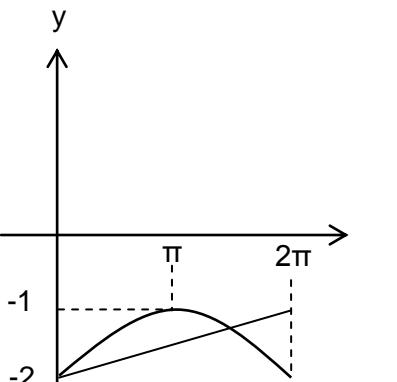


**SKEMA PEMARKAHAN  
PEPERIKSAAN PERCUBAAN SPM 2017 KM6/10 PPDU**

**MATEMATIK TAMBAHAN  
KERTAS 2**

NO	SKEMA BAHAGIAN A	MARKAH
1	$x - 1 + y + 2 = 9 \dots\dots\dots (1)$ $(x - 1)(y + 2) = 20 \dots\dots\dots (2)$  $y = 8 - x$ $x(8 - x) + 2x - (8 - x) = 22$  $x^2 - 11x + 30 = 0$ $(x - 6)(x - 5) = 0$ $x = 6, 5$ $y = 2, 3$	1 1 1 1 1 [ 5 m ]
2	<p>( a )</p>  <p>1m – graf <math>\sin x</math></p> <p>1m – graf <math>\sin \frac{1}{2}x</math></p> <p>1m – 2 unit ke bawah</p> <p>1m – nilai di paksi x , y</p> <p>( b ) melakar graf <math>y = \frac{x}{2\pi} - 2</math> ..... 1m Bilangan penyelesaian = 2 ..... 1m</p>	[ 6 m ]

3	( a ) $\frac{m+1}{2} = 4$ $m = 7$  $\frac{n}{4} + 5 = 4$ $n = -4$  ( b ) $g(x) = 4x - 20$  $gf(x) = f\left(\frac{x+1}{2}\right)$ $= 4\left(\frac{x+1}{2}\right) - 20$ $= 2x - 18$	1 1  1 1  1 1  [ 7m ]
4	( a ) $\frac{\log_5 25}{\log_5 \sqrt{x}} = m$  $\log_5 \sqrt{x} = \frac{2}{m}$  $\log_5 \sqrt{xy} = \log_5 \sqrt{x} + \log_5 \sqrt{y}$ $= \frac{2}{m} + \frac{1}{2} \log_5 y$  $= \frac{2}{m} + \frac{1}{2p}$	1  1  1  1  1
( b )	$4^{3x+2} = 4^{\left(\frac{3(x+10)}{2}\right)}$ $3x+2 = \frac{3(x+10)}{2}$ $x = \frac{26}{3}$	1 , 1  1  1
[ 8m ]		

5	<p>( a ) <math>\vec{PR} = 6\mathbf{a}</math>, <math>\vec{PQ} = 5\mathbf{b}</math></p> $\begin{aligned}\vec{RB} &= \vec{RP} + \vec{PB} \\ &= -6\underline{\mathbf{a}} + 2\underline{\mathbf{b}}\end{aligned}$ <p>( b ) <math>\vec{CA} = \vec{CR} + \vec{RA}</math></p> $\begin{aligned}&= \underline{\mathbf{a}} + \frac{1}{4} \vec{RB} \\ &= \underline{\mathbf{a}} + \frac{1}{4} (-6\underline{\mathbf{a}} + 2\underline{\mathbf{b}}) \\ &= -\frac{1}{2} \underline{\mathbf{a}} + \frac{1}{2} \underline{\mathbf{b}}\end{aligned}$ <p>( c ) <math>\vec{AQ} = \vec{AB} + \vec{BQ}</math></p> $\begin{aligned}&= \frac{3}{4} \vec{RB} + 3\underline{\mathbf{b}} \\ &= \frac{3}{4} (-6\underline{\mathbf{a}} + 2\underline{\mathbf{b}}) + 3\underline{\mathbf{b}} \\ &= -9/2 \underline{\mathbf{a}} + 9/2 \underline{\mathbf{b}}\end{aligned}$	<p>1 1</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>[ 8m ]</p>
6	<p>( a )</p> $\begin{aligned}m_t &= dy/dx \\ &= 2x \\ &= 2(4) \\ &= 8 \\ Q(x, 0), P(4, 16)\end{aligned}$ $\begin{aligned}\frac{16 - 0}{4 - x} &= 8 \\ x &= 2 \\ Q(2, 0)\end{aligned}$ <p>( b ) Luas = <math>\int_0^2 x^2 dx - \frac{1}{2}(2)(16)</math></p> $\begin{aligned}&= \left[ \frac{x^3}{3} \right]_0^4 - 16 \\ &= 5\frac{1}{3} @ 5.333 \text{ unit}^2\end{aligned}$	<p>1 1</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>1 1</p> <p>[ 6m ]</p>

BAHAGIAN B			
7	( a ) i ) $\mu = 500$		1
	ii ) $P( X > 600 ) = P( z > \frac{600-500}{100} )$		1
	$= P( z > 1 )$		1
	$= 0.15866$		1
	$\therefore 15.866\%$		1
	( b ) $P( X > t ) = 0.4013$		1
	$P( z > \frac{t-500}{100} ) = P( z > 0.25 )$		1
	$\frac{t-500}{100} = 0.25$		1
	$t = 525$		1
	Saiful tidak layak kerana skor minimum untuk diterima masuk ialah 525. Skor Saiful hanya 520		1
		[ 10m ]	
8	T2007 24000	T2008 25440	T2009 26966.40
	$r = 1.06$		1
	( a ) $T^{11} = ar^{10}$		1
	$= 24000( 1.06 )^{10}$		1
	$= 42980.34$		1
	$= 42980$		1
	( b ) $T_n = 2 \times 24000$		
	$ar^{n-1} = 48000$		
	$( 24000 )( 1.06 )^{n-1} = 48000$		1
	$( 1.06 )^{n-1} = 2$		1
	$\log( 1.06 )^{n-1} = \log 2$		1
	$n - 1 = 11.896$		
	$n = 12.896$		
	$= 13$		1
	( c ) $S_{11} = \frac{24000 ( 1.06^{11} - 1 )}{1.06 - 1}$		1
	$= 359,319.42$		1
	$= 359,319$		1
		[ 10m ]	

9	$\frac{1}{x}$	0.67	0.5	0.4	0.33	0.29	0.25	1 1
	$\frac{1}{y}$	0.51	1.59	2.27	2.78	3.03	3.23	
	( b )							1
	Melukis paksi – X dan Y dengan skala yang betul							1
	Memplotkan titik dengan betul							1
	Melukiskan garis penyuaihan terbaik dengan betul							1
	( c )							
	$\frac{p}{y} = \frac{q}{x} + 8$							1
	$\frac{1}{y} = \frac{q}{p} \left( \frac{1}{x} \right) + \frac{8}{p}$							
	$\frac{8}{p} = Y\text{-intercept}$							
	$\frac{8}{p} = 4.9$							1
	$p = 1.633$							1
	$\frac{q}{p} = \text{Gradient of the graph}$							
	$= -6.68$							1
	$q = -6.68 \times 1.633 = -10.91$							1
							[ 10m ]	

10	<p>( a ) <math>m_{BC} = -\frac{k}{3}</math>, <math>m_{OA} = \frac{3}{2}</math></p> $-\frac{k}{3} \times \frac{3}{2} = -1$ $k = 2$ <p>( b ) <math>m_{DC} = \frac{16}{5}</math>, <math>m_{OA} = \frac{3}{2}</math></p> <p><math>m_{DC} \neq m_{OA} \Rightarrow DC</math> dan <math>OA</math> tidak selari</p> <p>( c ) <math>B(0, 5/3)</math>, <math>m = 3/2</math></p> $y - \frac{5}{3} = \frac{3}{2}(x - 0)$ $y = \frac{3}{2}x + \frac{5}{3}$ <p>( d ) <math>D(5, 8)</math>, <math>P(x, y)</math></p> $DP = 5$ $\sqrt{(x - 5)^2 + (y - 8)^2} = 5$ $x^2 + y^2 - 10x - 16y + 64 = 0$	<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>1,1</p> <p>1</p> <p>[ 10m ]</p>
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13 ( a ) i.  $PS = \frac{8}{\sin 60^\circ} \times \sin 80^\circ$   
 $= 9.097 \text{ cm}$

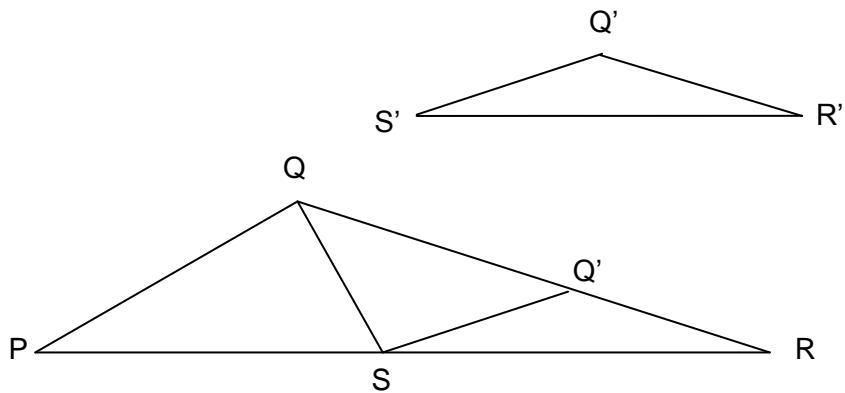
$$SR = \frac{1}{2} PS = 4.549 \text{ cm}$$

ii.  $\angle QPS = 40^\circ$   
 $PR = 13.65 \text{ cm}$

$$QR^2 = 8^2 + 13.65^2 - 2(8)(13.65) \cos 40^\circ$$

$$QR = 9.111 \text{ cm}$$

( b ) i.



( ii )

$$\cos \angle PRQ = \frac{8^2 - 13.65^2 - 9.111^2}{-2(13.65)(9.111)}$$

$$\angle PRQ = 34.36^\circ$$

$$\angle QPR = 40^\circ$$

$$\angle PQR = 145.64^\circ$$

$$\angle SQR = 25.64^\circ = \angle SQ'Q$$

$$\angle S'Q'R' = 180^\circ - 25.64^\circ = 154.36^\circ$$

iii ) Area of  $\Delta Q'R'S' = \frac{1}{2}(4.549)(9.111) \sin 34.36^\circ$   
 $= 11.70 \text{ cm}^2$

1

1

1

1

1

1

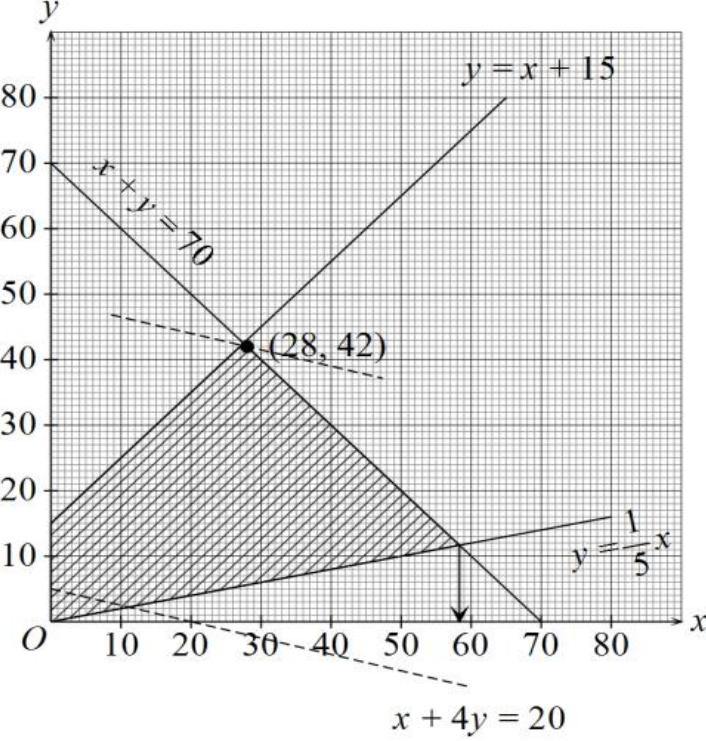
1

1

1

1

[ 10 m ]

14	( a )    I : $x + y \leq 70$ II : $y \geq \frac{1}{5}x$ III : $y \leq x + 15$ ( b )	1 1 1 1
	Lukis sekurang-kurangnya satu garis lurus daripada ketaksamaan	1
	Ketiga-tiga garis lurus dilukis dengan betul	1
	Melorek rantau berlorek dengan betul	1
		
	( c )	
	i. Berdasarkan graf, bilangan maksimum kek coklat ialah 58	1
	$0.5x + 2y = k$ bila $x = 0$ dan $y = 5$ , $k = 10$	1
	ii. berdasarkan graf, nilai kos maksimum pembuatan kek diperolehi dipoint $(28, 42)$	
	Berdasarkan graf, Kos maksimum $= 0.5(28) + 2(42) = RM\ 98.00$	1 1
	[ 10m ]	

15	<p>( a ) <math>\frac{18}{p} \times 100 = 120</math>  <math>p = 15</math></p> <p><math>\frac{q}{32} \times 100 = 125</math>  <math>q = 40</math></p> <p><math>r = \frac{33}{30} \times 100 = 110</math></p> <p>( b ) <math>\frac{140m + 120(2) + 125(6) + (110)(5)}{m+2+6+5} = 123.53</math>  <math>m = 4</math></p> <p>( c ) <math>\frac{Q_{17}}{425} \times 100 = 123.53</math>  <math>Q_{17} = RM525</math></p>	<p>1 1 1 1</p> <p>1 1</p> <p>1 1</p>
		<p>[ 10m ]</p>