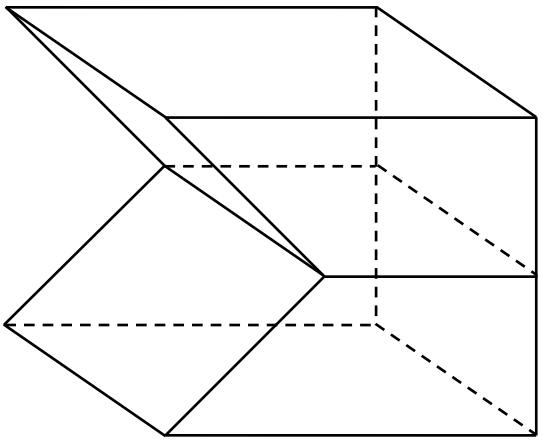
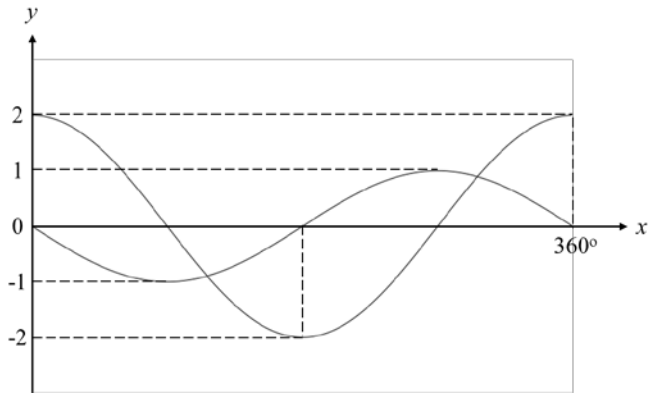
SKEMA JAWAPAN KERTAS 2 MATEMATIK TINGKATAN 5

PEPERIKSAAN SPMRSM 2021

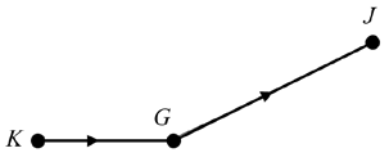
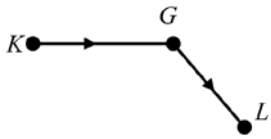
No	SECTION A [40 MARKS]	Marks	Total
1	$P = kQ$ $150 = k\,(25)$ *6 (35) RM 210	K1 K1 N1	3
2	$5x + 2y = 1071$ *or* $3x + 8y = 2159$ *or* equivalent $\begin{pmatrix}5 & 2\\3 & 8\end{pmatrix}\begin{pmatrix}x\\y\end{pmatrix} = \begin{pmatrix}1071\\2159\end{pmatrix}$ *or* equivalent $\frac{1}{5(8)-2(3)}\begin{pmatrix}8 & -2\\-3 & 5\end{pmatrix}\begin{pmatrix}1071\\2159\end{pmatrix}$ *or* equivalent $x = 125$ and $y = 223$ *or* $\begin{pmatrix}x\\y\end{pmatrix} = \begin{pmatrix}125\\223\end{pmatrix}$ Price for vaccination A = RM125 Note: 1. Accept any two different symbols for the price of vaccination A and vaccination B. 2. Do not accept any solution solved not using matrix method.	P1 P1 K1 N1 N1	5
3	$7(x+5)(3x-11) = 840$ *or* equivalent $21x^2 + 28x - 1225 = 0$ *or* equivalent $7(x-7)(3x+25) = 0$ *or* equivalent **OR** $\frac{-28 \pm \sqrt{28^2 - 4(21)(-1225)}}{2(21)}$ *or* equivalent 7 Note: 1. Accept without "$= 0$" for K1 2. Accept three terms on the same side, in any order.	K1 K1 K1 N1	4
4	$9 + 2 + 3 + 3m = 3m + 2m$ *or* equivalent $m = 7$ $18 + 3 + 2 + 9 + 3(^*7) + 2(^*7) + {}^*7$ *or* equivalent 74	K1 N1 K1 N1	4
5	(a) If $b \leq 10$, then $b + 1 \leq 11$ True (b) PQRSTUVW is a regular octagon.	K1 N1 P1	3

6	(a) $\frac{110}{170}$ *or* $\frac{11}{17}$ *or* 0.65 (b) $\frac{60}{110} \times \frac{59}{109}$ $\frac{354}{1199}$ *or* 0.30 (c) $1 - \left(\frac{50}{70} \times \frac{49}{69}\right)$ *or* equivalent $\frac{34}{69}$ *or* 0.49 Note: Accept all correct answer with three or more decimal places.	N1 K1 N1 K1 N1	5
7	(a) $\frac{24-18}{0-12}$ *or* *equivalent* $-\frac{1}{2}$ *or* -0.5 (b) $\frac{1}{2}(3)(18)$ *or* *equivalent* 27	K1 N1 K1 N1	4
8	(a)  Note: 1. Accept sketching and drawing without labels (ignore wrong labels). 2. Accept correct rotation of diagrams. 3. Two right prisms with uniform cross section sketched correctly, award P2 4. Correct sketching without dashed lines, award P1 (b) $\sqrt{3^2 + 3^2}$ *or* *equivalent* $2 \times \sqrt{3^2 + 3^2} \times 5$ *or* *equivalent* 42.43 Note: Accept all correct answer with three or more decimal places.	P2 P1 K1 N1	5

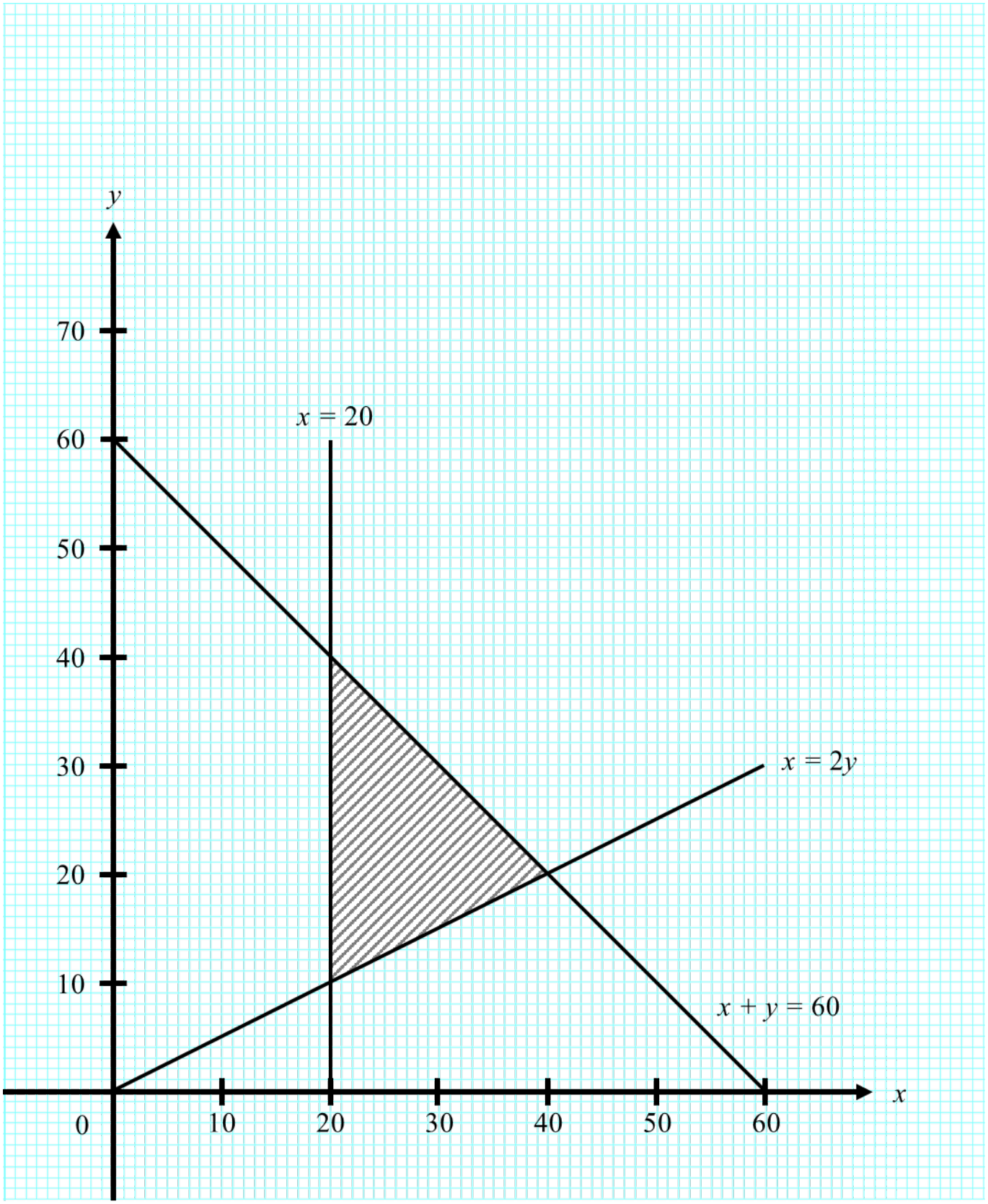
9	(a)	$(5, 5)$	P1	
	(b)	$\frac{^*5-3}{^*5-0}$ *or* *equivalent*	K1	3
		$y = \frac{2}{5}x + 3$ *or* *equivalent*	N1	
10	(a)	$3x + 8 = 4x$ *or* *equivalent*	K1	
		8	N1	
	(b)	$x + 19 + 2x + x = 163$ *or* *equivalent*	K1	4
		36	N1	
11	(a)	63.43^0 seen	P1	
		180^0 - 63.43^0 *or* $360^0 - 63.43^0$ *or* equivalent	K1	
		116.57^0 *and* 296.57^0	N1	
	(b)			8
		Shape of cos graph	P1	
		Amplitude of 2 for cos graph	P1	
		Shape of sin graph	P1	
		Reflection on *x*-axis for sin graph	P1	
		Note: Ignore graph outside of the range		
		c = -1	N1	
12	(a)	(i) Yes *or* equivalent	P1	
		(ii) Rotation 120° clockwise about centre *D*.	P3	
		Note : 1. Rotation at centre D, award P2 2. Rotation with 120° clockwise, award P2 3. Rotation, award P1		10

	(b)	(i) *Y* = Reflection in the line *DF*. Note : 1. Reflection, award P1	P2	
		(ii) *X* = Enlargement with scale factor 2 about centre *B*. Note : 1. Enlargement at centre B, award P2 2. Enlargement with scale factor 2, award P2 3. Enlargement, award P1	P3	
	(c)	12	N1	
13	(a)	10	N1	9
	(b)	$22 + m + n = 40$ *or* $n = 18 - m$ *or* $m = 18 - n$ *or equivalent*	P1	
		$\frac{^*14.5(4) + ^*24.5(m) + ^*34.5(n) + ^*44.5(10) + ^*54.5(8)}{40} = 35$ Note: Allow two mistakes in *midpoint for K1	K2	
		$10m = 160 \quad or \quad 10n = 20$	K1	
		$m = 16 \quad and \quad n = 2$	N1	
	(c)	$\sqrt{\frac{(^*14.5)^2(4) + (^*24.5)^2(^*16) + (^*34.5)^2(^*2) + (^*44.5)^2(10) + (^*54.5)^2(8)}{40} - (35)^2}$ Note: Allow two mistakes in *midpoint for K1	K2	
		13.59	N1	
14	(a)	- The length and the width of the picture - The area of the frame - Will the picture fit into the frame? - The length of the picture needs to be cut Note: 1. Accept any TWO statements above or any TWO logical answers. 2. If only one statement is given, award P1.	P2	9
	(b)	$(20 - 2x)(16 - 2x) = 60$ *or* equivalent	K1	
		$4(x - 13)(x - 5) = 0$ *or* equivalent	K1	
		$x = 5$ Note: Consider any suitable methods on teachers' descretion.	N1	

	(c)	$20 - 2(5)$ *or* 16-2(5) *or* equivalent		K1	
		10×6		K1	
		60		N1	
	(d)	David can fit the picture perfectly into the frame if he cut 5 cm from each side of the picture. Note: Accept any findings based on students' problem statement		N1	
15	(a)	(i)	Chargeable income		
		(ii)	Income tax	P2	
		(iii)	Tax rebate Note: Any two correct answers, award P1		
	(b)	(i)	6 000	P1	
		(ii)	$9\,000 + 4\,000 + 7\,000 + {}^{*}6\,000 + 2\,000 + 2\,300 + 250 + 400$ *or* equivalent	K1	
			$(66\,100 - 30\,950) - 35000$ *or* equivalent	K1	9
			$150 \times 8\%$ *or* 12	K1	
			$(600 + 12) - 500$	K1	
			112	N1	
		(iii)	- Spend more on lifestyle (buy books, computer, internet) - Give donation - More medical expenses for parents Note: Accept any reasonable tax exemptible reason	P1	
16	(a)	(i)	$60\,000 \times 0.045 \times 9$ *or* equivalent	K1	
			$\frac{60\,000 + (60\,000 \times 0.045 \times 9)}{9 \times 12}$ *or* equivalent	K1	
			780.56	N1	
		(ii)	- Find out the total coverage needed - Understand the scope of the coverage, the terms and conditions of the policy - Compare the premium rates and insurance benefits - Avoid unnecessary coverage Note: 1. Accept any TWO factors 2. Any one factor, award P1 3. Accept any similar answers	P2	15

	(b)	(i)	2.5×200 *or* 3×200 *or* 0.025×200 *or* 0.03×200 *or* $\square \times 200^2$ *or equivalent*	K1	
			2.5×3 *or* 0.025×0.03 *or* 500×600 *or* 5×6	K1	
			30	N1	
		(ii)	$^{*}30 \times 2 \times 20$ *or equivalent*	K1	
			1200	N1	
	(c)	(i)		N1	
			 Notes: Draw more than 2 directed graphs, deduct 1 mark	N1	
		(ii)	K ⟶ G ⟶ J ⟶ P	N1	
			$23 + 65 + 29$ *or equivalent*	K1	
			Visit 2 places at the lowest cost	N1	
			Note: Accept any similar reasonable justification		
17	(a)	(i)	$x \geq 20$ *or equivalent*	N1	
			$x + y \leq 60$ *or equivalent*	N1	
			$x \leq 2y$ *or equivalent*	N1	
		(ii)	Correct scale	P1	
			Draw correctly all three straight lines.	K2	
			Note : 1. Draw correctly 2 straight lines, award K1 2. Accept dashed line, award K1		15
			Region shaded correctly	N1	
			(Refer graph)		

Graph for 17(a)(ii)



	(b)	(i)	*s = 110* *t = 500* *u = 2110* *v = 320* *w = 1050* Note: - Accept any three or four correct answer, award P2 - Accept any one or two correct answer, award P1	P3	
		(ii)	2110 – 320 – 1050 *or equivalent* Yes, positive cash flow Note: Accept Yes and any relevant answer	K1 N1	
	(c)	(i)	8: 12 *or* 12: 3 *or equivalent* 8: 12: 3 Note: Accept correct answer without working	K1 N1	
		(ii)	16	N1	