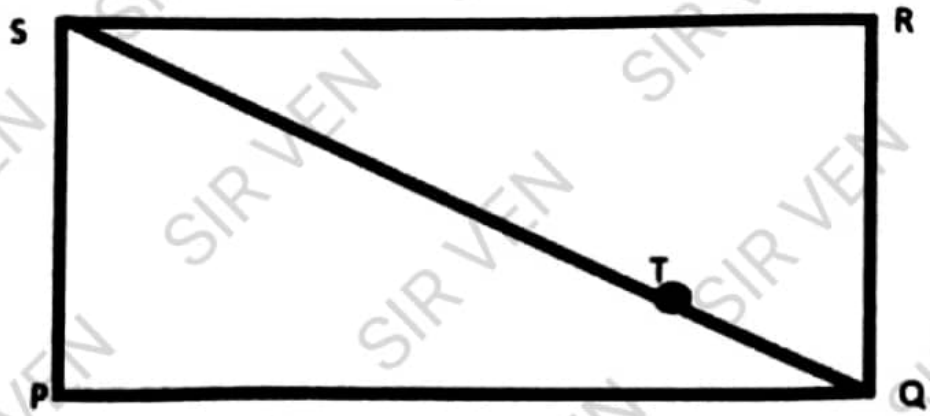
TRIAL NEGERI 2022 VECTOR ADD MATHS SPM

SIR VEN

Q1: PERLIS

Rajah 3 menunjukkan sebuah segiempat tepat PQRS. T ialah titik yang terletak pada QS dengan keadaan QS = 4QT.

Diagram 3 shows a rectangle PQRS. T is a point which lies on QS such that QS = 4QT.



Rajah 3/ *Diagram 3*

(a) Diberi $\overrightarrow{QP} = 15x$ dan $\overrightarrow{QS} = 15x + 7y$, ungkapkan vector yang berikut dalam sebutan x dan y.

Given that $\overrightarrow{QP} = 15x$ and $\overrightarrow{QS} = 15x + 7y$, express the following vectors in terms of x and y

(i) $\overrightarrow{QT}$

(ii) $\overrightarrow{PT}$

(b) Diberi garis lurus PT dipanjangkan ke titik U dengan keadaan $\overrightarrow{PU} = -9x + ky$. Cari nilai k.

Given that straight line PT is extended to the point U such that $\overrightarrow{PU} = -9x + ky$. Find the value k.

[7 markah/*7 marks*]

Jawapan/ *Answer* :

3

(a) Tulis hukum segitiga **K1**

$\overrightarrow{PT} = \overrightarrow{PQ} + \overrightarrow{QT}$

$\frac{15}{4}x + \frac{7}{4}y$ **N1** **N1** $\frac{-45}{4}x + \frac{7}{4}y$

(b) Guna $\overrightarrow{PU} = \lambda\overrightarrow{PT}$ **P1**

Samakan pekali x dan y **K1**

$\frac{45}{4}\lambda = 9$ atau $\frac{7}{4}\lambda = k$

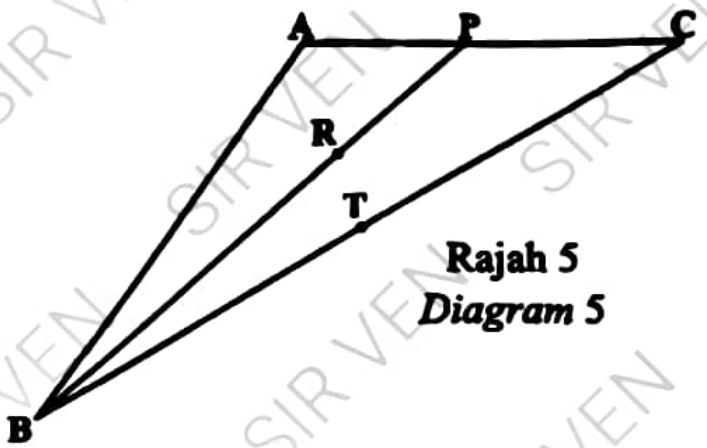
N1 $\lambda = \frac{4}{5}$

N1 $k = \frac{7}{5}$

Q2: YIK KELANTAN

Rajah 5 menunjukkan sebuah segi tiga *ABC*. Titik *R* terletak pada *BP* dan titik *T* terletak pada *BC*.

Diagram 5 shows a triangle ABC. Point R lies on BP and point T lies on BC.



Rajah 5

Diagram 5

Diberi bahawa, $\overrightarrow{AB} = 6\underset{\sim}{x}$, $\overrightarrow{AC} = 4\underset{\sim}{y}$, $3AP=PC$ dan titik *T* adalah titik tengah bagi *BC*.

It is given that $\overrightarrow{AB} = 6\underset{\sim}{x}$, $\overrightarrow{AC} = 4\underset{\sim}{y}$, $3AP=PC$ and point T is the midpoints of BC.

(a) Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan $\underset{\sim}{y}$

Express in terms of $\underset{\sim}{x}$ and $\underset{\sim}{y}$

(i) $\overrightarrow{BC}$,

(ii) $\overrightarrow{AT}$.

[4 *markah*]

[4 *marks*]

(b) Diberi bahawa $\overrightarrow{AR} = m\overrightarrow{AT}$ dan $\overrightarrow{AR} = \overrightarrow{AP} - n\overrightarrow{BP}$, dengan keadaan *m* dan *n* ialah pemalar.

It is given that $\overrightarrow{AR} = m\overrightarrow{AT}$ and $\overrightarrow{AR} = \overrightarrow{AP} - n\overrightarrow{BP}$, where m and n are constants.

Cari nilai *m* dan nilai *n*.

Find the values of m and of n.

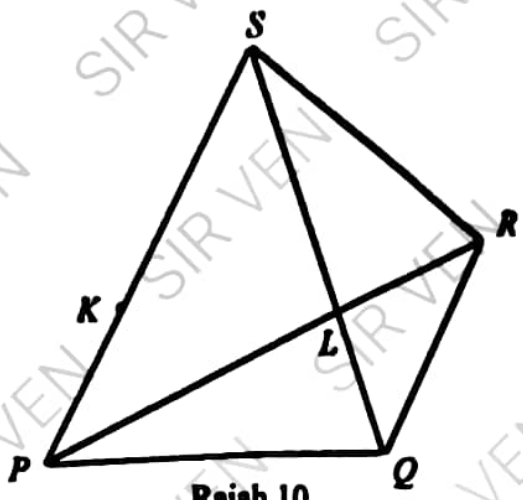
[6 *markah*]

[6 *marks*]

Q3: SAMK (ASRAMA)

Rajah 10 menunjukkan sebuah sisi empat $PQRS$.

Diagram 10 shows a quadrilateral $PQRS$.



Rajah 10

Diagram 10

Diberi bahawa $\overrightarrow{PK} = 2\underset{\sim}{x}$, $\overrightarrow{PQ} = 3\underset{\sim}{y}$, $PK : PS = 1:3$ dan $2QL = LS$.

It is given that $\overrightarrow{PK} = 2\underset{\sim}{x}$, $\overrightarrow{PQ} = 3\underset{\sim}{y}$, $PK : PS = 1:3$ and $2QL = LS$.

(a) Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan/ atau $\underset{\sim}{y}$:

Express in terms of $\underset{\sim}{x}$ and / or $\underset{\sim}{y}$:

(i) $\overrightarrow{SQ}$

(ii) $\overrightarrow{PL}$

[3 markah]

[3 marks]

(b) Diberi bahawa $\overrightarrow{SR} = 2a\underset{\sim}{y} - 2\underset{\sim}{x}$ dan $\overrightarrow{PR} = \frac{1}{b}\overrightarrow{PL}$, dengan keadaan a dan b ialah pemalar.

Given that $\overrightarrow{SR} = 2a\underset{\sim}{y} - 2\underset{\sim}{x}$ and $\overrightarrow{PR} = \frac{1}{b}\overrightarrow{PL}$, such that a and b are constants.

Cari

Find

(i) $\overrightarrow{SR}$ dalam sebutan b, $\underset{\sim}{x}$ dan $\underset{\sim}{y}$,

$\overrightarrow{SR}$ *in terms of* b, $\underset{\sim}{x}$ *and* $\underset{\sim}{y}$,

(ii) nilai a dan b.

the value of a and of b.

[5 markah]

[5 marks]

(c) Diberi luas segi tiga PQS adalah 120 unit^2, dan jarak serenjang dari Q ke PS ialah 5 unit, cari $|\underset{\sim}{x}|$.

Given the area of PQS is 120 unit^2, and the perpendicular distance from Q to PS is 5 unit, find $|\underset{\sim}{x}|$.

[2 markah]

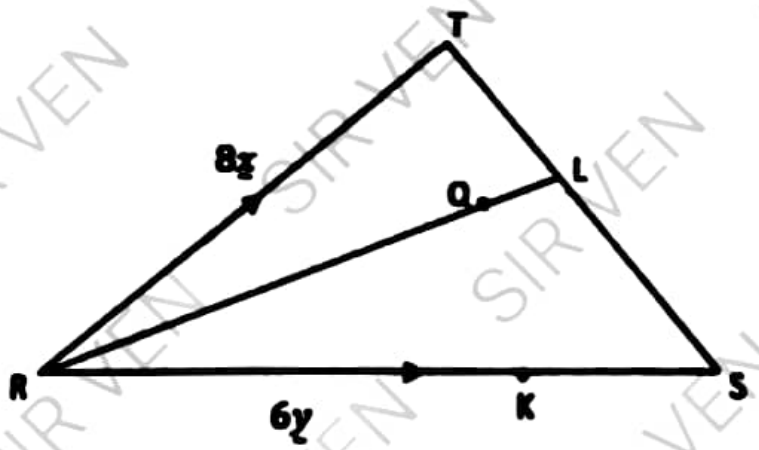
[2 marks]

)(a)(i)	$\overrightarrow{SQ} = -6\underset{\sim}{x} + 3\underset{\sim}{y}$
(ii)	$\overrightarrow{PL} = 3\underset{\sim}{y} + \frac{1}{3}(6\underset{\sim}{x} - 3\underset{\sim}{y})$
	$\overrightarrow{PL} = 2\underset{\sim}{x} + 2\underset{\sim}{y}$
10	$\overrightarrow{PR} = \frac{1}{b}(2\underset{\sim}{x} + 2\underset{\sim}{y})$
(b)(i)	$\overrightarrow{PR} = \frac{2}{b}\underset{\sim}{x} + \frac{2}{b}\underset{\sim}{y}$
	$\overrightarrow{SR} = \overrightarrow{SP} + \overrightarrow{PR}$
	$\overrightarrow{SR} = (-6 + \frac{2}{b})\underset{\sim}{x} + \frac{2}{b}\underset{\sim}{y}$

(b)(ii)	Perbandingan & menyelesaikan persamaan serentak *Comparison & solving using simultaneous equation* $-6 + \frac{2}{b} = -2$ or $2a = \frac{2}{b}$ $a = 2$ $b = \frac{1}{2}$
0 (c)	$\frac{1}{2}(6\lvert\underset{\sim}{x}\rvert)(5) = 120$ $\lvert\underset{\sim}{x}\rvert = 8\,unit$

Q4: MELAKA

Rajah 2 menunjukkan sebuah segi tiga RST
Diagram 2 shows a triangle RST



Rajah 2 / *Diagram 2*

Titik L terletak di atas garis lurus TS dengan keadaan TS = 3TL. Diberi bahawa $\overrightarrow{RT} = 8\underset{\sim}{x}$, $\overrightarrow{RK} = 6\underset{\sim}{y}$, $\overrightarrow{KS} = 4\underset{\sim}{y}$ dan $\overrightarrow{RQ} = n\overrightarrow{RL}$

Point L lies on the straight line TS such that TS = 3TL. It is given that $\overrightarrow{RT} = 8\underset{\sim}{x}$, $\overrightarrow{RK} = 6\underset{\sim}{y}$, $\overrightarrow{KS} = 4\underset{\sim}{y}$ and $\overrightarrow{RQ} = n\overrightarrow{RL}$

(a) Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan $\underset{\sim}{y}$ bagi
Express in terms of $\underset{\sim}{x}$ and $\underset{\sim}{y}$ of

(i) $\overrightarrow{TS}$ **[3 markah]**

(ii) $\overrightarrow{TK}$ **[3 *marks*]**

(b) (i) Ungkapkan $\overrightarrow{TQ}$ dalam sebutan n, $\underset{\sim}{x}$ dan $\underset{\sim}{y}$. **[2 markah]**
Express $\overrightarrow{TQ}$ in terms of n, $\underset{\sim}{x}$ and $\underset{\sim}{y}$. **[2 *marks*]**

(ii) Seterusnya, cari nilai bagi n jika titik - titik T, Q dan K adalah segaris. **[3 markah]**

Hence, find the value of n if point T, Q and K are collinear. **[3 *marks*]**

(a) i. $\overrightarrow{TS} = \overrightarrow{TR} + \overrightarrow{RS}$ or $\overrightarrow{TK} = \overrightarrow{TR} + \overrightarrow{RK}$

$\overrightarrow{TS} = -8\underset{\sim}{x} + 10\underset{\sim}{y}$

ii. $\overrightarrow{TK} = -8\underset{\sim}{x} + 6\underset{\sim}{y}$

(b) i. $\overrightarrow{TQ} = \overrightarrow{TR} + \overrightarrow{RQ}$

$= -8\underset{\sim}{x} + n(\overrightarrow{RL})$

$= -8\underset{\sim}{x} + n(\overrightarrow{RT} + \overrightarrow{TL})$

$= -8\underset{\sim}{x} + n(8\underset{\sim}{x} + \frac{1}{3}(-8\underset{\sim}{x} + 10\underset{\sim}{y}))$

$= -8\underset{\sim}{x} + \frac{16}{3}n\underset{\sim}{x} + \frac{10}{3}n\underset{\sim}{y}$

$\overrightarrow{TQ} = \left[\frac{16}{3}n - 8\right]\underset{\sim}{x} + \frac{10}{3}n\underset{\sim}{y}$

ii.

$\left[\frac{16n}{3} - 8\right]\underset{\sim}{x} + \frac{10}{3}n\underset{\sim}{y} = \lambda[-8\underset{\sim}{x} + 6\underset{\sim}{y}]$ or equivalent

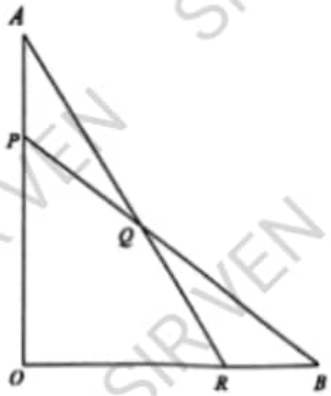
$-8\lambda = \frac{16n}{3} - 8$ or $\frac{10n}{3} = 6\lambda$

$n = \frac{9}{11}$

Q5: KELANTAN MMIS SET 1

Rajah 4 menunjukkan segi tiga OAR dan segi tiga OPB. Titik P dan R masing-masing terletak pada garis lurus OA dan garis lurus OB. Garis lurus AR dan garis lurus BP bersilang pada titik Q.

Diagram 4 shows triangle OAR and triangle OPB. The point P and R lies on straight line OA and straight line OB respectively. The straight line AR intersects the straight line BP at the point Q.



Rajah 4

Diagram 4

Diberi bahawa $\overrightarrow{OA}=12\underset{\sim}{u}$, $\overrightarrow{OB}=10\underset{\sim}{v}$, $\overrightarrow{OA}=4\overrightarrow{PA}$ dan $\overrightarrow{OR}=2\overrightarrow{RB}$.

It is given that $\overrightarrow{OA}=12\underset{\sim}{u}$, $\overrightarrow{OB}=10\underset{\sim}{v}$, $\overrightarrow{OA}=4\overrightarrow{PA}$ and $\overrightarrow{OR}=2\overrightarrow{RB}$.

(*a*) Ungkapkan dalam sebutan $\underset{\sim}{u}$ dan $\underset{\sim}{v}$:

Express in terms of $\underset{\sim}{u}$ and $\underset{\sim}{v}$:

(i) $\overrightarrow{BP}$

(ii) $\overrightarrow{AR}$

[3 markah]

[3 marks]

(*b*) Diberi bahawa $\overrightarrow{OQ}=m\overrightarrow{AR}$, dan $\overrightarrow{BQ}=n\overrightarrow{BP}$, dengan keadaan m dan n ialah pemalar. Ungkapkan $\overrightarrow{OQ}$ dalam sebutan

It is given that $\overrightarrow{OQ}=m\overrightarrow{AR}$ and $\overrightarrow{BQ}=n\overrightarrow{BP}$, where m and n are constants.

Express $\overrightarrow{OQ}$ in terms of

(i) m, $\underset{\sim}{u}$ dan $\underset{\sim}{v}$.

m, $\underset{\sim}{u}$ and $\underset{\sim}{v}$.

(ii) n, $\underset{\sim}{u}$ dan $\underset{\sim}{v}$.

n, $\underset{\sim}{u}$ and $\underset{\sim}{v}$.

Seterusnya, cari nilai m dan nilai n. [5 markah]

Hence, find the value of m and of n. [5 marks]

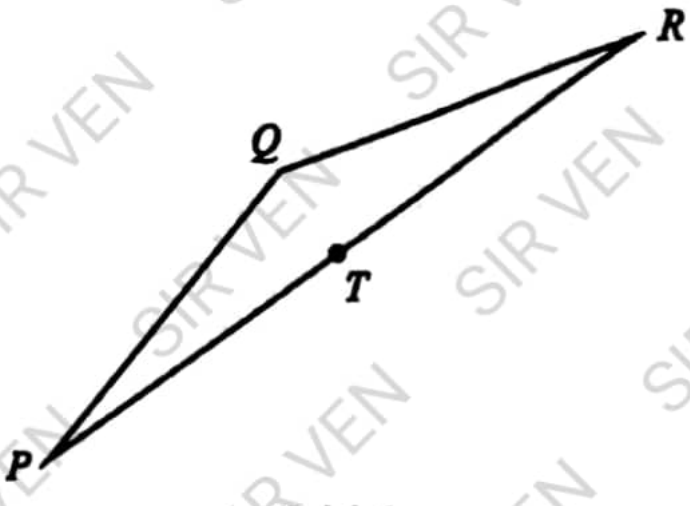
(*c*) Diberi $|\underset{\sim}{u}|=3$ unit, $|\underset{\sim}{v}|=2$ unit dan $\angle AOB=90°$, cari $|\overrightarrow{AB}|$. [2 markah]

Given that $|\underset{\sim}{u}|=3$ unit, $|\underset{\sim}{v}|=2$ unit and $\angle AOB=90°$, find $|\overrightarrow{AB}|$. [2 marks]

9(a)	$\overrightarrow{BP} = \overrightarrow{BO} + \overrightarrow{OP}$ or $\overrightarrow{AR} = \overrightarrow{AO} + \overrightarrow{OR}$
	$\overrightarrow{BP} = -10\underset{\sim}{v} + 9\underset{\sim}{u}$
	$\overrightarrow{AR} = -12\underset{\sim}{u} + \frac{20}{3}\underset{\sim}{v}$
(b)(i)	$\overrightarrow{OQ} = m\left(-12\underset{\sim}{u} + \frac{20}{3}\underset{\sim}{v}\right)$
(ii)	$\overrightarrow{OQ} = 9n\underset{\sim}{u} + (10 - 10n)\underset{\sim}{v}$
	$-12m\underset{\sim}{u} + \frac{20}{3}m\underset{\sim}{v} = 9n\underset{\sim}{u} + (10 - 10n)\underset{\sim}{v}$
	$-12m = 9n$ or $\frac{20}{3}m = 10 - 10n$
	$m = -\frac{3}{2}$, $n = 2$
(c)	$\left\|\overrightarrow{AB}\right\| = \sqrt{(-12(3))^2 + (10(2))^2}$
	$= 41.18 // 4\sqrt{106}$

Q6: SELANGOR (SET 2)

Rajah 1 menunjukkan sebuah segi tiga *PQR*. *T* ialah titik tengah garis lurus *PR*.
***Diagram 1** shows a triangle PQR. T is the midpoint of the straight line PR.*



Rajah 1
Diagram 1

Diberi bahawa koordinat P ialah (2, –1), $\overrightarrow{PQ} = \begin{pmatrix} 4 \\ 3 \end{pmatrix}$ dan $\overrightarrow{TR} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$.

It is given that coordinates P is (2, –1), $\overrightarrow{PQ} = \begin{pmatrix} 4 \\ 3 \end{pmatrix}$ and $\overrightarrow{TR} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$.

(*a*) Tunjukkan koordinat bagi titik:
Show that the coordinates of the point:

(i) ***Q*** **ialah (6, 2).**
***Q is* (6, 2).**

(ii) ***R*** **ialah (12, 3).**
***R is* (12, 3).**

[4 markah]
[4 *marks*]

(*b*) Tentukan vektor unit dalam arah vektor $\overrightarrow{QT}$.
Berikan jawapan anda dalam bentuk surd yang teringkas.
Determine the unit vector in the direction of vector $\overrightarrow{QT}$.
Give your answer in the simplest surd form.

[4 markah]
[4 *marks*]

(a) (i) $\overrightarrow{OQ} = \overrightarrow{OP} + \overrightarrow{PQ}$ atau $\overrightarrow{OP} = 2\underline{i} - \underline{j}$ atau $\overrightarrow{OP} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$

$= (2\underline{i} - \underline{j}) + (4\underline{i} + 3\underline{j})$ atau $\begin{pmatrix} 2 \\ -1 \end{pmatrix} + \begin{pmatrix} 4 \\ 3 \end{pmatrix}$

(6, 2)

(ii) $\overrightarrow{OR} = \overrightarrow{OP} + 2\overrightarrow{TR}$

$= (2\underline{i} - \underline{j}) + 2(5\underline{i} + 2\underline{j})$ atau $\begin{pmatrix} 2 \\ -1 \end{pmatrix} + 2\begin{pmatrix} 5 \\ 2 \end{pmatrix}$

(12, 3)

(b) $\overrightarrow{QT} = (6\underline{i} + \underline{j}) + (-5\underline{i} - 2\underline{j})$ atau $\begin{pmatrix} 6 \\ 1 \end{pmatrix} + \begin{pmatrix} -5 \\ -2 \end{pmatrix}$ ATAU $\begin{pmatrix} -4 \\ -3 \end{pmatrix} + \begin{pmatrix} 5 \\ 2 \end{pmatrix}$

$= \underline{i} - \underline{j}$ atau $= \begin{pmatrix} 1 \\ -1 \end{pmatrix}$

$|\overrightarrow{QT}| = \sqrt{(1)^2 + (-1)^2}$

$= \sqrt{2}$

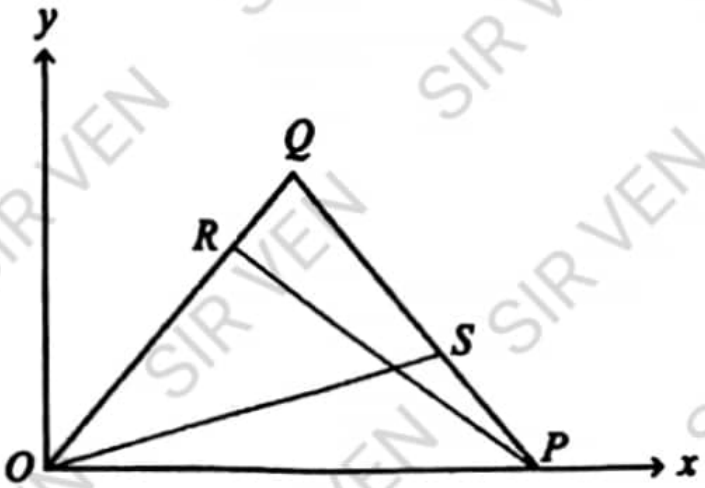
$\frac{1}{\sqrt{2}}(\underline{i} - \underline{j})$ ATAU $\frac{1}{\sqrt{2}}\begin{pmatrix} 1 \\ -1 \end{pmatrix}$

$\frac{\sqrt{2}}{2}\underline{i} - \frac{\sqrt{2}}{2}\underline{j}$ ATAU $\begin{pmatrix} \frac{\sqrt{2}}{2} \\ -\frac{\sqrt{2}}{2} \end{pmatrix}$

Q7: SELANGOR (SET 1)

Rajah 1 menunjukkan sebuah segi tiga OPQ di satah Cartes dan O ialah asalan. Diberi R dan S masing-masing berada atas garis lurus OQ dan PQ di mana $OR : RQ = 2 : 1$ dan $QS = 5SP$.

Diagram 1 shows a triangle OPQ on a Cartesian plane and O is the origin. Given that R and S lie on the straight line OQ and PQ respectively where $OR : RQ = 2 : 1$ *and* $QS = 5SP$.



Rajah 1
Diagram 1

Diberi bahawa $\overrightarrow{OP} = 6\underline{i}$ dan $\overrightarrow{OR} = 2\underline{i} + 4\underline{j}$.

It is given that $\overrightarrow{OP} = 6\underline{i}$ *and* $\overrightarrow{OR} = 2\underline{i} + 4\underline{j}$.

(a) Cari koordinat bagi titik:
Find the coordinates of the point:
(i) Q,
(ii) S.

[4 markah]
[4 marks]

(b) Tentukan vektor unit dalam arah vektor $\overrightarrow{RS}$.
Berikan jawapan anda dalam bentuk surd yang teringkas.
Determine the unit vector in the direction of vector $\overrightarrow{RS}$.
Give your answer in the simplest surd form.

[4 markah]
[4 marks]

(a) (i) $\frac{3}{2}\left(2\underline{i}+4\underline{j}\right)$ ATAU $\frac{3}{2}\begin{pmatrix}2\\4\end{pmatrix}$

$3\underline{i}+6\underline{j}$ ATAU $\begin{pmatrix}3\\6\end{pmatrix}$

$(3, 6)$

(ii) $\overrightarrow{OS}=\overrightarrow{OP}+\frac{1}{6}\overrightarrow{PQ}$ ATAU $\overrightarrow{OS}=\overrightarrow{OQ}+\frac{5}{6}\overrightarrow{QP}$

$6\underline{i}+\frac{1}{6}\left(-6\underline{i}+\left(3\underline{i}+6\underline{j}\right)\right)$ ATAU $\begin{pmatrix}6\\0\end{pmatrix}+\frac{1}{6}\begin{pmatrix}-6+3\\6\end{pmatrix}$

$\left(3\underline{i}+6\underline{j}\right)+\frac{5}{6}\left(-3\underline{i}-6\underline{j}+6\underline{i}\right)$ ATAU $\begin{pmatrix}3\\6\end{pmatrix}+\frac{5}{6}\begin{pmatrix}-3+6\\-6\end{pmatrix}$

$\left(\frac{11}{2}, 1\right)$

(b) $-2\underline{i}-4\underline{j}+\frac{11}{2}\underline{i}+\underline{j}$ ATAU $\begin{pmatrix}-2\\-4\end{pmatrix}+\begin{pmatrix}\frac{11}{2}\\1\end{pmatrix}$

$\frac{7}{2}\underline{i}-3\underline{j}$ ATAU $\begin{pmatrix}\frac{7}{2}\\-3\end{pmatrix}$

$\sqrt{\left(\frac{7}{2}\right)^2+(-3)^2}$

$\frac{\sqrt{85}}{2}$

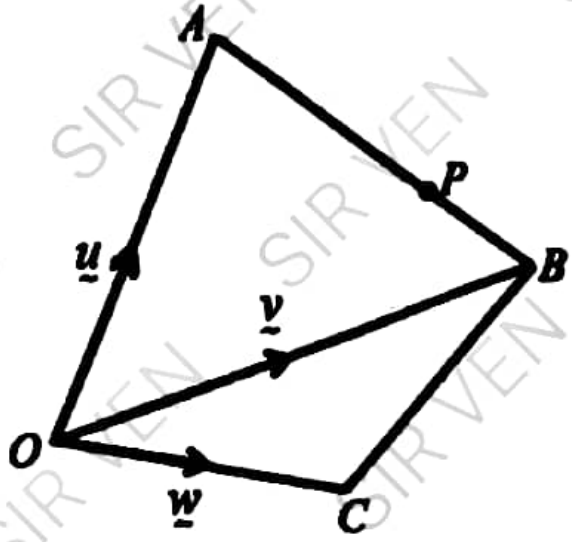
$\frac{1}{\frac{\sqrt{85}}{2}}\left(\frac{7}{2}\underline{i}-3\underline{j}\right)$ ATAU $\frac{1}{\frac{\sqrt{85}}{2}}\begin{pmatrix}\frac{7}{2}\\-3\end{pmatrix}$

$\frac{7\sqrt{85}}{85}\underline{i}-\frac{6\sqrt{85}}{85}\underline{j}$ ATAU $\begin{pmatrix}\frac{7\sqrt{85}}{85}\\-\frac{6\sqrt{85}}{85}\end{pmatrix}$

Q8: KEDAH

Rajah 7 menunjukkan sisi empat $OABC$ dengan keadaan O ialah asalan. Titik P terletak di atas garis AB dengan keadaan $AP:AB=3:4$ manakala titik Q terletak di atas garis OC dengan keadaan $OQ:OC=2:3$.

Diagram 7 shows that quadrilateral of OABC such as O is origin. The point P lies on AB such that $AP:AB=3:4$ while the point Q lies on the line OC such that $OQ:OC=2:3$.



Rajah 7
Diagram 7

Ungkapkan,
Express,

(a) **(i)** $\overrightarrow{AP}$ **dalam sebutan** $\underset{\sim}{u}$ **dan** $\underset{\sim}{v}$ **.Seterusnya tunjukkan bahawa** $\overrightarrow{OP}=\frac{1}{4}(\underset{\sim}{u}+3\underset{\sim}{v})$.

$\overrightarrow{AP}$ *in terms of* $\underset{\sim}{u}$ *and* $\underset{\sim}{v}$ *.Hence show that* $\overrightarrow{OP}=\frac{1}{4}(\underset{\sim}{u}+3\underset{\sim}{v})$.

(ii) $\overrightarrow{PQ}$ **dalam sebutan** $\underset{\sim}{u}$, $\underset{\sim}{v}$ **dan** $\underset{\sim}{w}$.

$\overrightarrow{PQ}$ *in terms of* $\underset{\sim}{u}$, $\underset{\sim}{v}$ *and* $\underset{\sim}{w}$.

[4 markah / *marks*]

(b) **Diberi** $5\overrightarrow{PQ}=6\overrightarrow{BC}$, **cari** $\underset{\sim}{w}$ **dalam sebutan** $\underset{\sim}{u}$ **dan** $\underset{\sim}{v}$.

Given that $5\overrightarrow{PQ}=6\overrightarrow{BC}$, *find* $\underset{\sim}{w}$ *in terms of* $\underset{\sim}{u}$ *and* $\underset{\sim}{v}$.

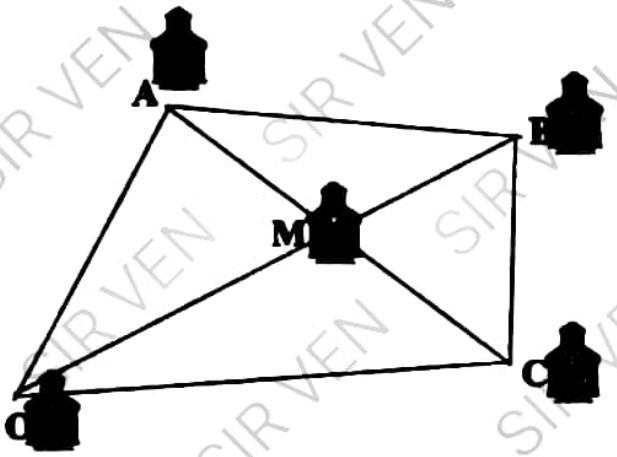
[3 markah / *marks*]

(a)(i)	$\overrightarrow{AP} = \frac{3}{4}\left(\overrightarrow{AO} + \overrightarrow{OB}\right)$ tulis Hukum K1 $\overrightarrow{AP} = -\frac{3}{4}\underset{\sim}{u} + \frac{3}{4}\underset{\sim}{v}$ $\overrightarrow{OP} = \underset{\sim}{u} + \frac{3}{4}\underset{\sim}{v} - \frac{3}{4}\underset{\sim}{u}$ N1 $\overrightarrow{OP} = \frac{1}{4}\left(\underset{\sim}{u} + 3\underset{\sim}{v}\right)$ Terbukti N1
(a)(ii)	$\overrightarrow{PQ} = -\frac{1}{4}\underset{\sim}{u} - \frac{3}{4}\underset{\sim}{v} + \frac{2}{3}\underset{\sim}{w}$ N1
(b)	$\overrightarrow{BC} = \overrightarrow{BA} + \overrightarrow{AO} + \overrightarrow{OC}$ Tulis hukum K1 $-\frac{1}{4}\underset{\sim}{u} - \frac{3}{4}\underset{\sim}{v} + \frac{2}{3}\underset{\sim}{w} = \frac{6}{5}\left(-\underset{\sim}{v} + \underset{\sim}{w}\right)$ K1 $\underset{\sim}{w} = \frac{27\underset{\sim}{v} - 15\underset{\sim}{u}}{32}$ N1

Q9: PAHANG

Rajah 1 di bawah menunjukkan jalan bagi sekolah-sekolah di sebuah bandar yang berbentuk sisi empat OABC.

The diagram 1 below shows roads of schools in a town area that form a rectangle OABC.



Rajah 1/*Diagram 1*

Sekolah M terletak di tengah-tengah sekolah A dan C dan OM : OB = 2 : 3. Diberi $\overrightarrow{OA} = 3\underset{\sim}{x} + 2\underset{\sim}{y}$, $\overrightarrow{OC} = 9\underset{\sim}{x} + 2\underset{\sim}{y}$ dan $\overrightarrow{CB} = 3r\underset{\sim}{y}$, dengan r ialah pemalar,

School M is allocated at the middle of schools A and C and OM : OB = 2 : 3. Given $\overrightarrow{OA} = 3\underset{\sim}{x} + 2\underset{\sim}{y}$, $\overrightarrow{OC} = 9\underset{\sim}{x} + 2\underset{\sim}{y}$ and $\overrightarrow{CB} = 3r\underset{\sim}{y}$, where r is constant,

(a) ungkapkan dalam sebuatan $\underset{\sim}{x}$ dan/atau $\underset{\sim}{y}$,

express in terms of $\underset{\sim}{x}$ and/or $\underset{\sim}{y}$,

(i) $\overrightarrow{AC}$

(ii) $\overrightarrow{OM}$ **[3 markah/*marks*]**

(b) ungkapkan $\overrightarrow{OB}$ dalam sebutan

express $\overrightarrow{OB}$ in terms of

(i) $\underset{\sim}{x}$ dan $\underset{\sim}{y}$

(ii) $\underset{\sim}{x}$, $\underset{\sim}{y}$ dan r.

Seterusnya, cari nilai r.

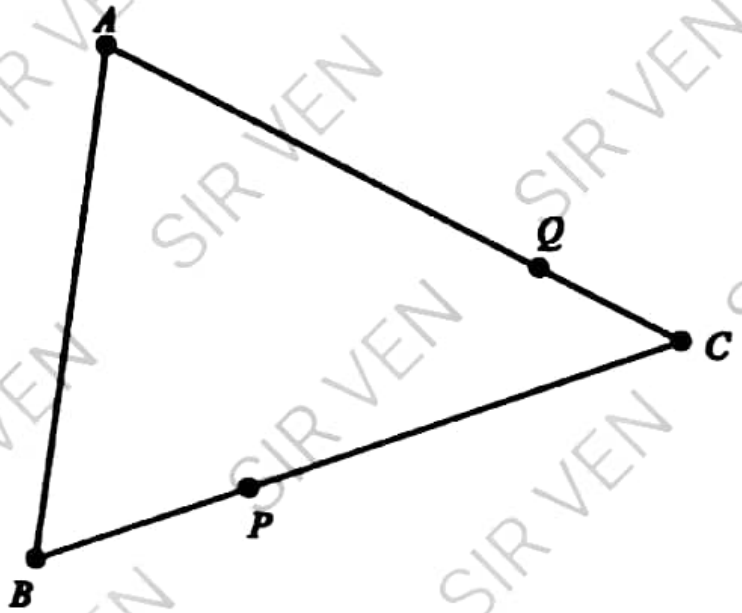
Hence, find the value of r. **[5 markah /*marks*]**

(a)(i)	$\overrightarrow{AC} = \overrightarrow{AO} + \overrightarrow{OC}$ $= -3\underline{x} - 2\underline{y} + 9\underline{x} + 2\underline{y}$ $= 6\underline{x}$	N1
(a)(ii)	$\overrightarrow{OM} = \overrightarrow{OA} + \overrightarrow{AM}$ $= \overrightarrow{OA} + \frac{1}{2}\overrightarrow{AC}$ $= 3\underline{x} + 2\underline{y} + \frac{1}{2}(6\underline{x})$ $= 6\underline{x} + 2\underline{y}$	K1 N1
(b)(i)	$\overrightarrow{OB} = \frac{3}{2}\overrightarrow{OM}$ $= \frac{3}{2}(6\underline{x} + 2y)$ $= 9\underline{x} + 3\underline{y}$	K1 N1
(b)(ii)	$\overrightarrow{OB} = \overrightarrow{OC} + \overrightarrow{CB}$ $= 9\underline{x} + 2\underline{y} + 3r\underline{y}$ $= 9\underline{x} + (2 + 3r)\underline{y}$ With compare, $2+3r = 3$ $r = \frac{1}{3}$	K1 K1 N1

Q10: PERAK

Rajah 1 menunjukkan sebuah segi tiga *ABC*. Titik *P* and *Q* terletak pada *BC* dan *AC* masing-masing.

Diagram* 1 *shows a triangle ABC. Points P and Q lie on BC and AC respectively.



Rajah 1

***Diagram* 1**

Diberi $\overrightarrow{BP} = 4\underset{\sim}{x}$, $\overrightarrow{BA} = 20\underset{\sim}{y}$, $BP : PC = 1 : 2$ dan $AQ : AC = 3 : n$, dengan keadaan *n* ialah suatu pemalar.

It is given $\overrightarrow{BP} = 4\underset{\sim}{x}$, $\overrightarrow{BA} = 20\underset{\sim}{y}$, $BP : PC = 1 : 2$ ***and*** $AQ : AC = 3 : n$, ***where n is a constant.***

(*a*) Cari nilai *n* jika $\overrightarrow{CQ} = -3\underset{\sim}{x} + 5\underset{\sim}{y}$. **[3 *markah*]**

Find the value of n if $\overrightarrow{CQ} = -3\underset{\sim}{x} + 5\underset{\sim}{y}$. **[3 *marks*]**

(*b*) Diberi $\underset{\sim}{x} = 3\underset{\sim}{i}$ dan $\underset{\sim}{y} = \underset{\sim}{i} - \frac{3}{5}\underset{\sim}{j}$, cari vektor unit dalam arah $\overrightarrow{CA}$. **[3 *markah*]**

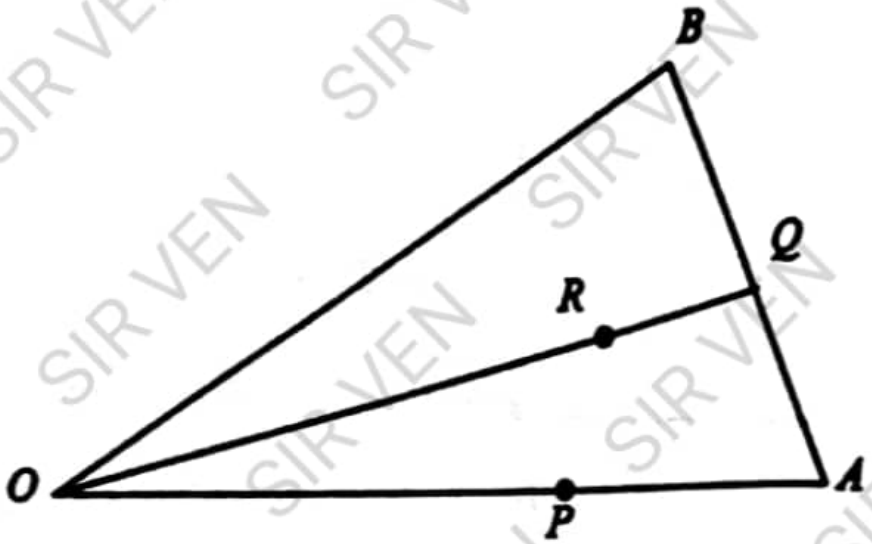
Given $\underset{\sim}{x} = 3\underset{\sim}{i}$ ***and*** $\underset{\sim}{y} = \underset{\sim}{i} - \frac{3}{5}\underset{\sim}{j}$, ***find the unit vector in the direction*** $\overrightarrow{CA}$. **[3 *marks*]**

1(a)	$\overrightarrow{CB}+\overrightarrow{BA}$ atau $\overrightarrow{AB}+\overrightarrow{BC}$ $\frac{n-3}{n}\left(-12\underset{\sim}{x}+20\underset{\sim}{y}\right)=-3\underset{\sim}{x}+5\underset{\sim}{y}$ **dan** perbandingan salah komponen dilakukan 4 (atau $n=4$)
(b)	$-12\left(3\underset{\sim}{i}\right)+20\left(\underset{\sim}{i}-\frac{3}{5}\underset{\sim}{j}\right)$ $\frac{-16\underset{\sim}{i}-12\underset{\sim}{j}}{\sqrt{(-16)^2+(-12)^2}}$ $-\frac{4}{5}\underset{\sim}{i}-\frac{3}{5}\underset{\sim}{j}$

Q11: NEGERI SEMBILAN

Dalam Rajah 5, OAB ialah satu segitiga, $OP = \frac{2}{3}OA$, $AB = 2AQ$, dan $OR = \frac{4}{5}OQ$.
Diberi bahawa $\overrightarrow{OA} = 9\underline{x}$ dan $\overrightarrow{OB} = 4\underline{y}$.

In Diagram 5, OAB is a triangle, $OP = \frac{2}{3}OA$, $AB = 2AQ$, and $OR = \frac{4}{5}OQ$.
Given that $\overrightarrow{OA} = 9\underline{x}$ and $\overrightarrow{OB} = 4\underline{y}$.



Rajah 5
Diagram 5

(a) Ungkapkan, dalam sebutan $\underline{x}$ dan/atau $\underline{y}$, **[3 markah]**
Express, in terms of $\underline{x}$ and/or $\underline{y}$, **[3 marks]**

(i) $\overrightarrow{PB}$,
(ii) $\overrightarrow{OQ}$.

(b) Seterusnya, buktikan bahawa titik-titik P, R dan B adalah segaris. **[4 markah]**
Hence, prove that points P, R and B are collinear. **[4 marks]**

(c) Diberi luas ΔPAB ialah 12 cm^2. Cari luas ΔOAB. **[2 markah]**
Given the area of ΔPAB is 12 cm^2. Find the area of ΔOAB. **[2 marks]**

(a) $\overrightarrow{PB} = \overrightarrow{PO} + \overrightarrow{OB}$ atau $\overrightarrow{PB} = \overrightarrow{PA} + \overrightarrow{AB}$ atau $\overrightarrow{OQ} = \overrightarrow{OA} + \overrightarrow{AQ}$ atau setara

(i) $\overrightarrow{PB} = -6\underline{x} + 4\underline{y}$

(ii) $\overrightarrow{OQ} = \frac{9}{2}\underline{x} + 2\underline{y}$

(b) $\overrightarrow{PR} = -\frac{12}{5}\underline{x} + \frac{8}{5}\underline{y}$ atau setara

Bandingkan pekali $\underline{x}$ atau $\underline{y}$:

$-\frac{12}{5} = -6\lambda$ atau $\frac{8}{5} = 4\lambda$ atau setara

$\lambda = \frac{2}{5}$ atau setara

$\overrightarrow{PR} = \frac{2}{5}\overrightarrow{PB}$ atau setara

(c)

$\frac{1}{2}\lvert 3\underline{x}\rvert h = 12$ ATAU	$\frac{1}{2}(3PA)h$ ATAU	$\frac{OAB}{PAB} = \frac{3}{1}$
$\frac{1}{2}\lvert 9\underline{x}\rvert\left(\frac{8}{\lvert\underline{x}\rvert}\right)$	3×12	$OAB = 3(12)$
36	36	36

Q12: KELANTAN

Titik A dan titik B mempunyai vektor kedudukan $\underset{\sim}{a}$ dan $\underset{\sim}{b}$ masing-masing relatif kepada titik O. Diberi L ialah titik tengah $\overline{OA}$ dan M ialah titik pada garis $\overline{OB}$ yang dipanjangkan dengan keadaan $\overline{OM} = 3\overline{OB}$. P ialah titik pada $\overline{LM}$ dengan keadaan $\overline{LP} = k\overline{LM}$.

Points A and B have position vectors $\underset{\sim}{a}$ and $\underset{\sim}{b}$ respectively relative to point O. Given that L is a midpoint of $\overline{OA}$ and M is the point on $\overline{OB}$ produced such that $\overline{OM} = 3\overline{OB}$. P is the point on $\overline{LM}$ such that $\overline{LP} = k\overline{LM}$.

(a) Ungkapkan $\overline{LM}$ dalam sebutan $\underset{\sim}{a}$ dan $\underset{\sim}{b}$ [2 markah]

Express $\overline{LM}$ in terms of $\underset{\sim}{a}$ and $\underset{\sim}{b}$ [2 marks]

(b) Ungkapkan $\overline{AP}$ dalam sebutan $\underset{\sim}{a}$, $\underset{\sim}{b}$ dan k [2 markah]

Express $\overline{AP}$ in terms of $\underset{\sim}{a}$, $\underset{\sim}{b}$ and k [2 marks]

(c) Jika A, P dan B ialah segaris, cari

If A, P and B are collinear, find

i). k

ii). $\dfrac{\overline{AP}}{\overline{PB}}$

[6 markah]

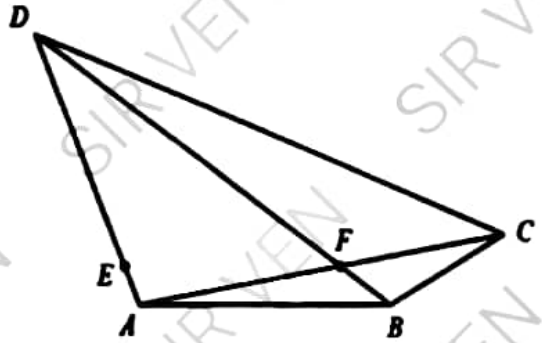
[6 marks]

9 (a)	$LM = LO + OM$ $LM = -\frac{1}{2}a + 3b$
9 (b)	$AP = -\frac{1}{2}a + kLM$ $AP = \left(-\frac{1}{2} - \frac{1}{2}k\right)a + 3kb$
9(c)(i)	$\left(-\frac{1}{2} - \frac{1}{2}k\right)a + 3kb = \lambda(-a + b)$ $\left(-\frac{1}{2} - \frac{1}{2}k\right) = -\lambda$ dan $3k = \lambda$ $\left(-\frac{1}{2} - \frac{1}{2}k\right) = -3k$,(hapuskan satu unknown) $k = \frac{1}{5}$

Q13: JOHOR

Rajah 9 menunjukkan sisi empat *ABCD*. Pepenjuru-pepenjuru *BD* dan *AC* bersilang di titik *F*. Titik *E* terletak pada *AD*.

Diagram 9 shows a quadrilateral ABCD. The diagonals BD and AC intersect at point F. Point E lies on AD.



Rajah 9/*Diagram 9*

Diberi bahawa $\overrightarrow{AE} = \frac{1}{5}\overrightarrow{AD}$, $\overrightarrow{BF} = \frac{1}{5}\overrightarrow{BD}$, $\overrightarrow{AB} = \underset{\sim}{x}$ dan $\overrightarrow{AE} = \underset{\sim}{y}$.

It is given that $\overrightarrow{AE} = \frac{1}{5}\overrightarrow{AD}$, $\overrightarrow{BF} = \frac{1}{5}\overrightarrow{BD}$, $\overrightarrow{AB} = \underset{\sim}{x}$ *and* $\overrightarrow{AE} = \underset{\sim}{y}$.

(a) Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan $\underset{\sim}{y}$

Express in terms of $\underset{\sim}{x}$ *and* $\underset{\sim}{y}$

(i) $\overrightarrow{DB}$

(ii) $\overrightarrow{AF}$

[5 markah/ *marks*]

(b) Diberi $\overrightarrow{DC} = m\underset{\sim}{x} - \underset{\sim}{y}$ dan $\overrightarrow{AF} = n\overrightarrow{AC}$, dengan keadaan *m* dan *n* ialah pemalar, cari nilai *m* dan *n*.

Given that $\overrightarrow{DC} = m\underset{\sim}{x} - \underset{\sim}{y}$ *and* $\overrightarrow{AF} = n\overrightarrow{AC}$, *where m and n are constants, find the value of m and n.*

[5 markah/ *marks*]

Jawapan / *Answer*:

(a) (i) $\overrightarrow{DB} = \overrightarrow{DA} + \overrightarrow{AB}$

$= -5\overrightarrow{AE} + x$

$= x - 5y$

(ii) $\overrightarrow{AF} = \overrightarrow{AB} + \overrightarrow{BF}$

$= c + \frac{1}{5}(-x + 5y)$

$= \frac{4}{5}x + y$

(b) $\overrightarrow{DC} = mx - y$

$\overrightarrow{AC} = \overrightarrow{AD} + \overrightarrow{DC}$

$\overrightarrow{AC} = 5y + mx - y$

$= mx + 4y$

$\overrightarrow{AF} = n\overrightarrow{AC}$

$\frac{4}{5}x + y = n(mx + 4y)$

$\frac{4}{5}x + y = mnx + 4ny$

Bandingkan x dan y

$1 = 4n$

$n = \frac{1}{4}$

$\frac{4}{5} = mn$

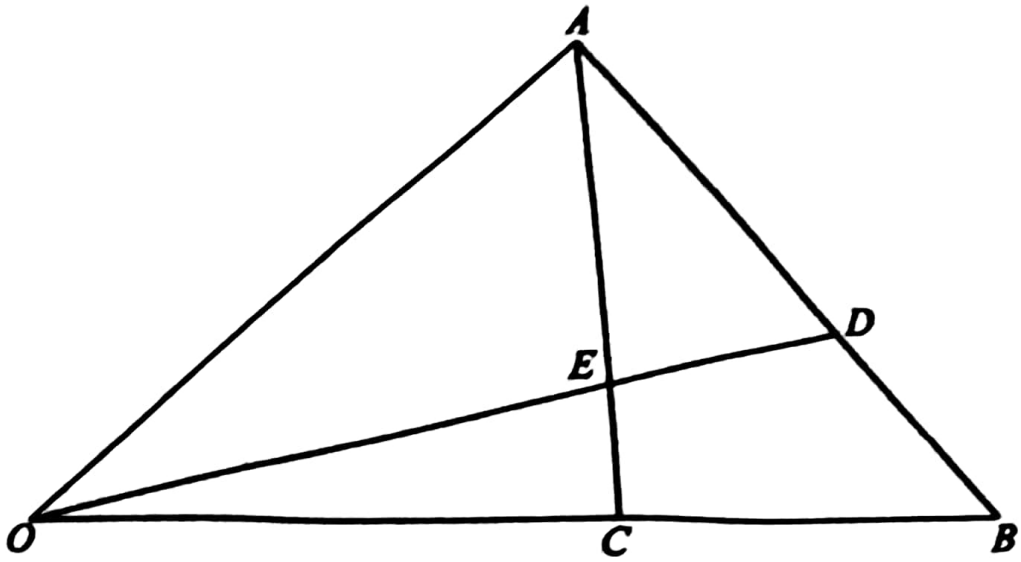
$\frac{4}{5} = m(\frac{1}{4})$

$m = \frac{16}{5}$

Q14: SBP (ASRAMA)

Rajah 2 menunjukkan sebuah segi tiga *OAB*. Titik *C* dan titik *D* masing-masing terletak pada garis lurus *OB* dan garis lurus *AB*. Garis lurus *OD* dan garis lurus *AC* bersilang pada titik *E*.

Diagram 2 shows a triangle OAB. Point C and point D are on the straight lines OB and AB respectively. Straight lines OD and AC intersect at point E.



Rajah 2
Diagram 2

Diberi bahawa $\overrightarrow{OA} = \underset{\sim}{x}$, $\overrightarrow{OB} = \underset{\sim}{y}$, $3\overrightarrow{AD} = 2\overrightarrow{AB}$ dan $\overrightarrow{OC} = \frac{3}{5}\overrightarrow{OB}$.

Given that $\overrightarrow{OA} = \underset{\sim}{x}$, $\overrightarrow{OB} = \underset{\sim}{y}$, $3\overrightarrow{AD} = 2\overrightarrow{AB}$ and $\overrightarrow{OC} = \frac{3}{5}\overrightarrow{OB}$.

(a) **Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan $\underset{\sim}{y}$:**

Express in terms of $\underset{\sim}{x}$ and $\underset{\sim}{y}$:

(i) $\overrightarrow{AC}$,

(ii) $\overrightarrow{OD}$.

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

(*b*) Diberi bahawa $\overrightarrow{OE} = h\overrightarrow{OD}$ dan $\overrightarrow{AE} = k\overrightarrow{AC}$, dengan keadaan h dan k ialah pemalar.

It is given that $\overrightarrow{OE} = h\overrightarrow{OD}$ *and* $\overrightarrow{AE} = k\overrightarrow{AC}$, *where* h *and* k *are constants.*

Ungkapkan $\overrightarrow{OE}$ dalam sebutan

Express $\overrightarrow{OE}$ *in terms of*

(i) h, $\underset{\sim}{x}$ dan / *and* $\underset{\sim}{y}$,

(ii) k, $\underset{\sim}{x}$ dan / *and* $\underset{\sim}{y}$.

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

(*c*) Seterusnya, cari nilai-nilai h dan k.

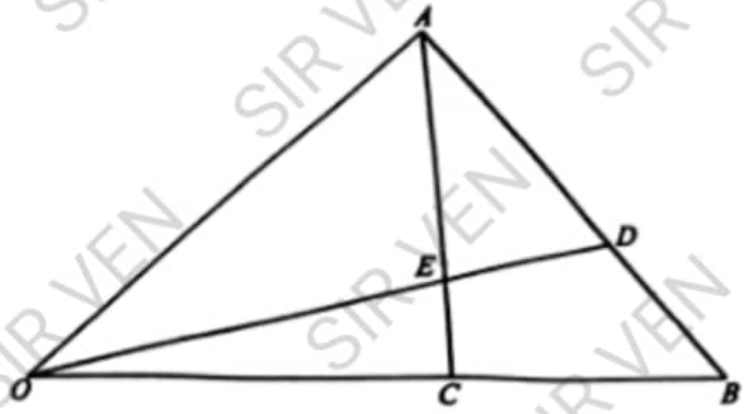
Hence, find the values of h *and* k.

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

Q14: SBP (ASRAMA)

Rajah 2 menunjukkan sebuah segi tiga *OAB*. Titik *C* dan titik *D* masing-masing terletak pada garis lurus *OB* dan garis lurus *AB*. Garis lurus *OD* dan garis lurus *AC* bersilang pada titik *E*.

Diagram 2 shows a triangle OAB. Point C and point D are on the straight lines OB and AB respectively. Straight lines OD and AC intersect at point E.



Rajah 2
Diagram 2

Diberi bahawa $\overrightarrow{OA} = \underset{\sim}{x}$, $\overrightarrow{OB} = \underset{\sim}{y}$, $3\overrightarrow{AD} = 2\overrightarrow{AB}$ dan $\overrightarrow{OC} = \frac{3}{5}\overrightarrow{OB}$.

Given that $\overrightarrow{OA} = \underset{\sim}{x}$, $\overrightarrow{OB} = \underset{\sim}{y}$, $3\overrightarrow{AD} = 2\overrightarrow{AB}$ and $\overrightarrow{OC} = \frac{3}{5}\overrightarrow{OB}$.

(*a*) **Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan $\underset{\sim}{y}$:**
Express in terms of $\underset{\sim}{x}$ and $\underset{\sim}{y}$:

(i) $\overrightarrow{AC}$,
(ii) $\overrightarrow{OD}$.

[3 markah]
[3 marks]

(*b*) **Diberi bahawa $\overrightarrow{OE} = h\overrightarrow{OD}$ dan $\overrightarrow{AE} = k\overrightarrow{AC}$, dengan keadaan *h* dan *k* ialah pemalar.**
It is given that $\overrightarrow{OE} = h\overrightarrow{OD}$ and $\overrightarrow{AE} = k\overrightarrow{AC}$, where h and k are constants.

Ungkapkan $\overrightarrow{OE}$ dalam sebutan
Express $\overrightarrow{OE}$ in terms of

(i) ***h*, $\underset{\sim}{x}$ dan / *and* $\underset{\sim}{y}$,**

(ii) ***k*, $\underset{\sim}{x}$ dan / *and* $\underset{\sim}{y}$.**

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

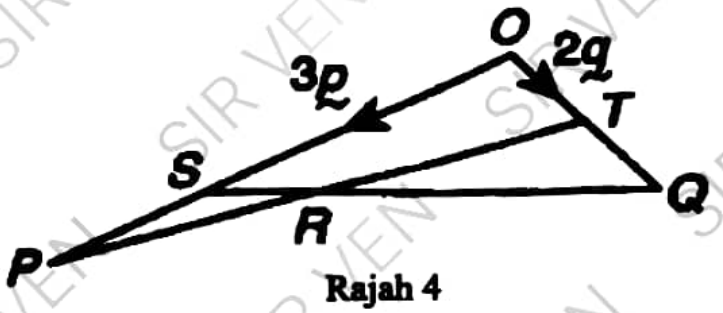
(*c*) **Seterusnya, cari nilai-nilai *h* dan *k*.**
Hence, find the values of h and k.

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

Q15: KELATAN MIMS (SET 1)

Rajah 4 menunjukkan segitiga *OPT* dan *OQS*.

Diagram 4 shows the triangle of OPT and OQS.



Rajah 4

Diagram 4

(a) **Diberi $\overrightarrow{OP} = 3\underset{\sim}{p}$ dan $\overrightarrow{OQ} = 2\underset{\sim}{q}$. *T* ialah titik tengah bagi *OQ* dan *S* terletak di atas *OP* dengan keadaan $\overrightarrow{OS} = \frac{2}{3}\overrightarrow{OP}$. Ungkapkan dalam sebutan $\underset{\sim}{p}$ dan $\underset{\sim}{q}$,**

Given that $\overrightarrow{OP} = 3\underset{\sim}{p}$ dan $\overrightarrow{OQ} = 2\underset{\sim}{q}$. T is the midpoint of OQ and S lies on OP where $\overrightarrow{OS} = \frac{2}{3}\overrightarrow{OP}$. Express in terms of $\underset{\sim}{p}$ and $\underset{\sim}{q}$,

(i) $\overrightarrow{QS}$,

(ii) $\overrightarrow{TP}$.

[3 *markah*]

[3 *marks*]

(b) **Diberi $\overrightarrow{RS} = h\overrightarrow{QS}$ dan $\overrightarrow{RP} = k\overrightarrow{TP}$ dengan keadaan *h* dan *k* ialah pemalar, ungkapkan**

Given $\overrightarrow{RS} = h\overrightarrow{QS}$ and $\overrightarrow{RP} = k\overrightarrow{TP}$ where h and k are constants, express

(i) $\overrightarrow{RS}$ **dalam sebutan *h*, $\underset{\sim}{p}$ dan / atau $\underset{\sim}{q}$,**

$\overrightarrow{RS}$ ***in terms of h, $\underset{\sim}{p}$ and / or $\underset{\sim}{q}$,***

(ii) $\overrightarrow{RP}$ **dalam sebutan *k*, $\underset{\sim}{p}$ and / atau $\underset{\sim}{q}$.**

$\overrightarrow{RP}$ ***in terms of k, $\underset{\sim}{p}$ and / or $\underset{\sim}{q}$.***

Seterusnya cari nilai *h* dan nilai *k*.

Hence, find the value of h and of k.

[5 *markah*]

[5 *marks*]

5 (*a*) (i)(ii)	$\overrightarrow{QS} = \overrightarrow{QO} + \overrightarrow{OS}$ or $\overrightarrow{TP} = \overrightarrow{TO} + \overrightarrow{OP}$
	$2\underset{\sim}{p} - 2\underset{\sim}{q}$
	$3\underset{\sim}{p} - \underset{\sim}{q}$
(*b*)(i)(ii)	$2h\underset{\sim}{p} - 2h\underset{\sim}{q}$
	$3k\underset{\sim}{p} - k\underset{\sim}{q}$
	$p = -2hp + 2hq + 3kp - kq$
	$h = \frac{1}{4}$
	$k = \frac{1}{2}$

Q16: TERENGGANU

Diberi bahawa OAB ialah sebuah segi tiga. Titik C terletak pada OA dan titik D terletak pada AB. Garis lurus BC bersilang dengan garis lurus OD pada titik E.
Diberi $OA:OC=4:3$, $AB:AD=2:1$, $\overrightarrow{OA}=20\underset{\sim}{x}$ dan $\overrightarrow{OB}=9\underset{\sim}{y}$.

Given that OAB is a triangle. Point C lies on OA and point D lies on AB.

The straight line BC intersects the straight line OD at point E.

It is given that $OA:OC=4:3$, $AB:AD=2:1$, $\overrightarrow{OA}=20\underset{\sim}{x}$ and $\overrightarrow{OB}=9\underset{\sim}{y}$.

(*a*) Ungkapkan dalam sebutan $\underset{\sim}{x}$ dan/atau $\underset{\sim}{y}$,

Express in terms of $\underset{\sim}{x}$ and/or $\underset{\sim}{y}$,

(i) $\overrightarrow{BC}$

(ii) $\overrightarrow{OD}$

[3 *markah*]

[3 *marks*]

(*b*) Jika $\overrightarrow{BE}=m\overrightarrow{BC}$ dan $\overrightarrow{OE}=n\overrightarrow{OD}$, dengan keadaan m dan n adalah pemalar,
Cari nilai m dan n. [5 *markah*]

If $\overrightarrow{BE}=m\overrightarrow{BC}$ and $\overrightarrow{OE}=n\overrightarrow{OD}$, such that m and n are constants, find the values of m and of n. [5 *marks*]

(*c*) Diberi bahawa $|\underset{\sim}{x}|=2$ unit dan luas segi tiga OAB ialah 140 unit^2.
Hitung jarak serenjang dari B ke OA. [2 *markah*]

It is given that $|\underset{\sim}{x}|=2$ unit and the area of the triangle OAB is 140 unit^2.

Calculate the perpendicular distance from B to OA. [2 *marks*]

(a) $\overrightarrow{BC} = \overrightarrow{BO} + \overrightarrow{OC}$ atau $\overrightarrow{OD} = \overrightarrow{OA} + \overrightarrow{AD}$ dan

$\overrightarrow{BC} = -9\underset{\sim}{y} + \frac{3}{4}(20\underset{\sim}{x})$ atau $\overrightarrow{OD} = 20\underset{\sim}{x} + \frac{1}{2}(-20\underset{\sim}{x} + 9\underset{\sim}{y})$ **K1**

(i) $15\underset{\sim}{x} - 9\underset{\sim}{y}$ **N1**

(ii) $10\underset{\sim}{x} + \frac{9}{2}\underset{\sim}{y}$ **N1**

(b) $\overrightarrow{BE} = -9\underset{\sim}{y} + n\left(10\underset{\sim}{x} + \frac{9}{2}\underset{\sim}{y}\right)$ **K1**

$m(15\underset{\sim}{x} - 9\underset{\sim}{y}) = -9\underset{\sim}{y} + n\left(10\underset{\sim}{x} + \frac{9}{2}\underset{\sim}{y}\right)$ **K1**

$15m = 10n$, $-9m = \frac{9}{2}n - 9$ dan selesaikan **K1**

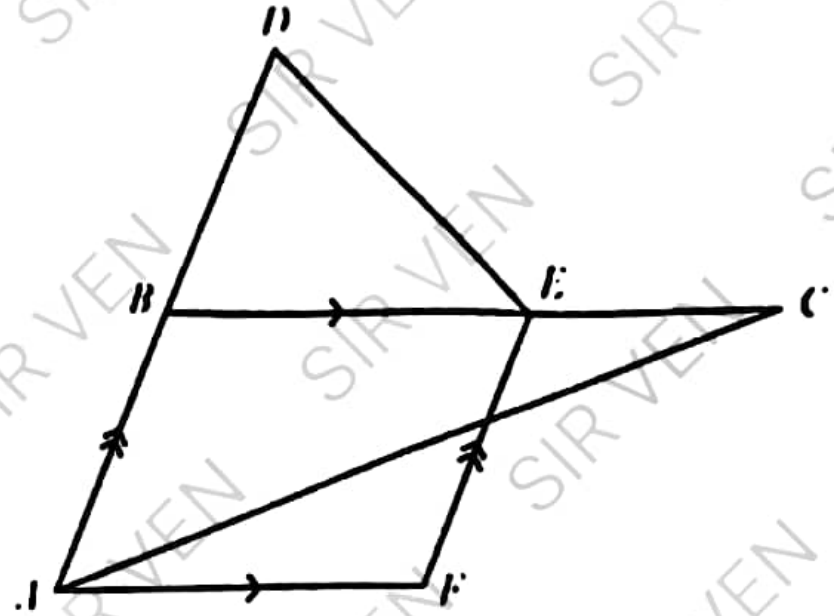
$m = \frac{4}{7}, n = \frac{6}{7}$ **N1 N1**

(c) $\frac{1}{2}(20 \times 2)h = 140$ **K1**

$h = 7$ **N1**

Q17: MRSM

(a) Rajah 5 menunjukkan trapezium $ADEF$ dan segi tiga ABC.
Diagram 5 shows trapezium $ADEF$ and triangle ABC.



Rajah 5
Diagram 5

Diberi bahawa $\overline{AD} = 8x$, $\overline{BE} = 3y$, $\overline{BE} = \frac{3}{5}\overline{BC}$ dan nisbah $AD : FE = 2:1$.

It is given that $\overline{AD} = 8x$, $\overline{BE} = 3y$, $\overline{BE} = \frac{3}{5}\overline{BC}$ and ratio $AD : FE = 2:1$.

(i) Ungkapkan $\overline{AC}$ dalam sebutan x dan/atau y. [3 markah]
Express $\overline{AC}$ in terms of x and/or y. [3 marks]

(ii) Garis FE dipanjangkan kepada titik M dengan keadaan $\overline{FM} = \frac{8}{5}\overline{FE}$ dan $\overline{BM} = k\overline{AC}$.
Cari nilai k. [4 markah]

Line FE is extended to a point M such that $\overline{FM} = \frac{8}{5}\overline{FE}$ and $\overline{BM} = k\overline{AC}$.
Find the value of k. [4 marks]