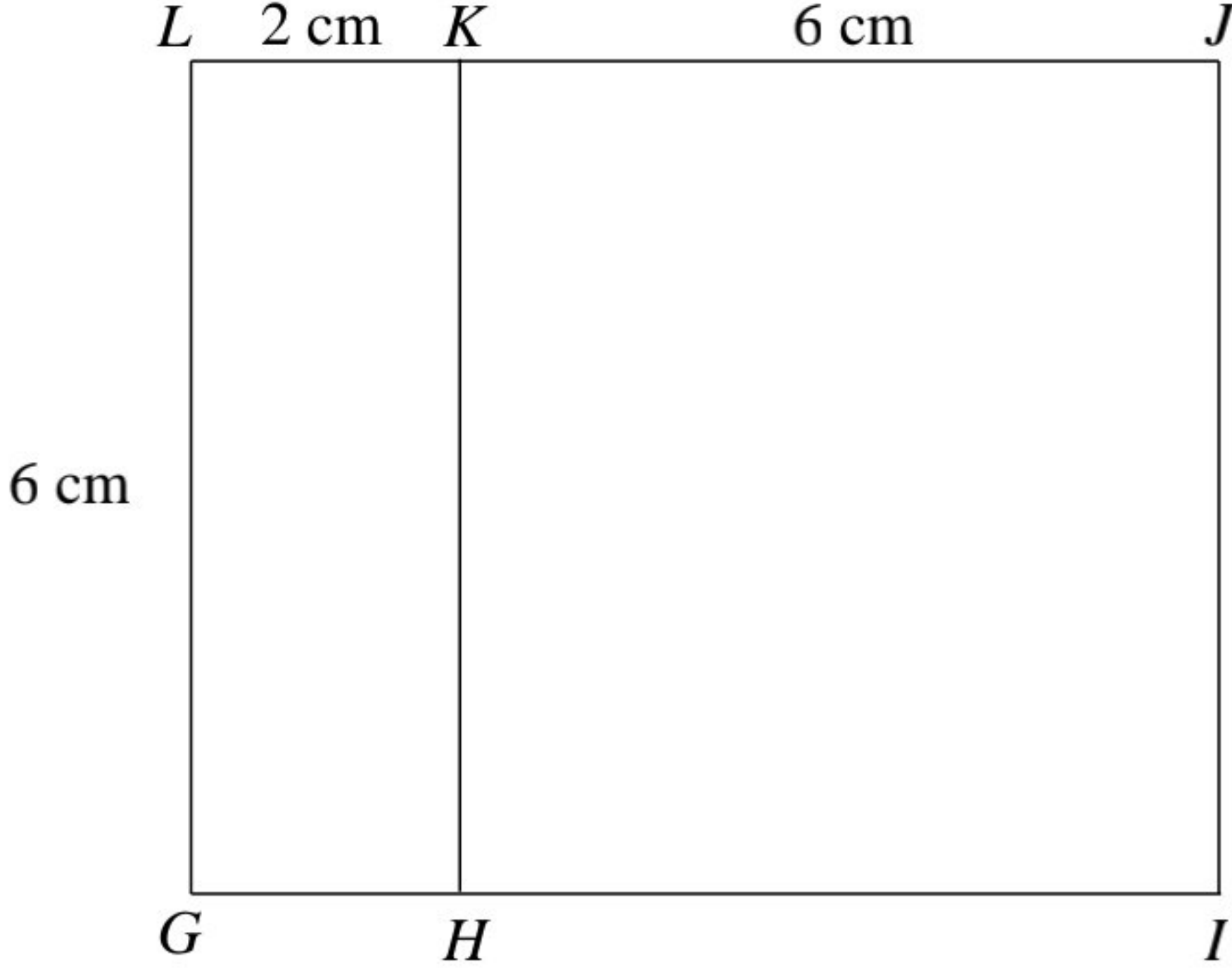
Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
7	$\frac{75}{100} \times 373.05 \text{ atau setara / or equivalent}$ $\left(\frac{75}{100} \times 373.05 \right) - \frac{45}{100} \left(\frac{75}{100} \times 373.05 \right)$ atau setara / or equivalent 153.88	1 1 1	3
8	(a) 15 (b)(i) $\frac{1}{2}(u+72)\left(\frac{18}{60}\right) = 15.3$ atau setara / or equivalent 30 (b)(ii) 140	1 1 1 1	4
9	(a) -7 (b) $\frac{4 - (-1)}{3 - (-7)}$ atau setara / or equivalent $4 = \frac{1}{2}(-7) + c$ atau setara / or equivalent $y = \frac{1}{2}x + \frac{15}{2}$ atau setara / or equivalent	1 1 1 1	4
10	(a) $t = \sqrt{10^2 - 8^2}$ 6 (b) $\frac{1}{3} \times \frac{22}{7} \times 8^2 \times 6$ atau / or $\frac{22}{7} \times 8^2 \times t$ atau setara/or equivalent $\frac{1}{3} \times \frac{22}{7} \times 8^2 \times 6 + \frac{22}{7} \times 8^2 \times t = 2816$ $t = 12$	1 1 1 1 1	5

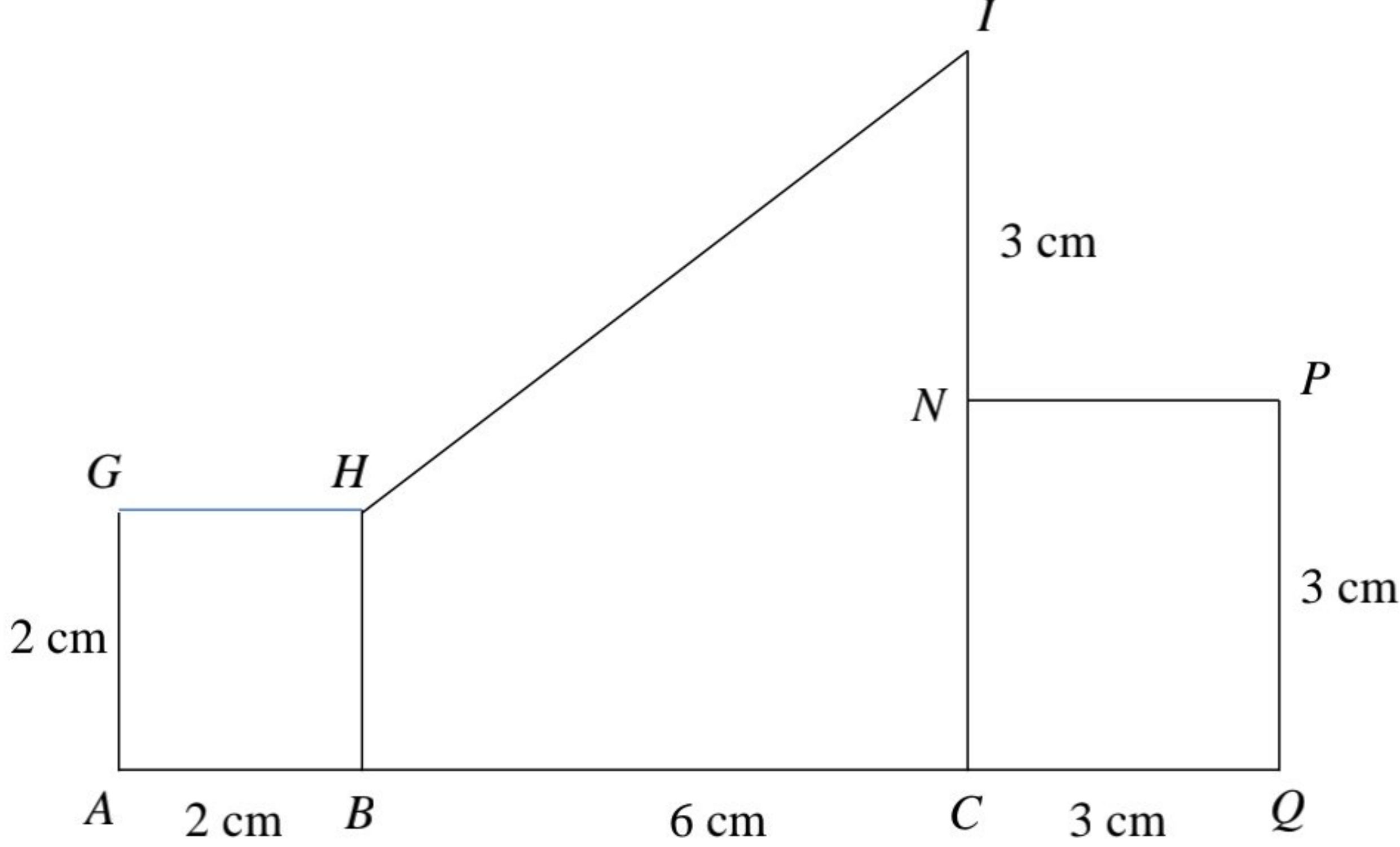
Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
11	<p>(a)</p> <p style="text-align: center;">Matematik/Mathematics</p> <div style="text-align: center;"> </div> <p>$\frac{17}{20}$ dan/and $\frac{9}{20}$ dan/and $\frac{11}{20}$ atau setara/or equivalent</p> <p>$\frac{3}{20}$ dan/and $\frac{9}{20}$ dan/and $\frac{11}{20}$ atau setara/ or equivalent</p>	1 1	
	<p>(b)</p> <p>(i)</p> $\left(\frac{17}{20} \times \frac{9}{20}\right)$ <p>$\frac{153}{400}$ atau setara / or equivalent</p> <p>(ii)</p> $\left(\frac{17}{20} \times \frac{11}{20}\right) + \left(\frac{3}{20} \times \frac{9}{20}\right)$ <p>$\frac{107}{200}$ atau setara / or equivalent</p> <p>(iii)</p> $\left(\frac{17}{20} \times \frac{9}{20}\right) + \left(\frac{17}{20} \times \frac{11}{20}\right) + \left(\frac{3}{20} \times \frac{9}{20}\right)$ <p>$\frac{367}{400}$ atau setara / or equivalent</p>	1 1 1 1	

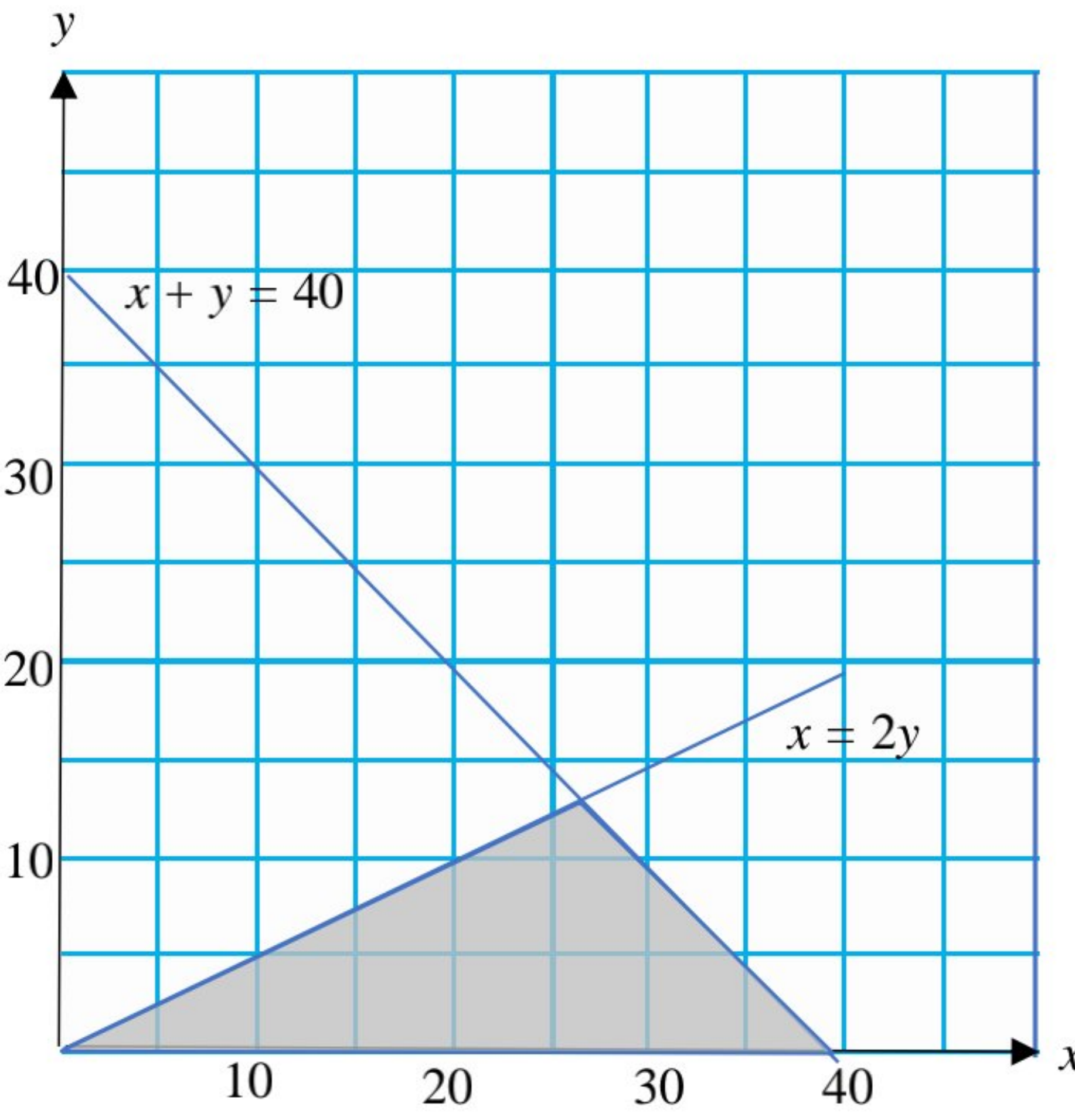
8

Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
12	<p>(a) (i) (10, - 2)</p> <p>(ii) (6, 5)</p> <p>Nota: (6, -1) dilihat beri 1 markah. Note: (6, -1) seen award 1 mark.</p> <p>(b) (i) K: Putaran 90° ikut arah jam pada pusat (2, 3) Clockwise rotation of 90° about the centre (2, 3)</p> <p>(ii) L: Pembesaran pada pusat (2, 7) dengan faktor skala 2 Enlargement at the centre (2, 7) about scale factor 2</p>	1 2 3 3	9
13	<p>(a) $\frac{(9 \times 47) + (20 \times 52) + (29 \times 57) + (19 \times 62) + (9 \times 67) + (4 \times 72)}{90}$</p> <p>atau setara/ or equivqlent</p> $\sqrt{\frac{(9 \times 47^2) + (20 \times 52^2) + (29 \times 57^2) + (19 \times 62^2) + (9 \times 67^2) + (4 \times 72^2)}{90}} = 57.61^2$ <p>atau setara / or setara</p> <p>*5 atau 4 data betul beri 1 markah *5 or 4 data correct award 1 mark</p> <p>6.361</p> <p>(b) Kekерapan longgokan atau sempadan atas yang betul. Correct cumulative frequency or upper boundaries.</p> <p>Paksi di lukis dengan arah yang betul dan skala seragam bagi 44.5 ≤ x ≤ 74.5 dan 0 ≤ y ≤ 90. Axes are drawn in correct direction and uniform scale for 44.5 ≤ x ≤ 74.5 and 0 ≤ y ≤ 90.</p> <p>*6 titik di plot dengan betul. * 6 points are plotted correctly</p> <p>Nota/Note : 5 atau 4 titik di plot dengan betul, beri 1 markah. 5 or 4 points are plotted correctly, award 1 mark</p> <p>Lengkungan licin dan berterusan tanpa garis lurus dan melalui 6 titik yang betul bagi 44.5 ≤ x ≤ 74.5 dan 0 ≤ y ≤ 90. Smooth and continuous curve passing through 6 points using correct scale 44.5 ≤ x ≤ 74.5 and 0 ≤ y ≤ 90.</p>	1 2 1 1 2 1	9

Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total						
14	(a) <table border="1" data-bbox="506 394 955 546" style="margin-left: 40px;"> <tr> <td style="padding: 5px;">x</td> <td style="padding: 5px;">-2</td> <td style="padding: 5px;">1</td> </tr> <tr> <td style="padding: 5px;">y</td> <td style="padding: 5px;">13.5</td> <td style="padding: 5px;">-6</td> </tr> </table>	x	-2	1	y	13.5	-6	1, 1	
x	-2	1							
y	13.5	-6							
	(b) Kedua-dua paksi dilukis dalam arah yang betul dengan skala seragam untuk $-4 \leq x \leq 4$ dan $-10 \leq y \leq 70$ <i>Axes are drawn in correct direction and uniform scale for $-4 \leq x \leq 4$ and $-10 \leq y \leq 70$</i> *9 titik di plot dengan betul. * 9 points are plotted correctly Nota/Note : 8 atau 7 titik di plot dengan betul, beri 1 markah. 8 or 7 points are plotted correctly award 1 mark Lengkungan licin dan berterusan tanpa garis lurus dan melalui 9 titik yang betul bagi $-4 \leq x \leq 4$ dan $-10 \leq y \leq 70$. <i>Smooth and continuous curve passing through 9 points using correct scale $-4 \leq x \leq 4$ and $-10 \leq y \leq 70$.</i>	1 2 1							
	(c) (i) $-2.7 \leq x \leq -2.5$ $3.3 \leq x \leq 3.5$ (ii) $-8 \leq y \leq -6$	1 1 1	9						

Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
15	<p>(a)</p>  <p>Bentuk betul bagi segi empat tepat <i>GHKL</i> dan segi empat sama <i>HIJK</i>. Semua garisan padu tebal.</p> <p><i>Correct shape of rectangle GHKL and HIJK. All solid lines.</i></p> <p>$LJ > LG = KJ > LK$</p> <p>Ukuran betul kepada ± 0.2 cm dan semua sudut pada bucu $90^\circ \pm 1^\circ$.</p> <p><i>Measurement correct to ± 0.2 cm and all angle at the vertices $90^\circ \pm 1^\circ$.</i></p>	1	

Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
(b)	<p>(i)</p>  <p>Bentuk betul bagi trapezium $BCIH$ dan segi empat sama $ABHG$ dan $CQPN$. Semua garisan padu tebal. <i>Correct shape for trapezium $BCIH$ and squares of $ABHG$ and $CQPN$. All solid line.</i></p> <p>$AQ > BC = JC > CQ = QP = JN > AB = AG$</p> <p>Ukuran betul kepada ± 0.2 cm dan semua sudut pada bucu $90^\circ \pm 1^\circ$. <i>Measurement corrects to ± 0.2 cm and all angle at the vertices $90^\circ \pm 1^\circ$.</i></p> <p>(ii)</p> $\frac{1}{4} \times 2 \times \frac{22}{7} \times 3^2 \quad \text{atau/or} \quad \frac{1}{4} \times \frac{22}{7} \times 3 \times 3 \quad \text{atau setara / or equivalent}$ $\frac{1}{4} \times 2 \times \frac{22}{7} \times 3^2 + \frac{1}{4} \times \frac{22}{7} \times 3 \times 3 \quad \text{atau setara / or equivalent}$ $\frac{198}{7} \quad \text{atau setara / or equivalent}$	<p>1</p> <p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p>	<p>10</p>

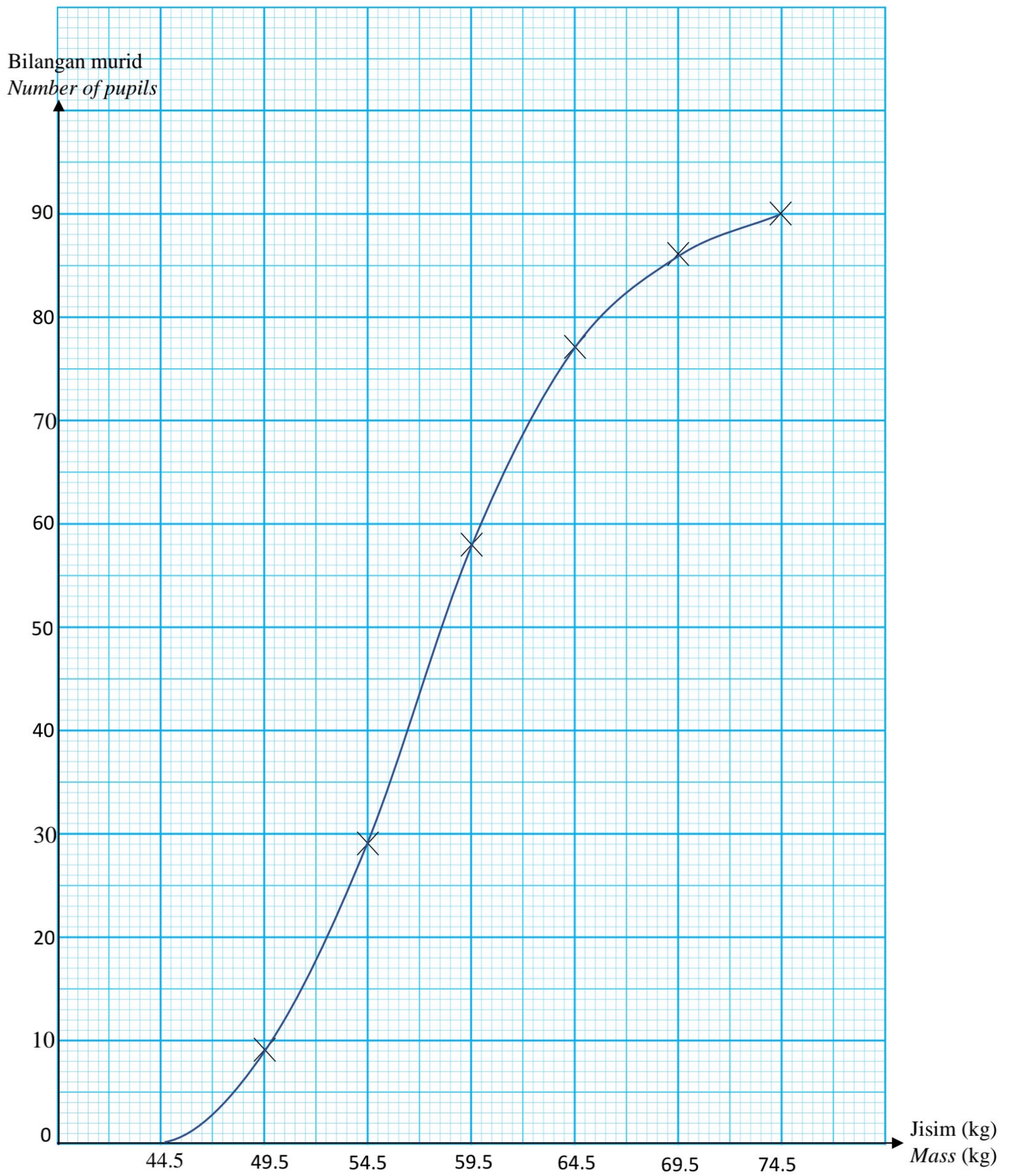
Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
16	<p>(a) (i) $140P + 180Q = 3560$ atau / or</p> $280P + 120Q = 4240$ $\begin{bmatrix} 140 & 180 \\ 280 & 120 \end{bmatrix} \begin{bmatrix} P \\ Q \end{bmatrix} = \begin{bmatrix} 3560 \\ 4240 \end{bmatrix}$ $\begin{bmatrix} P \\ Q \end{bmatrix} = \frac{1}{(140 \times 120) - (180 \times 280)} \begin{bmatrix} 120 & -180 \\ -280 & 140 \end{bmatrix} \begin{bmatrix} 3560 \\ 4240 \end{bmatrix}$ <p>$P = 10$</p> <p>$Q = 12$</p> <p>(b) (i) $x + y \leq 40$</p> $x \geq 2y$ <p>(ii)</p>  <p>Nota/Note :</p> <p>Garis lurus / <i>straight line</i> $x + y \leq 40$</p> <p>Garis lurus / <i>straight line</i> $x \geq 2y$</p> <p>Paksi dilukis dengan arah yang betul dan skala yang seragam <i>Axes are drawn in correct direction and uniform scale</i></p> <p>Lorek dalam kawasan yang betul <i>Shade in the correct region</i></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

Soalan Question	Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total
	<p>(c) (2.4×5000) atau /or (2×150) atau /or (2.6×5000) atau/or</p> <p>$\left(\frac{3.5}{100} \times 12\,000\right)$ atau /or $\left(\frac{3.8}{100} \times 13\,000\right)$</p> <p>$32\,100 - (2.40 \times 5\,000) + (2 \times 150) + \left(\frac{3.5}{100} \times 12\,000\right)$ atau / or</p> <p>$34\,800 - (2.60 \times 5\,000) + 250 + \left(\frac{3.8}{100} \times 13\,000\right)$</p> <p>20 820 dan/and 22 544</p> <p>Pelaburan Kencang Maju memberikan nilai pulangan yang lebih tinggi <i>Kencang Maju gave the higher return on investment.</i></p> <p>Nota/Note :</p> <p>1 markah diberi pada salah satu pengiraan Pelaburan Berjaya Holding atau Kencang Maju. <i>Award 1 mark for either calculation on investment of Berjaya Holding or Kencang Maju.</i></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>15</p>
17	<p>(a) (i) 47 850</p> <p>(ii) $(1 \times 6^5) + (5 \times 6^3) + (3 \times 6^2) + (1 \times 6^1)$ atau / <i>or</i> $(6 \times 9^4) + (8 \times 9^3) + (4 \times 9^2) + (3 \times 9^1) + (1 \times 9^0)$ 47 850 dan/and 45 550 <i>(kedua-dua dilihat / both are seen)</i></p> <p>Traktor B / <i>Tractor B</i></p> <p>(b) (i) $10x^2 \times 0.05 = 450$ atau setara/ <i>or equivalent</i></p> <p>$x = 30$</p> <p>(ii) $(1\,150 \times 12)$ atau / or 13 800</p> <p>$\frac{759}{13800} \times 100$ atau setara / <i>or equivalent</i></p> <p>5.5 %</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

Soalan Question		Cadangan Jawapan Suggested answer	Markah Marks	Jumlah Total	
17	(c)	$(2\,393 - 2\,000)(0.80)$ atau setara / <i>or equivalent</i>	1		
		$440 + (2\,393 - 2\,000)(0.80)$ atau setara / <i>or equivalent</i>	1		
		754.40	1		
	Nota/Note: Jawapan akhir 2 tempat perpuluhan. <i>2 decimal places for final answer.</i>				
	(d)	$\sqrt{147}$ atau setara / <i>or equivalent</i>	1		
		$\frac{1}{2} \times \sqrt{147} \times 14$ atau /or $\frac{1}{2} \times \sqrt{147} \times 14 \times 6$ atau setara / <i>or equivalent</i>	1		
		509	1		
					15

Selamat mengulangkaji dari telegram@soalanpercubaanspm

Graf untuk soalan 13(b)
Graph for question 13(b)



Graf untuk soalan 14(b)
Graph for question 14(b)

