

**SULIT**  
**1449/2**  
**Matematik**  
**Kertas 2**  
**Peraturan**  
**Pemarkahan**  
**Oktober**  
**2021**

**SKEMA MODUL PERCUBAAN SPM**  
**SET 1**  
**2021**

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**MATEMATIK**

Kertas 2

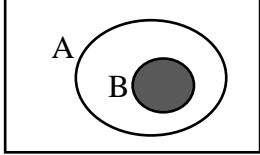
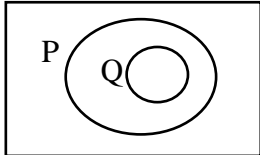
**PERATURAN PEMARKAHAN**

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**Peraturan pemarkahan ini mengandungi 11 halaman bercetak**

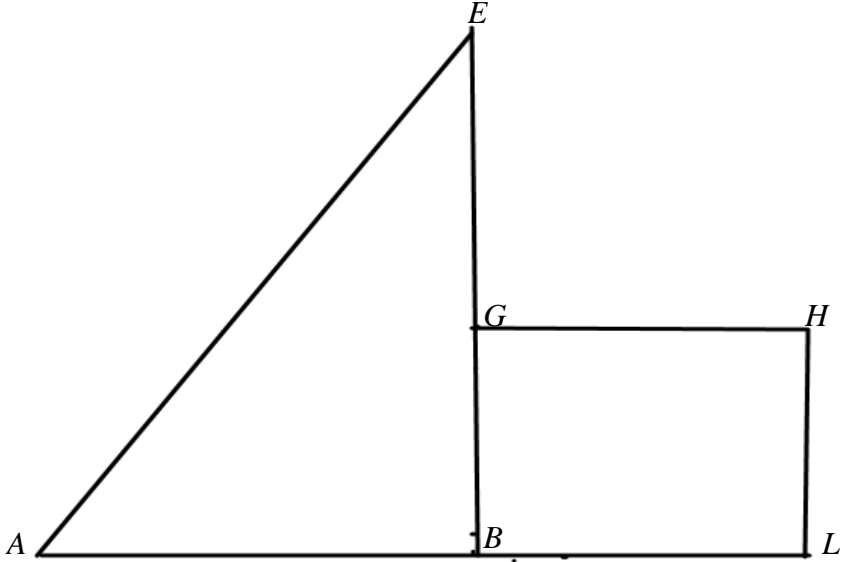
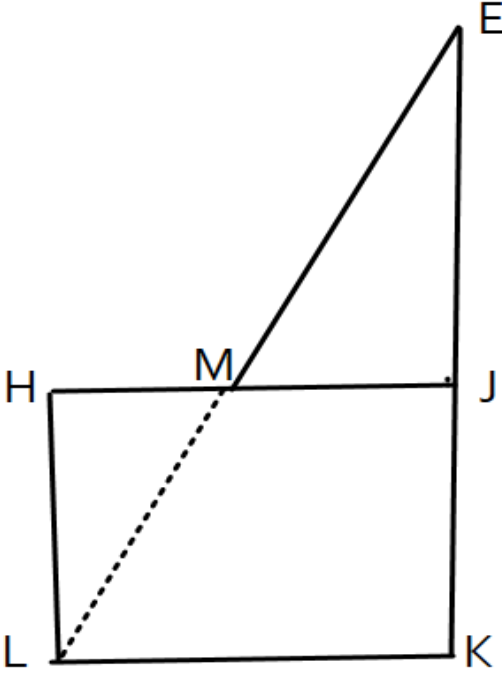
**Bahagian A**  
[ 40 markah ]

No	Peraturan Pemarkahan	Markah	
1.	<p>(a) <math>\varepsilon</math> </p> <p>(b) <math>\varepsilon</math> </p>	1	
		2	<b>3</b>
2	$x^2 - 3x - 28 = 0$ $(x - 7)(x + 4) = 0$ $x = 7$ Perimeter = 22	1 1 1 1	<b>4</b>
3	$3m + 12n = 42 @ 6m + 4n = 24$ $-10n = -30$ $n = 3$ $m = 2$	1 1 1 1	<b>4</b>
4	<p>(a) <math>m = -\frac{1}{2}</math></p> $3 = (-\frac{1}{2})(6) + c$ $y = -\frac{1}{2}x + 6$ <p>(b) <math>0 = -\frac{1}{2}x + 6</math>  <math>x = 12</math></p>	1  1 1  1 1	<b>5</b>
5	$8 \times 8 \times 8$ $\frac{1}{3}(8 \times 8)5$ $(8 \times 8 \times 8) + \frac{1}{3}(8 \times 8)5$ $= 618.67 @ 618\frac{2}{3}$	1 1  1 1	<b>4</b>

No	Peraturan Pemarkahan	Markah																									
6	$\frac{30}{360} \times \frac{22}{7} \times 7^2 @ \frac{60}{360} \times \frac{22}{7} \times 14^2 @ \frac{60}{360} \times \frac{22}{7} \times 7^2$ $\frac{60}{360} \times \frac{22}{7} \times 14^2 - \frac{60}{360} \times \frac{22}{7} \times 7^2 + \frac{30}{360} \times \frac{22}{7} \times 7^2$ $89 \frac{5}{6} @ 89.83$	1																									
		1																									
		1	<b>3</b>																								
7	$\begin{pmatrix} 2 & 4 \\ 3 & 5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 26 \\ 35 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = -\frac{1}{2} \begin{pmatrix} 5 & -4 \\ -3 & 2 \end{pmatrix} \begin{pmatrix} 26 \\ 35 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 5 \\ 4 \end{pmatrix}$ <p>x= 5, y=4</p>	1																									
		1																									
		1,1	<b>4</b>																								
8	<p>(a) <math>\frac{1}{2}(12+6)10 + \frac{1}{2}(10+22)6</math></p> $\frac{186}{18}$ <p>10.33</p> <p>(b) Motorsikal bergerak dengan laju seragam <math>10\text{ms}^{-1}</math></p>	1																									
		1																									
		1																									
		1	<b>4</b>																								
9	<p>(a) 20% daripada 30 ialah 6 jika dan hanya jika <math>0.2 \times 30 = 60</math></p> <p>(b) (i) 15 ialah gandaan 3</p> <p>(ii) sah dan tidak munasabah</p>	1																									
		1																									
		1,1	<b>4</b>																								
10	<p>(a)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1,A)</td> <td>(1,B)</td> <td>(1,C)</td> </tr> <tr> <td>2</td> <td>(2,A)</td> <td>(2,B)</td> <td>(2,C)</td> </tr> <tr> <td>3</td> <td>(3,A)</td> <td>(3,B)</td> <td>(3,C)</td> </tr> <tr> <td>4</td> <td>(4,A)</td> <td>(4,B)</td> <td>(4,C)</td> </tr> <tr> <td>5</td> <td>(5,A)</td> <td>(5,B)</td> <td>(5,C)</td> </tr> </tbody> </table> <p>(b)(i) {(1,B),(1,C),(2,B),(2C),(3,B),(3,C)}</p> $\frac{6}{15}$ <p>(ii) {(1,A), (2,A), (3,A), (4,A), (4,B), (4,C), (5,A), (5,B), (5,C)}</p> $\frac{9}{15}$		A	B	C	1	(1,A)	(1,B)	(1,C)	2	(2,A)	(2,B)	(2,C)	3	(3,A)	(3,B)	(3,C)	4	(4,A)	(4,B)	(4,C)	5	(5,A)	(5,B)	(5,C)	1	
	A	B	C																								
1	(1,A)	(1,B)	(1,C)																								
2	(2,A)	(2,B)	(2,C)																								
3	(3,A)	(3,B)	(3,C)																								
4	(4,A)	(4,B)	(4,C)																								
5	(5,A)	(5,B)	(5,C)																								
		1																									
		1																									
		1																									
		1	<b>5</b>																								

**Bahagian B**  
**[45 markah]**

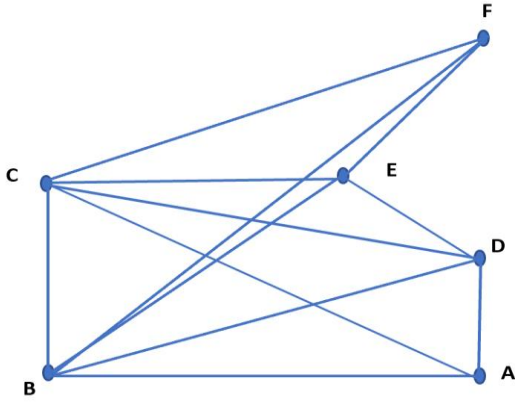
No	Peraturan Pemarkahan	Markah	
11 (a)	-8	1	2
	2.7	1	
	(b) <u>Graph</u> Axes drawn in correct directions with uniform scales for $-4 \leq x \leq 4$ and $-8 \leq y \leq 8$ .	1	4
	All 6 points and *2 points correctly plotted or the curve passes through all the points for $-4 \leq x \leq 4$ and $-8 \leq y \leq 8$ .	2	
	<u>Note :</u> 6 or 7 points correctly plotted, award K1  Smooth and continuous curve without any straight line passing through all 8 correct points using the given scales for $-4 \leq x \leq 4$ and $-8 \leq y \leq 8$ .	1	
(c) (i) $-1.7 \pm 0.1$	1	2	
(ii) $3.1 \pm 0.1$	1		
		<b>9</b>	
12 (a)	Correct shape with triangle ABE and rectangle BLHG. All solid lines.	1	4
	$EB > BA > BL = EG > GB$	1	
	Measurements correct to $\pm 0.2$ cm (one way) and all right angles at vertices = $90^\circ \pm 1^\circ$ .	2	

No	Peraturan Pemarkahan	Markah	
(b)			
	 <p data-bbox="293 1659 989 1765">Correct shape with rectangle LKJH and triangle MJE. All solid lines. (Ignore LM)</p> <p data-bbox="293 1805 1050 1839">L – M is joined by a dashed line to form trapezium LKJM.</p> <p data-bbox="293 1879 1174 1984"><math>LK = KE &gt; EJ = JM &gt; MH = HL</math> Measurements correct to <math>\pm 0.2</math> cm (one way) and all right angles at vertices = <math>90^\circ \pm 1^\circ</math>.</p>	<p data-bbox="1299 1603 1315 1630">1</p> <p data-bbox="1299 1704 1315 1731">1</p> <p data-bbox="1299 1771 1315 1798">1</p> <p data-bbox="1299 1872 1315 1899">2</p>	<p data-bbox="1398 1771 1414 1798">5</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <p data-bbox="1398 1861 1414 1888">9</p> </div>



No	Peraturan Pemarkahan	Markah											
14 (a)	<p><b>Q</b> – Putaran <math>90^\circ</math> ikut arah jam, pada pusat ( 1, 2 )  <i>A clockwise rotation of <math>90^\circ</math> about the centre ( 1, 2 )</i></p> <p><u>Note :</u>            1. Putaran <math>90^\circ</math> ikut arah jam <u>atau</u> Putaran, pusat ( 1, 2 ) //  <i>A clockwise rotation of <math>90^\circ</math> or Rotation, centre ( 1, 2 ) , beri P2</i>            2. Putaran // <i>Rotation</i> , beri 1markah</p> <p><b>P</b> – Pembesaran, faktor skala 2, pusat ( 3, 5 )@E  <i>Enlargement, scale factor 2, centre ( 3, 5 )@E</i></p> <p><u>Note :</u>            1. Pembesaran, faktor skala 2 <u>atau</u> Pembesaran, pusat ( 3, 5 ) //  <i>Enlargement, scale factor 2 or Enlargement, centre ( 3, 5 ) , beri P2.</i>            2. Pembesaran // <i>Enlargement</i> , beri 1markah</p>	3											
		3											
		2	6										
(b)	$\frac{54}{* 2^2 - 1}$ <p><u>Note :</u>  <math>54 = * 2^2 x - x</math> , beri K1</p> <p>18</p>	1	3										
			9										
15 (a)													
(i)	Bentuk loceng	1											
	Pencong ke kiri	1											
(ii)	Masa larian 100 m (L16) terserak lebih luas berbanding 100 m (L18).	1											
(iii)	100 m L18 lebih baik kerana mempunyai catatan masa yang lebih baik.	1											
			4										
(b) (i)		2											
(ii)	<table border="1"> <tr> <td>Nilai minimum</td> <td>12.5</td> </tr> <tr> <td>Q<sub>1</sub></td> <td>15</td> </tr> <tr> <td>Median</td> <td>16</td> </tr> <tr> <td>Q<sub>3</sub></td> <td>16.9</td> </tr> <tr> <td>Nilai maksimum</td> <td>19.5</td> </tr> </table>	Nilai minimum	12.5	Q <sub>1</sub>	15	Median	16	Q <sub>3</sub>	16.9	Nilai maksimum	19.5	1	
Nilai minimum	12.5												
Q <sub>1</sub>	15												
Median	16												
Q <sub>3</sub>	16.9												
Nilai maksimum	19.5												
		1											
(iii)	<p>Garis menyambungkan nilai minimum dengan Q<sub>1</sub>, Q<sub>3</sub> dengan nilai maksimum dan garis membentuk kotak.</p> <p>Julat = 7</p> <p>Julat antara kuartil = 1.9</p> <p>Taburan simetri</p>	1	5										
		1	10										

**Bahagian C**  
[ 15 markah/15 marks ]

No	Peraturan Pemarkahan	Markah	
16(a)(i)	$x + y \leq 60$ $y - x \geq 20$	1	<b>3</b>
(ii)	20	1	
		1	
b)	<div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• Murid melukis 6 bucu</li> <li>• Murid melukis 2 atau lebih garaf tidak terarah</li> </ul> <p>ii) Bilangan Darjah = <math>8 \times 2</math> =16</p>	1 1 1 1	<b>4</b>
c)	<p>i) Jumlah Insurans yang harus dibeli</p> $\frac{80}{100} \times \text{RM } 550\,000 = \text{RM } 440\,000$ <p>ii) a) Bayaran pampasan = RM 80 000 – RM 5 000</p> <p style="text-align: center;">RM 75 000</p> <p>b) i)</p> $\frac{\text{RM } 350\,000}{\text{RM } 440\,000} \times \text{RM } 80\,000 - \text{RM } 5\,000$ <p style="text-align: center;">RM 58 636.36</p> <p>iii) RM 400 000 – RM 5 000</p> <p style="text-align: center;">RM 395 000</p>	1 1 1 1 1 1 1 1	<b>8</b>
			<b>15</b>



No	Peraturan Pemarkahan	Markah	
17(a)	Pendapatan bercukai $= \text{RM } 44\,400 - \text{RM } 500 - \text{RM } 12\,530$ $= \text{RM } 31\,370$  Cukai pendapatan $= \text{RM } 150 + (\text{RM } 11\,370 \times 0.03) - \text{RM } 400$ $= \text{RM } 491.10 - \text{RM } 400$ $= \text{RM } 91.10$  $(\text{RM } 70 \times 12) - \text{RM } 91.10$ $= \text{RM } 748.90$  PCB > Cukai. Encik Talib tidak perlu menambah bayaran cukai pendapatan. Dia mendapat lebih sebanyak RM 748.90.	1 1  1 1 1  1	<b>6</b>
(b)	$x + y = 625$ @ $\frac{3}{2}x - y = 0$  $y = \frac{3}{2}x$ atau $3x - 2y = 0$  $\begin{pmatrix} 1 & 1 \\ \frac{3}{2} & -1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 625 \\ 0 \end{pmatrix}$  $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{1(-1) - (\frac{3}{2})(1)} \begin{pmatrix} -1 & -1 \\ -\frac{3}{2} & 1 \end{pmatrix} \begin{pmatrix} 625 \\ 0 \end{pmatrix}$  $\begin{pmatrix} 250 \\ 375 \end{pmatrix}$  $x = \text{RM } 250$ , $y = \text{RM } 375$	1   1  1   1 1	<b>5</b>
(c)	i) 15 minit  $1.5 + 1.5 = 3 \text{ km}$  Laju purata = $\frac{3}{1.5}$  i) = 2 kmj	1  1  1 1	<b>4</b>
		<b>15</b>	

# LAMPIRAN

Graf  $y = \frac{8}{x}$

