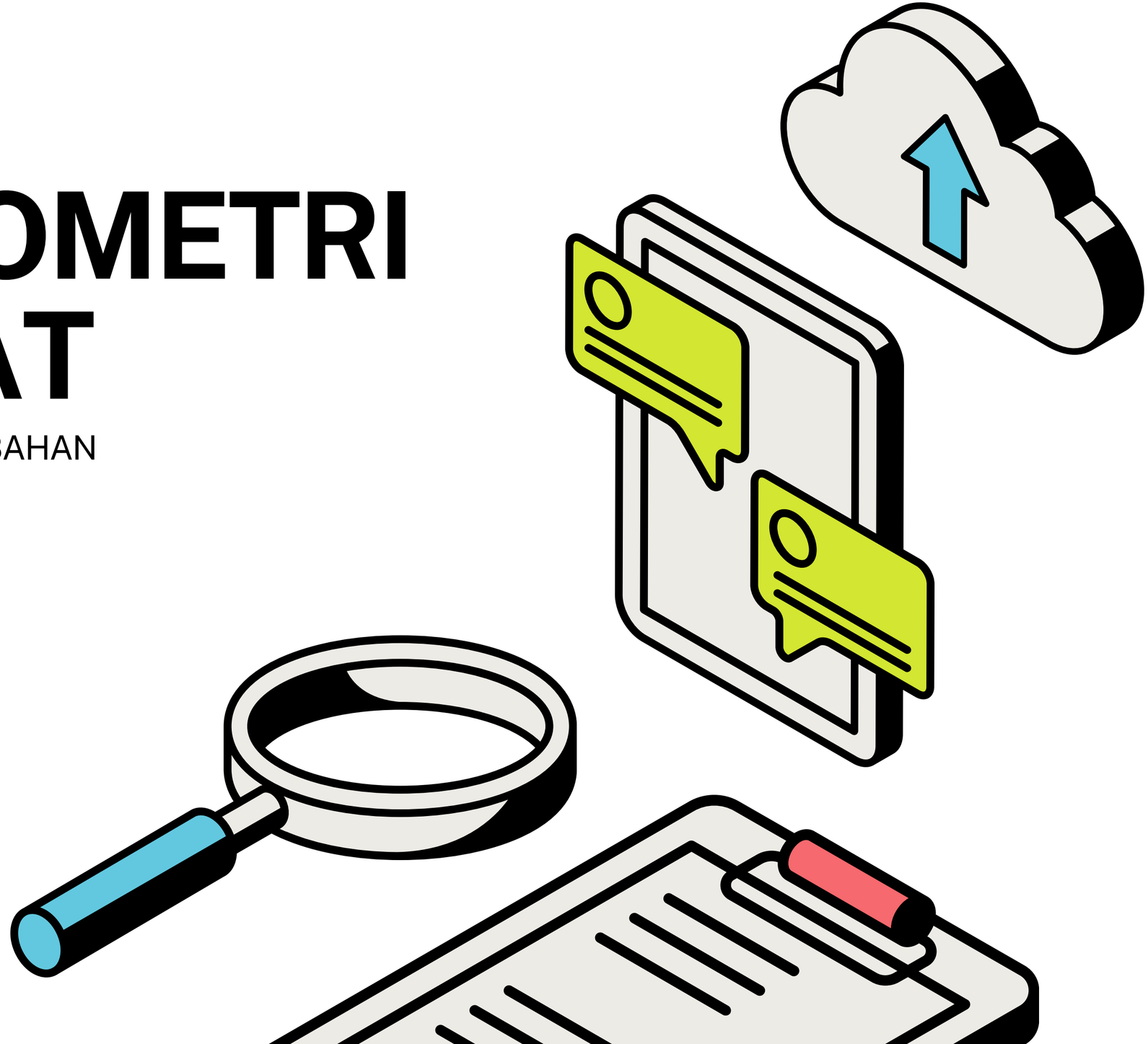
TINGKATAN 4

BAB 7 : GEOMETRI KOORDINAT

KOMPILASI SOALAN MATEMATIK TAMBAHAN
PERCUBAAN SPM 2023

SKEMA PEMARKAHAN



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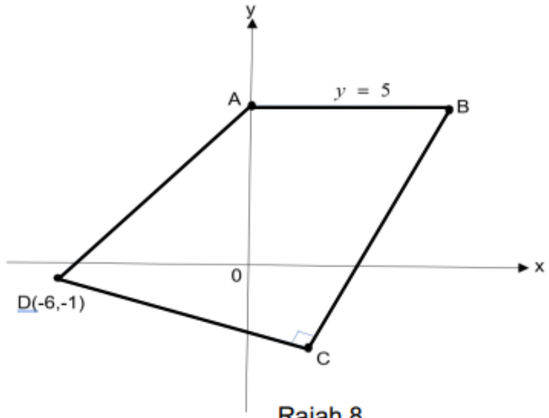
KELANTAN (K1)

GEOMETRI KOORDINAT

14. Rajah 8 menunjukkan sisi empat $ABCD$. Titik A terletak pada paksi-y.

Diagram 8 shows the four sides $ABCD$. Point A lies on the $y-axis$.



Rajah 8
Diagram 8

Persamaan garis lurus BC ialah $y-2x+9=0$

The equation of the straight line BC is $y-2x+9=0$

(a) Cari
Find

(i) persamaan garis lurus CD.
the equation of straight line CD

(ii) koordinat titik C.
the coordinate of point C

[5 *markah*]
[5 *marks*]

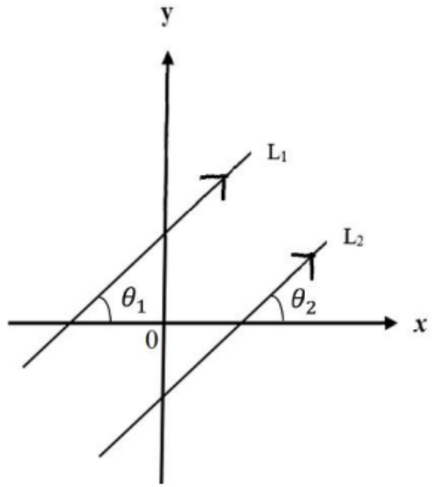
(b) Cari luas segiempat $ABCD$. [3 *markah*]
Find the area of quadrilateral $ABCD$. [3 *marks*]

14 (a)	(i) $2\times m_{AB}=-1$ dan $m_{AB}=\frac{-1}{2}$	K1
	$y=\frac{-1}{2}x-4$	N1
	(ii) $2x-9=-\frac{1}{2}x-4$	K1
	$x=2$	K1
	$C=(2,-5)$	N1
14 (b)	$B(7,5)$	P1
	$\frac{1}{2}\left\|((0\times 5)+(7\times-5)+(2\times-1)+(-6\times5))-((5\times7)+(5\times2)+(-5\times-6)+(-1\times0))\right\|$	K1
	$71\ \text{unit}^2$	N1

MELAKA (K1)

GEOMETRI KOORDINAT

1. (a) Rajah 1 menunjukkan sudut θ_1, sudut θ_2 dan garis lurus L_1 selari dengan garis lurus L_2.
Diagram 1 shows angle θ_1, angle θ_2 and straight line L_1 is parallel to straight line L_2.



Rajah 1
Diagram 1

Dengan menggunakan maklumat di atas, tunjukkan kecerunan kedua-dua garis itu, m_1 dan m_2, adalah sama.
By using the above information, show that the gradient of both lines, m_1 and m_2, are the same.

[2 markah]
[2 *marks*]

(b) Diberi empat titik, P(– 6, 1), Q(1, –2), R(0, 5) dan S(–3, h).
Jika PQ berserenjang dengan RS, cari nilai pemalar *h*.
Given four points, P(– 6, 1), Q(1, –2), R(0, 5) and S(–3, h).
If PQ is perpendicular to RS, find the value of h.

[3 markah]
[3 *marks*]

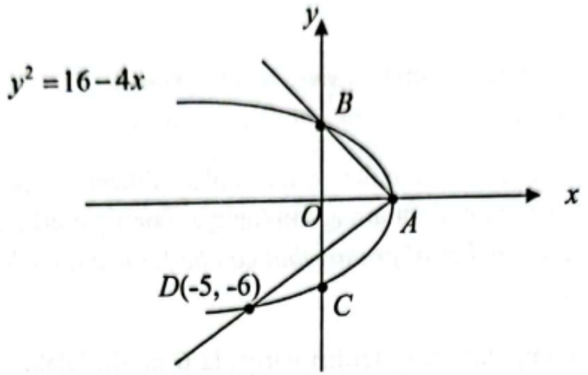
1	(a)	$\tan\theta_1 = \tan\theta_2$	1
		$m_1 = m_2$ shown	1
	(b)	$m_{PQ} = \frac{-2-1}{1-(-6)}$ or $m_{RS} = \frac{h-5}{-3-0}$	1
		$\frac{-2-1}{1-(-6)} \times \frac{h-5}{-3-0} = -1$	1
		$h = -2$	1

N9 (K1)

GEOMETRI KOORDINAT

10 Rajah 6 menunjukkan suatu lengkung $y^2 = 16 - 4x$ yang menyilang paksi-x pada titik A dan paksi-y pada titik B dan titik C. Titik $D(-5,-6)$ terletak di atas lengkung tersebut.

Diagram 6 shows the curve $y^2 = 16 - 4x$ intersects x-axis at point A and y-axis at point B and point C. Point $D(-5,-6)$ lies on the curve.



Rajah 6

Diagram 6

(*a*) Cari persamaan garis lurus AC dalam bentuk pintasan. [2 *markah*]
Find the equation of the straight line AC in intercept form. [2 *marks*]

(*b*) Hitung luas segi tiga ABD, dalam unit^2. [2 *markah*]
Calculate the area of triangle ABD, in unit^2. [2 *marks*]

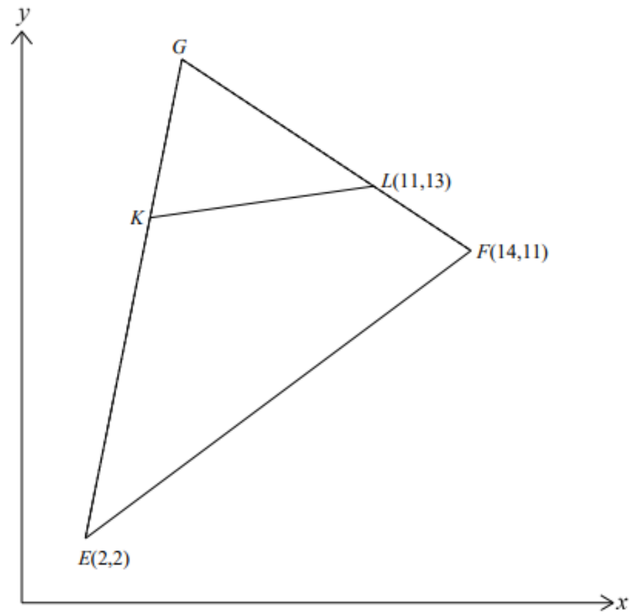
(*c*) Tentukan sama ada garis lurus AD berserenjang dengan garis lurus AB. Justifikasi jawapan anda dengan menggunakan kaedah pengiraan. [2 *markah*]
Determine whether the straight line AD is perpendicular to the straight line AB. Justify your answer by using method of calculation. [2 *marks*]

10	(a)	$A(4,0)$ atau $B(0,4)$ atau $C(0,-4)$ atau lihat pintasan-x atau pintasan-y pada kedudukan yang betul pada rajah.	K1
		$\frac{x}{4}+\frac{y}{-4}=1$ // $\frac{x}{4}-\frac{y}{4}=1$	N1
	(b)	$\frac{1}{2}\left\|\left(0(0)+4(-6)+4(-5)\right)-\left(4(4)+0(-5)+0(-6)\right)\right\|$	K1
		30	N1
	(c)	$m_{AB} \times m_{AD}$ $\frac{4-0}{0-4}\times\frac{-6-0}{-5-4}=-\frac{2}{3}$ atau $-1\times\frac{2}{3}=-\frac{2}{3}$	K1
		$m_{AB}\times m_{AD} \neq -1$,garis lurus AB tidak berserenjang dengan garis lurus AD.	N1

PAHANG (K1)

GEOMETRI KOORDINAT

8 Rajah 5 menunjukkan sebuah segi tiga *EFG*.
Diagram 5 shows a triangle EFG.



Rajah 5
Diagram 5

Titik L membahagi garis FG dengan nisbah $1:2$ dan $GE = 3GK$. Cari
Point L divides line FG with ratio of $1:2$ and $GE = 3GK$.
Find

(*a*) koordinat K.
the coordinates of K.

[3 *markah*]
[3 *marks*]

(*b*) nisbah termudah bagi luas segi tiga GKL kepada luas sisi empat $EFLK$.
the simplest ratio of area of triangle GKL to the area of quadrilateral $EFLK$.

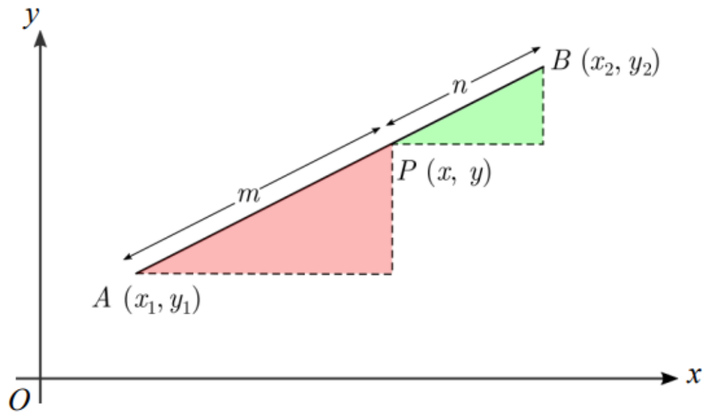
[3 *markah*]
[3 *marks*]

8	(*a*)		$(11,13) = \left(\frac{1(x)+2(14)}{1+2}, \frac{1(y)+2(11)}{1+2}\right)$	1
			$K = \left(\frac{1(2)+2(*5)}{1+2}, \frac{1(2)+2(*17)}{1+2}\right)$	1
			$K(4,12)$	1
	(*b*)		$\frac{1}{2}\left\|\left(5(13)+11(12)+4(17)\right)-\left(17(11)+13(4)+12(5)\right)\right\|$ **atau** $\frac{1}{2}\left\|\left(2(11)+14(13)+11(12)+4(2)\right)-\left(2(14)+11(11)+13(4)+12(2)\right)\right\|$	1
			17 **dan** $\frac{119}{2}$ @ 59.5	1
			$2:7$	1

PERLIS (K1)

GEOMETRI KOORDINAT

7 Rajah 7 menunjukkan garis lurus AB pada satah Cartes.
Diagram 7 shows a straight line AB on a Cartesian plane.



Rajah 7 / *Diagram 7*

(a) Terbitkan rumus pembahagi tembereng garis pada satah Cartes.
Derive the formula for divisor of line segment on the Cartesian plane.

[3 markah / *marks*]

(b) Seterusnya, diberi titik P(h, 5) membahagi tembereng garis yang menyambungkan titik A(2, 2) dan titik B(12, k) dengan keadaan AP : PB = 3 : 2 . Cari nilai h dan k.
Hence, given that point P(h, 5) *divides the line segment joining point* A(2, 2) *and* B(12, k) *such that* AP : PB = 3 : 2 . *Find the values of h and k.*

[3 markah / *marks*]

7

(a)

$\frac{CD}{DE} = \frac{AP}{PB}$ P1 (Rujuk label pada Rajah 7)

$n(x - x_1) = m(x_2 - x)$ K1

$x = \frac{nx_1 + mx_2}{m+n}$ N1 **3**

(b)

$h = \frac{2(2)+3(12)}{3+2}$ *atau* $5 = \frac{2(2)+3k}{3+2}$ K1

$h = 8$ N1

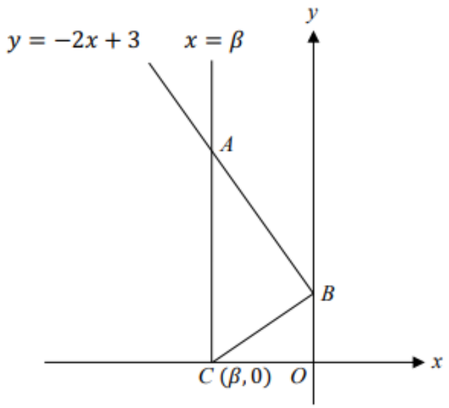
$k = 7$ N1 **3**

SABAH (K1)

GEOMETRI KOORDINAT

15. Rajah 15 menunjukkan garis lurus $y = -2x + 3$ menyilang garis $x = \beta$ di A dan menyilang paksi-y di B.

Diagram 15 shows a straight line $y = -2x + 3$ intersects line $x = \beta$ at A and intersects y-axis at B.



Rajah 15/*Diagram 15*

Diberi bahawa koordinat C ialah $(\beta, 0)$ dan $\angle ABC = 90°$, cari

Given that coordinate of C is $(\beta, 0)$ and $\angle ABC = 90°$, find

a) nilai β,
the value of β,

[2 markah/*marks*]

b) koordinat A,
the coordinate of A,

[1 markah/*mark*]

c) luas segi tiga ABC,
the area of triangle ABC,

[2 markah/*marks*]

d) persamaan lokus bagi S jika titik S bergerak dengan keadaan jaraknya dari titik B sentiasa sama dengan jarak antara titik B dan titik C.
the equation of the locus S if the point S moves such that its distance from point B is always the same as the distance between point B and point C.

[3 markah/*marks*]

15	a) $-2 \times m_{BC} = -1$ atau $(-2)\left(-\frac{3}{\beta}\right) = -1$ -6	K1 N1
	b) $(-6, 15)$	N1
	c) $\frac{1}{2}\lvert[-6(3)+0(0)+(-6)(15)]-[0(15)+(-6)(3)+(-6)(0)]\rvert$ 45	K1 N1
	d) $\sqrt{(x-0)^2+(y-3)^2}$ atau $\sqrt{(-6-0)^2+(0-3)^2}$ $\sqrt{(x-0)^2+(y-3)^2} = \sqrt{(-6-0)^2+(0-3)^2}$ atau $\sqrt{(x-0)^2+(y-3)^2} = \sqrt{45}$ atau $x^2+y^2-6y+9=45$ atau setara $x^2+y^2-6y-36=0$	K1 K1 N1

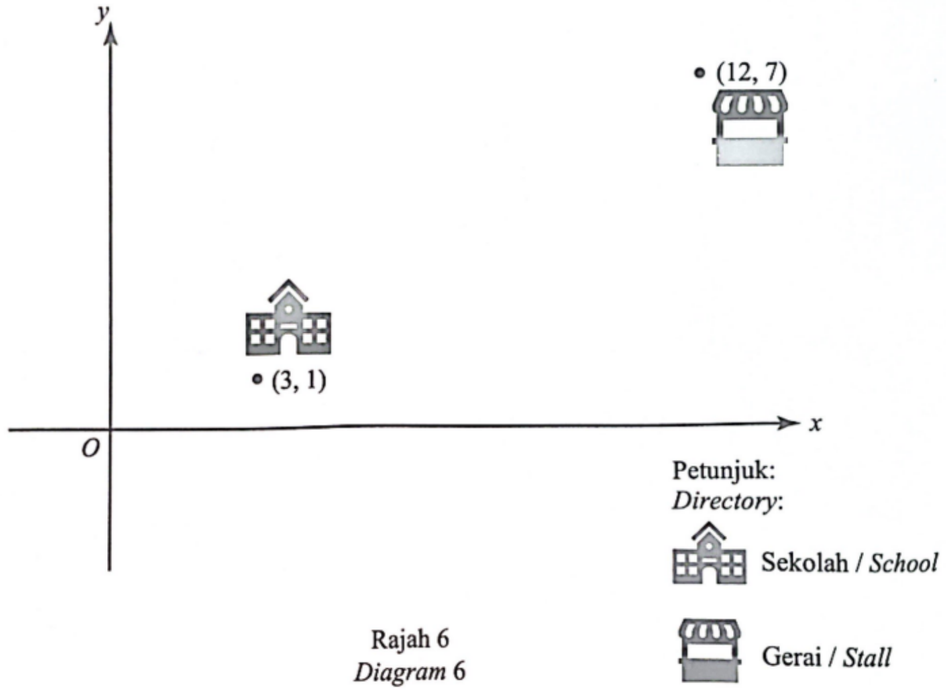
SELANGOR SET 1 (K1)

GEOMETRI KOORDINAT

6 Penyelesaian secara lukisan berskala tidak diterima.
Solution by scale drawing is not accepted.

Rajah 6 menunjukkan kedudukan sekolah dan sebuah gerai pada satah Cartes. Rumah David berada di kedudukan $\frac{1}{3}$ sepanjang jalan lurus dari sekolah ke gerai.

Diagram 6 shows the position of a school and a stall on a Cartesian plane. David's house is at the position of $\frac{1}{3}$ *on the straight road from school to the stall.*



Rajah 6
Diagram 6

Tentukan titik bagi kedudukan rumah David. Seterusnya, cari jarak di antara rumah David dengan sekolah.

Determine the point for the position of David's house. Hence, find the distance between David's house and the school.

[4 markah]
[4 *marks*]

6			$2SD = 3DG$ $\frac{SD}{DG} = \frac{3}{2}$ $D = \left(\frac{1(12)+2(3)}{1+2}, \frac{1(7)+2(1)}{1+2}\right)$ $(6,3)$ $SD = \sqrt{(6-3)^2+(3-1)^2}$ $\sqrt{13}$ atau 3.6055	K1 N1 K1 N1

SELANGOR SET 2 (K1)

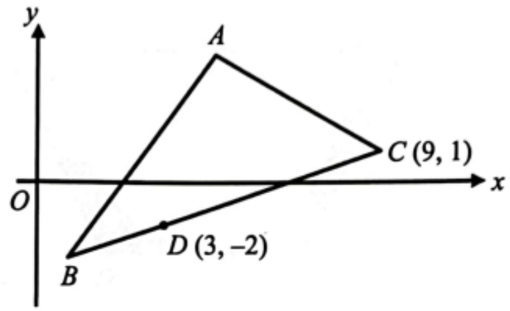
GEOMETRI KOORDINAT

11 Penyelesaian secara lukisan berskala tidak diterima.

Solution by scale drawing is not accepted.

Rajah 11 menunjukkan sebuah segi tiga ABC dengan keadaan titik D terletak pada garis lurus BC. Diberi bahawa nisbah bagi luas ΔABD : luas $\Delta ADC = 1 : 3$.

Diagram 11 *shows a triangle ABC where point D lies on the straight line BC. It is given that the ratio of the area of* ΔABD *: the area of* $\Delta ADC = 1 : 3$.



Rajah 11
Diagram 11

(*a*) Cari koordinat bagi titik B.

Find the coordinates of the point B.

[3 markah]
[3 *marks*]

(*b*) P ialah satu titik yang bergerak dengan keadaan PD sentiasa berserenjang dengan PC. Cari persamaan lokus bagi titik P.

P is a moving point such that PD is always perpendicular to PC. Find the equation of the locus of point P.

[2 markah]
[2 *marks*]

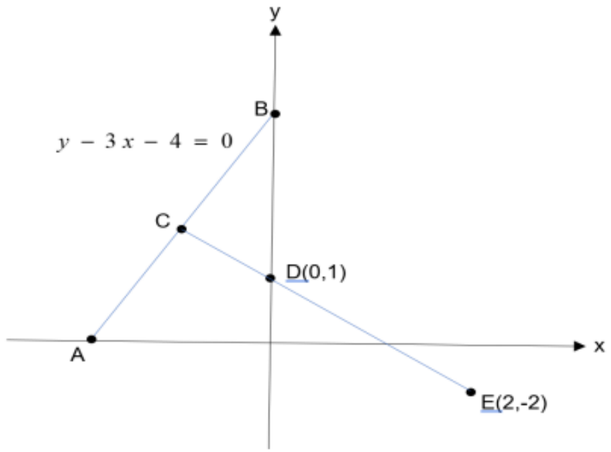
11	(*a*)		$BD:DC = 1:3$ $\frac{1(9)+3x}{1+3} = 3$ @ $\frac{1(1)+3y}{1+3} = -2$ $B(1,-3)$	P1 K1 N1
	(*b*)		$\frac{y-(-2)}{x-3} \times \frac{y-1}{x-9} = -1$ $x^2 + y^2 - 12x + y + 25 = 0$	K1 N1

KELANTAN (K2)

GEOMETRI KOORDINAT

5 Rajah 3 menunjukkan graf garis lurus ACB dan CDE dalam satah Cartesan.

Diagram 3 shows the graph of straight lines ACB *and* CDE *in the Cartesian plane.*



Rajah 3

Diagram 3

Titik A dan titik B masing-masing terletak di atas paksi-x dan paksi-y. Titik C ialah titik tengah AB.

Point A *and point* B *lie on the* x-axis *and* y-axis *respectively. Point* C *is the midpoint of* AB.

(a) Diberi ED : EC = m : m+n , cari nilai bagi m : n. [3 *markah*]

Given ED : EC = m : m+n , *find the values of* m : n. [3 *marks*]

(b) Satu titik P bergerak dengan keadaan jaraknya dari titik B adalah separuh daripada jaraknya dari titik E. Cari persamaan lokus P. [3 *markah*]

A point P *moves with the condition that its distance from point* B *is half of its distance from point* E. *Find the equation of the locus of* P. [3 *marks*]

5(a)	$C\left(-\frac{2}{3}, 2\right)$	P1
	$\frac{2n+\left(-\frac{2}{3}\right)m}{m+n} = 0$ atau $\frac{-2n+2m}{m+n} = 1$	K1
	3:1	N1
5(b)(i)	$PB = \frac{1}{2}PE$	P1
	$\sqrt{(x-0)^2+(y-4)^2} = \frac{1}{2}\sqrt{(x-2)^2+(y-(-2))^2}$	K1
	$3x^2+3y^2+4x-36y+56=0$	N1

MELAKA (K2)

GEOMETRI KOORDINAT

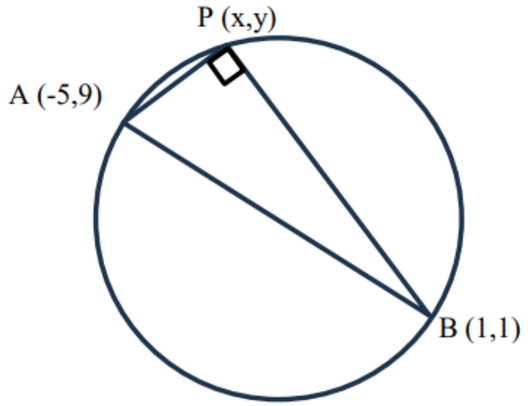
3 (a) Titik $R(x, y)$ bergerak dengan keadaan jaraknya dari titik P dan dari titik Q sentiasa sama. Huraikan lokus bagi titik bergerak R

Point $R(x, y)$moves such that its distance from point P and from point Q are always the same. Describe the locus of the moving point R.

[1 markah / *mark*]

(b) Rajah 2 di bawah menunjukkan sebuah segi tiga bersudut tegak yang terterap di dalam
sebuah bulatan .

Diagram 2 below shows a right angled triangle inscribed in a circle.



Rajah 2 / *Diagram 2*

(i) Cari persamaan bagi lokus titik $P(x, y)$ yang bergerak pada lilitan bulatan tersebut.

Find the equation of the locus of a point $P(x, y)$ that moves on the circumference of the circle.

[4 markah /*marks*]

(ii) Cari pintasan-y bagi lokus tersebut.

Find the y-intercept of the locus.

[3 markah / *marks*]

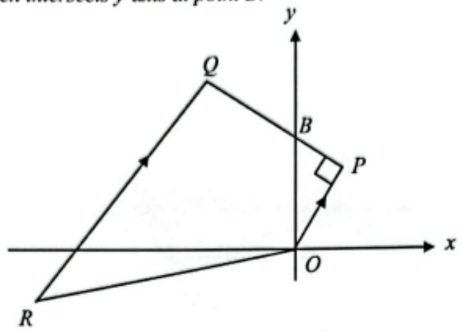
3(a)	Pembahagi dua sama serenjang bagi PQ // perpendicular bisector of PQ	1
(b) i	Titik tengah AB, $M = (-2,5)$ Titik bergerak $P(x, y)$	
	$BM = \sqrt{(-2-1)^2 + (5-1)^2}$ *atau* $AM\sqrt{(-5+2)^2 + (9-5)^2}$	1
	$PM = \sqrt{(x+2)^2 + (y-5)^2}$	1
	Gunakan $PM = AM$ *atau* BM	1
	$\sqrt{(x+2)^2 + (y-5)^2} = 5$	1
	$x^2 + y^2 + 4x - 10y + 4 = 0$	
	OR	
	$\left(\frac{y-9}{x+5}\right)$ or $\left(\frac{y-1}{x-1}\right)$	
	$\left(\frac{y-9}{x+5}\right)\left(\frac{y-1}{x-1}\right) = -1$ $y^2 - 10y + 9 = -x^2 - 4x + 5$ $x^2 + y^2 + 4x - 10y + 4 = 0$	
(b) ii	$y^2 - 10y + 4 = 0$	1
	$y = \frac{-(-10) \pm \sqrt{(-10)^2 - 4(1)(4)}}{2(1)}$	1
	$Pintasan - y = 9.583\ dan\ y = 0.4174$	1

N 9 (K2)

GEOMETRI KOORDINAT

11 Penyelesaian secara lukisan berskala **tidak** diterima.
Solution by scale drawing is **not** *accepted.*

Rajah 6 menunjukkan sebuah trapezium *OPQR*. Garis lurus *OP* adalah berserenjang dengan garis lurus *PQ* yang memotong paksi-*y* pada titik *B*.
Diagram 6 shows a trapezium OPQR. The straight line OP is perpendicular to the straight line PQ which intersects y-axis at point B.



Rajah 6
Diagram 6

Diberi persamaan garis lurus *OP* ialah $y=\frac{3}{4}x$ dan persamaan garis lurus *PQ* ialah $3y+kx=50$.

Given the equation of the straight line OP is $y=\frac{3}{4}x$ *and the equation of straight line PQ is* $3y+kx=50$.

(*a*) Cari
Find

(i) nilai bagi *k*,
the value of k,

(ii) koordinat bagi *P*.
the coordinates of P.

[4 *markah*]
[4 *marks*]

(*b*) Diberi bahawa $PB:PQ=1:3$, cari
Given that $PB:PQ=1:3$, *find*

(i) koordinat bagi *Q*,
the coordinates of Q,

(ii) persamaan garis lurus bagi *QR*.
the equation of the straight line QR.

[4 *markah*]
[4 *marks*]

(*c*) Suatu titik *J* bergerak dengan keadaan jaraknya dari titik *Q* sentiasa 4 unit. Cari persamaan lokus bagi *J*.
[2 *markah*]

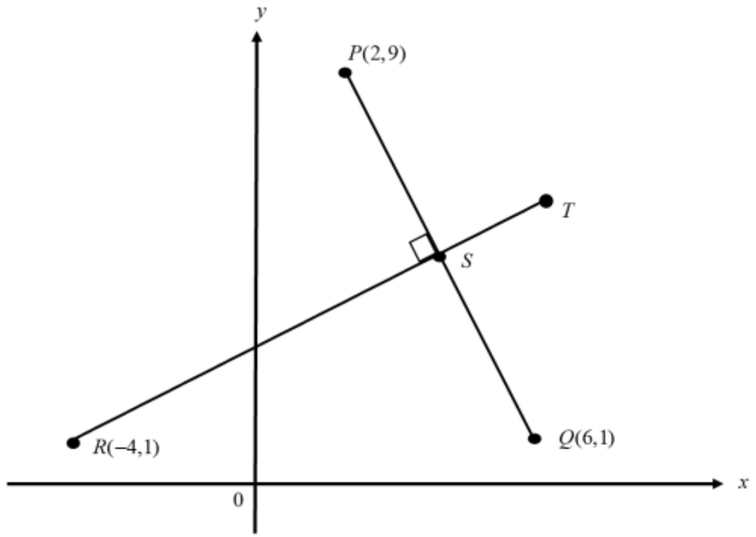
A point J moves such that its distance from point Q always 4 unit. Find the equation of the locus J.
[2 *marks*]

11(a)(i)	$\frac{3}{4}\times\left(-\frac{k}{3}\right)=-1$	K1
	$k=4$	N1
(ii)	$3\left(\frac{3}{4}x\right)+4x=50$	K1
	$P(8,6)$	N1
11(b)(i)	$\frac{1(x)+2(8)}{1+2}=0$ atau $\frac{1(y)+2(6)}{1+2}=\frac{50}{3}$	K1
	$Q(-16,38)$	N1
11(b)(ii)	$38=\frac{3}{4}(-16)+c$ *atau* $y-38=\frac{3}{4}(x-(-16))$	K1
	$y=\frac{3}{4}x+50$	N1
11(c)	$\sqrt{(x-(-16))^2+(y-38)^2}=4$	K1
	$x^2+y^2+32x-76y+1684=0$	N1

PAHANG (K2)

GEOMETRI KOORDINAT

1 Rajah 1 menunjukkan garis lurus PQ bersilang dengan garis lurus RT pada titik S.
Diagram 1 shows the straight line PQ intersects the straight line RT at point S.



Rajah 1
Diagram 1

(*a*) (i) Cari persamaan garis lurus RT.
Find the equation of a straight line RT.
(ii) Cari koordinat *S*.
Find the coordinates of S.

[6 *markah*]
[6 *marks*]

(*b*) Titik *N* bergerak dengan keadaan jaraknya sentiasa 6 unit dari titik *S*. Cari persamaan lokus *N*.
Point N moves such that its distance is always 6 units from point S. Find the equation of the locus N.

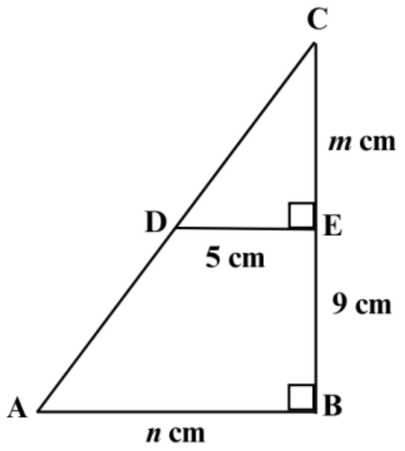
[2 *markah*]
[2 *marks*]

1	(*a*)	(i)	$mPQ = -2$ dan guna $m_1 \times m_2 = -1$ $m_2 = \frac{1}{2}$	1
			Selesaikan $y-1=\frac{1}{2}(x-(-4))$ **atau** $1=\frac{1}{2}(-4)+c$ $c=3$	1
			$y=\frac{1}{2}x+3$	1
		(ii)	$y=-2x+13$	1
			Selesaikan $y=\frac{1}{2}x+3$ dan $y=-2x+13$	1
			$(4,5)$	1
	(*b*)		$\sqrt{(x-4)^2+(y-5)^2}=6$ **atau** setara	1
			$x^2+y^2-8x-10y+5=0$	1

PERLIS (K2)

GEOMETRI KOORDINAT

1



Rajah 1 / *Diagram* 1

Rajah 1 menunjukkan segitiga ABC. Diberi AB + BC = 32 cm. Cari nilai bagi m dan n.

Diagram 1 *shows a triangle ABC. It is given that AB + BC* = 32 *cm. Find the value of m and n.*

[7 markah / *marks*]

1

$n + 9 + m = 32$ P1 P1 $\frac{5}{n} = \frac{m}{9+n}$

$m = 23 - n$ @ $m = \frac{45}{n-5}$ @ $n = \frac{45+5m}{m}$ P1

Hapus satu anu (melibatkan satu persamaan linear dan satu persamaan tak linear dalam sebutan m dan n)

$45 + 5n = n(23 - n)$ K1

Selesaikan persamaan kuadratik K1

$ax^2 + bx + c = 0 \ for \ b \neq 0$

Pemfaktoran

$(n - 5)(n - 9) = 0$

Rumus

$p = \frac{-(-18) \pm \sqrt{(-18)^2 - 4(1)(45)}}{2(1)}$

N1 $n = 5$ or $n = 9$

N1 $m = 18$ or $m = 14$

PERLIS (K2)

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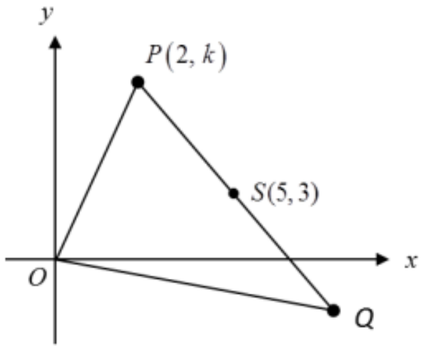
10 Rajah 10 menunjukkan sebuah segi tiga *OPQ* dengan keadaan *PS : PQ* = 1: 3. Diberi bahawa persamaan garis lurus *OP* ialah $7x - 2y = 0$. Cari

Diagram 10 *shows a triangle OPQ such that PS : PQ* = 1: 3. *Given that the equation of the straight line OP is* $7x - 2y = 0$. *Find*



Rajah 10 / *Diagram* 10

(a) nilai *k*.
the value of k.

[2 markah / *marks*]

(b) koordinat *Q*.
the coordinates of Q.

[3 markah / *marks*]

(c) luas, dalam unit², bagi ΔOPQ.
the area, in unit², of ΔOPQ.

[2 markah / *marks*]

(d) persamaan garis lurus yang melalui S dan berserenjang dengan garis lurus PQ.
the equation of the straight line that passes through point S and perpendicular to the line PQ

[3 markah / *marks*]

10

(a) . $7(2) - 2k = 0$ K1

$k = 7$ N1 **2**

(b) $\frac{2(2)+1(x)}{1+2} = 5$ *atau* $\frac{2(7)+1(y)}{1+2} = 3$ K1

$\frac{2(2)+1(x)}{1+2} = 5$ *dan* $\frac{2(7)+1(y)}{1+2} = 3$ K1

$(11, -5)$ N1 **3**

(c) $\frac{1}{2}|[0(*7) + 2(*-5) + *11(0)] - [0(2) + *7(*11) + (*-5)(0)]|$ K1

43.5 N1 **2**

(d)

$-\frac{4}{3} \times m_2 = -1$ K1

$m_2 = \frac{3}{4}$

$3 = \frac{3}{4}(5) + C$ atau $y - 3 = \frac{3}{4}(x - 5)$ K1

$y = \frac{3}{4}x - \frac{3}{4}$ N1 **3**

SABAH (K2)

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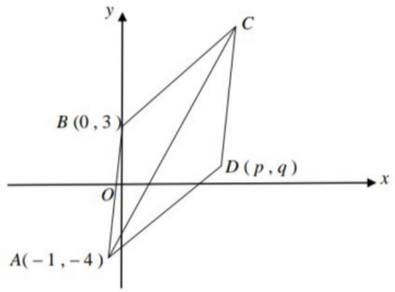
5. Rajah 5 menunjukkan sebuah rombus *ABCD* dilukis pada satah Cartesan. Persamaan pepenjuru *AC* ialah $y - 2x + 2 = 0$.

Diagram 5 shows a rhombus ABCD drawn on the Cartesian plane. The equation for diagonal AC is $y - 2x + 2 = 0$.



Rajah 5/*Diagram* 5

a) Cari nilai p dan q.

Find the value of p and of q.

[3 markah/*marks*]

b) Cari luas rombus *ABCD*.

Find the area of rhombus ABCD.

[4 markah/*marks*]

5	a) $y - 3 = -\frac{1}{2}(x - 0)$ $y = -\frac{1}{2}x + 3$ $y = 2x - 2$ Selesaikan persamaan $-\frac{1}{2}x + 3 = 2x - 2$ Titik tengah BD = (2, 2) $\frac{p+0}{2} = 2$, $\frac{q+3}{2} = 2$ $p = 4$ dan $q = 1$	K1 K1 N1
	b) Guna titik tengah (2, 2) $\frac{x+(-1)}{2} = 2$ dan $\frac{y+(-4)}{2} = 2$ Koordinat $C = (5, 8)$ $= \frac{1}{2}\lvert[-1(3) + 0(8) + 5(1) + 4(-4)] - [-4(0) + 3(5) + 8(4) + 1(-1)]\rvert$ $= 30$	K1 N1 K1 N1

SELANGOR SET 1 (K2)

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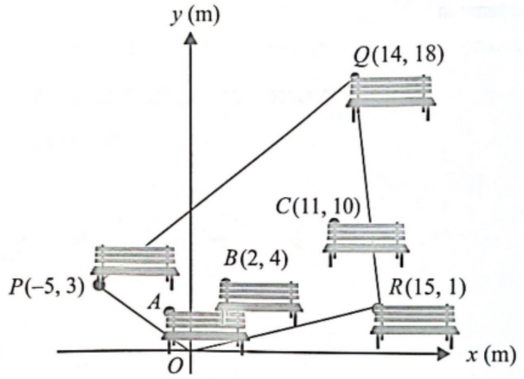
4 Penyelesaian secara lukisan berskala tidak diterima.
Solutions by scale drawing is not accepted.

Rajah 4 menunjukkan sebuah taman permainan *OPQR*. Titik-titik *A*, *B* dan *C* adalah kedudukan bangku yang disediakan dan *A*, *B* dan *C* adalah segaris.
Diagram 4 *shows a playground OPQR. Points A, B and C are the position of the bench provided and A, B and C are collinear.*



Rajah 4
Diagram 4

Diberi bahawa nisbah jarak bangku, $AB : BC = 1 : 3$.
It is given the ratio of the distance of bench, $AB : BC = 1 : 3$.

(*a*) Cari
Find

(i) koordinat *A*,
the coordinates of A,

(ii) luas, dalam m^2, taman permainan *OPQR*.
the area, in m^2, *of the playground OPQR*.

[5 markah]
[5 *marks*]

(*b*) Laluan refleksologi dibina dengan keadaan jarak laluan dari bangku *C* ialah sentiasa 3 m. Cari persamaan kedudukan laluan itu.
Reflexology path were built such that the distance of the path from the bench C is always 3 m. *Find the equation of position of the path.*

[2 markah]

4	(*a*)	(i)	$\left(\frac{3x+11}{1+3}, \frac{3y+10}{1+3}\right) = (2,4)$ $\frac{3x+11}{4} = 2$ atau $\frac{3y+10}{1+3} = 4$ $x = -1 \qquad y = 2$ $A(-1,2)$	K1 N1
		(ii)	$\frac{1}{2}\begin{vmatrix} 0 & 15 & 14 & -5 & 0 \\ 0 & 1 & 18 & 3 & 0 \end{vmatrix}$ $\frac{1}{2}\lvert((0)(1) + (15)(18) + (14)(3) + (-5)(0)) - ((15)(0) + (14)(1)) + (-5)(18) + (0)(3))\rvert$ $\frac{1}{2}\lvert 388 \rvert$ 194	K2 N1
	(*b*)		$\sqrt{(x-11)^2 + (y-10)^2} = 3$ $(x-11)^2 + (y-10)^2 = 9$ $x^2 + y^2 - 22x - 20y + 212 = 0$	K1 N1

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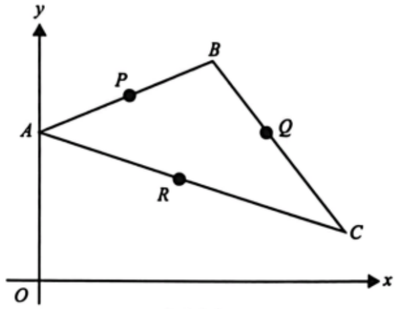
SELANGOR SET 2 (K2)

9 Penyelesaian secara lukisan berskala tidak diterima.
Solution by scale drawing is not accepted.

Rajah 9 menunjukkan segi tiga ABC. Titik-titik $P(3, 8)$, $Q(9, 6)$ dan $R(6, 4)$ masing-masing adalah titik tengah bagi garis lurus AB, BC dan AC.
Diagram 9 shows a triangle ABC. The points P(3, 8), Q(9, 6) and R(6, 4) are midpoints of the straight lines AB, BC and AC respectively.



Rajah 9
Diagram 9

$APQR$ membentuk sebuah segi empat selari. Garis lurus AB menyilang paksi–y di titik A dan persamaan garis lurus AB ialah $3y = 2x + 18$. Garis lurus AB dipanjangkan sehingga bersilang dengan pembahagi dua sama serenjang garis lurus AC pada titik M.
$APQR$ forms a parallelogram. The straight line AB intersect the y–axis at point A and the equation of straight line AB is $3y = 2x + 18$. Straight line AB is extended until it intersects with the perpendicular bisector of straight line AC at point M.

(*a*) Cari
Find

(i) persamaan pembahagi dua sama serenjang garis lurus AC,
the equation of the perpendicular bisector of straight line AC,

(ii) koordinat M.
coordinates of M.

[5 markah]
[5 *marks*]

(*b*) Jika garis lurus AQ dipanjangkan ke titik G dengan keadaan $AQ : QG = 2 : 3$, cari koordinat G.
If the straight line AQ is extended to a point G such that $AQ : QG = 2 : 3$, find the coordinates of G.

[2 markah]
[2 *marks*]

(*c*) Hitung luas segi tiga AGC.
Calculate the area of triangle AGC.

[3 markah]
[3 *marks*]

9	(a) (i)	Guna $m_1 \times m_2 = -1$ $-\frac{1}{3} \times m_2 = -1$ Guna $y - y_1 = m(x - x_1)$ $y - 4 = 3(x - 6)$ @ Guna $y = mx + c$ & selesaikan untuk c $4 = 3(6) + c, c = -14$ $y = 3x - 14$	K1 K1 N1
	(ii)	Selesaikan persamaan serentak $\frac{2}{3}x + 6$ dan $^{*}(3x - 14)$ $\left(\frac{60}{7}, \frac{82}{7}\right)$	K1 N1
	(b)	Guna rumus pembahagi tembereng $\frac{0(3)+2x}{5} = 9$ @ $\frac{6(3)+2y}{5} = 6$ $\left(\frac{45}{2}, 6\right)$	K1 N1
	(c)	$C(12, 2)$ Luas $AGC = \frac{1}{2}\left\|\left((0 \times 6) + \left(\frac{45}{2} \times 2\right) + (12 \times 6)\right) - \left(\left(6 \times \frac{45}{2}\right) + (6 \times 12) + (2 \times 0)\right)\right\|$ 45	P1 K1 N1

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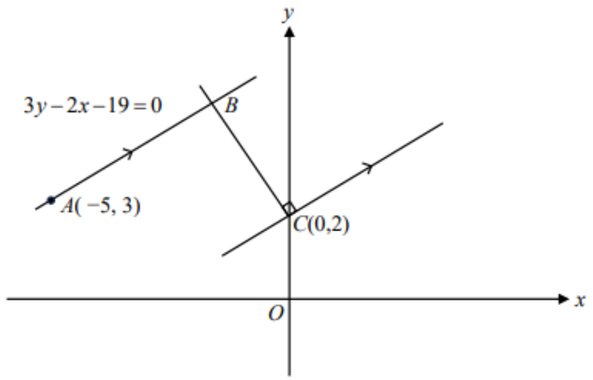
TERENGGANU (K2)

9 Rajah 4 menunjukkan garis lurus AB bersilang dengan garis lurus CB pada titik B.
Diagram 4 shows the straight line AB intersects the straight line CB at point B.



Rajah 4 / *Diagram 4*

Diberi persamaan garis lurus AB ialah $3y-2x-19=0$.
It is given that the equation of the straight line AB is $3y-2x-19=0$.

Cari / *Find*

(*a*) (i) persamaan garis lurus CB,
the equation of the straight line CB,
(ii) koordinat B.
the coordinates of B.

[5 *markah*]
[5 *marks*]

(*b*) Garis lurus CB dipanjangkan ke titik $D\left(-5,\frac{19}{2}\right)$ dengan keadaan $CB:CD=m:n$. Cari nisbah $m:n$. [3 *markah*]

The straight line CB is extended to point $D\left(-5,\frac{19}{2}\right)$ *such that* $CB:CD=m:n$. *Find the ratio of* $m:n$. [3 *marks*]

(*c*) Satu titik P bergerak dengan keadaan jaraknya dari titik B sentiasa 3 unit. Cari persamaan lokus bagi titik P. [2 *markah*]
A point P moves such that its distance from point B is always 3 units. Find the equation of the locus of point P. [2 *marks*]

9	(*a*) (i)	$\frac{2}{3}\times m_1=-1$	**K1**
		$2=-\frac{3}{2}(0)+c$ & selesaikan @ setara	
		ATAU $c=2$ (DILIHAT)	**K1**
		$y=-\frac{3}{2}x+2$	**N1**
	(ii)	$\frac{2}{3}x+\frac{19}{3}=-\frac{3}{2}x+2$ & selesaikan	**K1**
		$B(-2,5)$	**N1**
	(*b*)	$-2=\frac{(n-m)(0)+m(-5)}{(n-m)+m}$ @ $5=\frac{(n-m)(2)+m\left(\frac{19}{2}\right)}{(n-m)+m}$ @	**10**
		MENGGUNAKAN FORMULA JARAK DENGAN BETUL	**K1**
		Selesaikan $-2=\frac{(n-m)(0)+m(-5)}{(n-m)+m}$ @ $5=\frac{(n-m)(2)+m\left(\frac{19}{2}\right)}{(n-m)+m}$ @	
		MENCARI NISBAH JARAK YANG SAH	**K1**
		$m:n=2:5$	**N1**
	(*c*)	$\left[\sqrt{[x-(-2)]^2+(y-5)^2}=3\right]$	**K1**
		$x^2+y^2+4x-10y+20=0$	**N1**