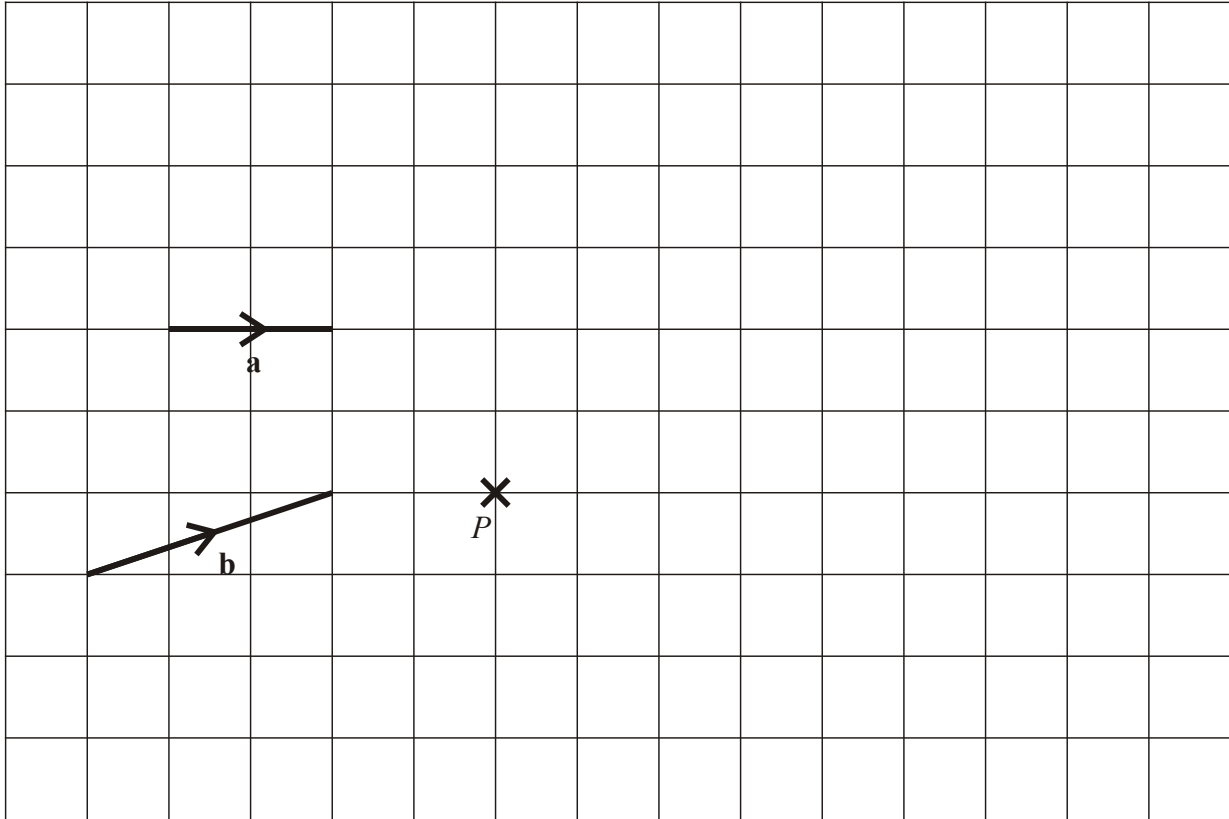


Vectors – GCSE Exam Questions

1.



The diagram shows two vectors **a** and **b**.

$$\overrightarrow{PQ} = \mathbf{a} + 2\mathbf{b}$$

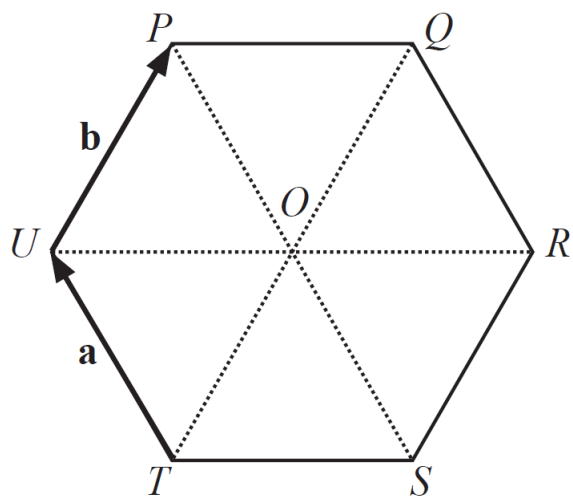
On the grid above draw the vector $\overrightarrow{PQ}$.

(Total 2 marks)

2.

$PQRSTU$ is a regular hexagon, centre O .

The hexagon is made from six equilateral triangles of side 2.5 cm.



$$\overrightarrow{TU} = \mathbf{a}, \overrightarrow{UP} = \mathbf{b}.$$

(a) Find, in terms of $\mathbf{a}$ and/or $\mathbf{b}$, the vectors

(i) $\overrightarrow{TP}$

.....
(1)

(ii) $\overrightarrow{PO}$

.....
(1)

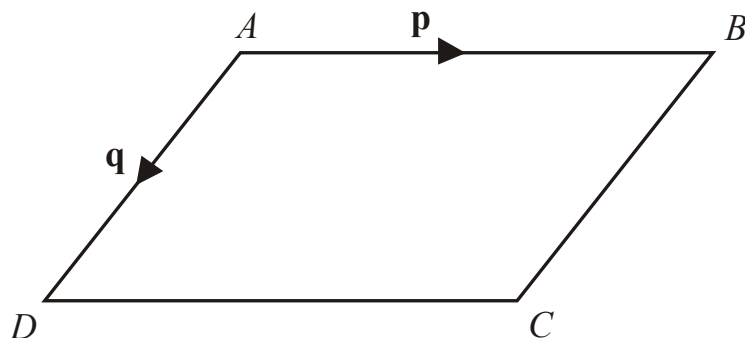
(iii) $\overrightarrow{UO}$

.....
(1)

(b) Find the modulus (magnitude) of $\overrightarrow{UR}$.

..... cm
(1)

3.



$ABCD$ is a parallelogram. AB is parallel to DC . AD is parallel to BC .

$$\vec{AB} = \mathbf{p} \quad \vec{AD} = \mathbf{q}$$

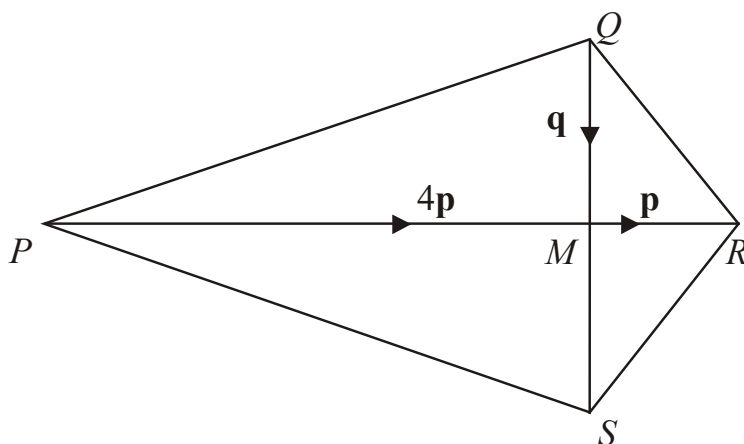
(a) Express, in terms of $\mathbf{p}$ and $\mathbf{q}$

(i) $\vec{AC}$ (i).....

(ii) $\vec{BD}$ (ii).....

(Total 2 marks)

4.



$PQRS$ is a kite. The diagonals PR and QS intersect at M .

$$\vec{MP} = 4\mathbf{p} \quad \vec{QM} = \mathbf{q} \quad \vec{MR} = \mathbf{p} \quad \vec{QM} = MS$$

Find expressions, in terms of $\mathbf{p}$ and/or $\mathbf{q}$ for

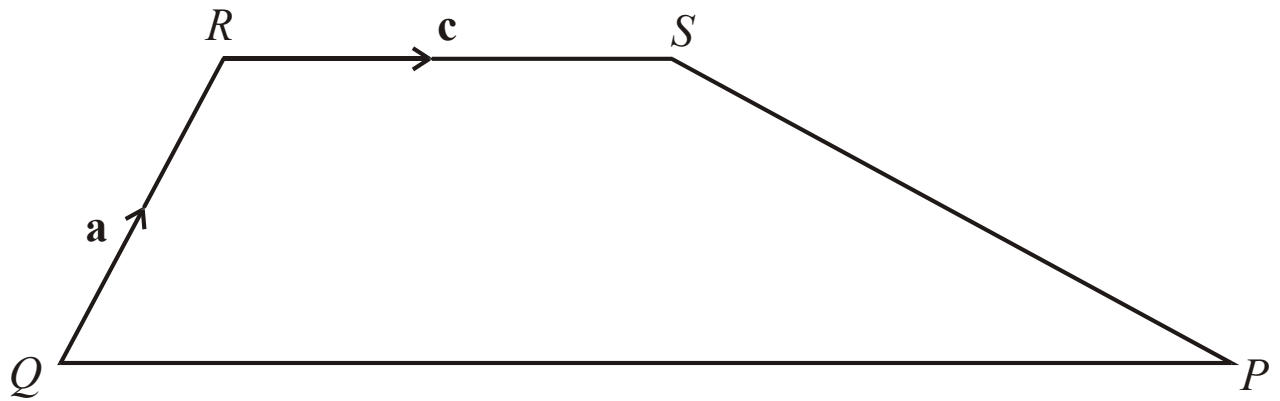
(i) $\vec{PR}$ $\vec{PR}$

(ii) $\vec{QS}$ $\vec{QS}$

(iii) $\vec{PQ}$ $\vec{PQ}$

(Total 4 marks)

5.



$PQRS$ is a trapezium.

QP is parallel to RS .

$QP = 3RS$.

$\vec{QR} = \mathbf{a}$, $\vec{RS} = \mathbf{c}$

Express in terms of $\mathbf{a}$ and/or $\mathbf{c}$

(i) $\vec{QP}$

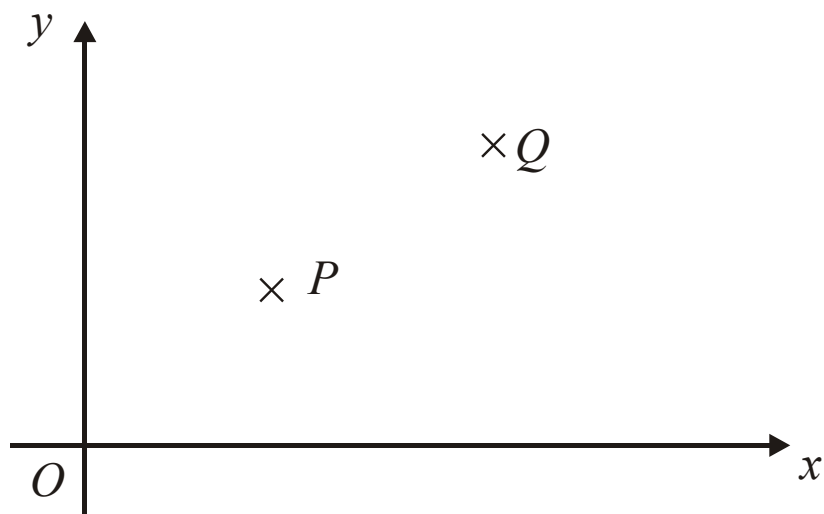
$\vec{QP} = \dots\dots\dots$

(ii) $\vec{SP}$

$\vec{SP} = \dots\dots\dots$

(Total 3 marks)

6.



The diagram is a sketch.

P is the point $(2, 3)$

Q is the point $(6, 6)$

(a) Write down the vector $\vec{PQ}$

Write your answer as a column vector $\begin{pmatrix} x \\ y \end{pmatrix}$

$\begin{pmatrix} \\ \end{pmatrix}$
.....

(2)

$PQRS$ is a parallelogram.

$$\vec{PR} = \begin{pmatrix} 4 \\ 7 \end{pmatrix}$$

(b) Find the vector $\vec{QS}$

Write your answer as a column vector $\begin{pmatrix} x \\ y \end{pmatrix}$

$\begin{pmatrix} \\ \end{pmatrix}$
.....

(2)

(Total 4 marks)