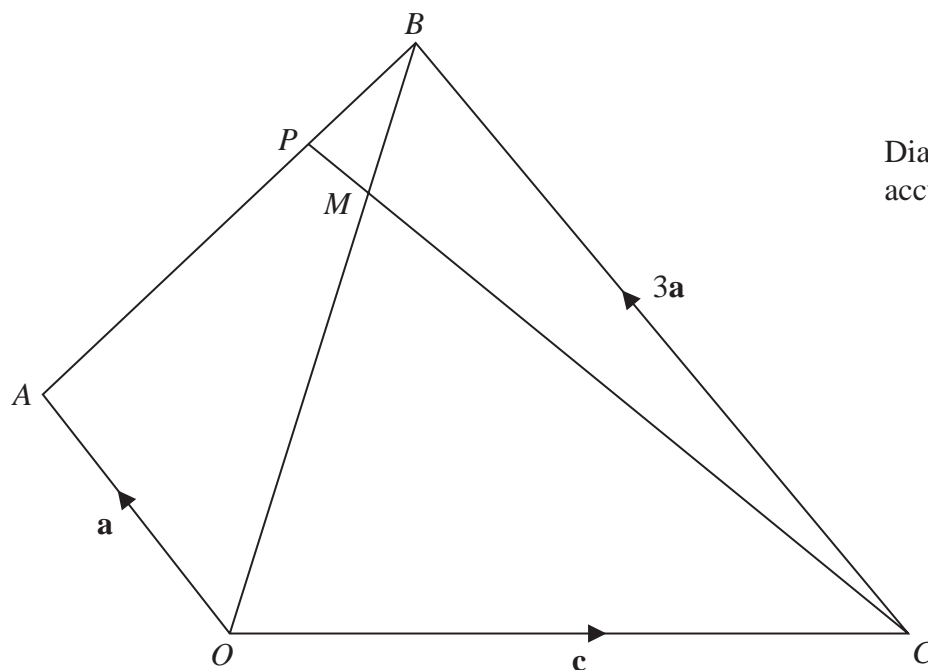**25**

Diagram **NOT**
accurately drawn

The diagram shows a quadrilateral $OABC$ in which

$$\overrightarrow{OA} = \mathbf{a} \qquad \overrightarrow{OC} = \mathbf{c} \qquad \overrightarrow{CB} = 3\mathbf{a}$$

The point M lies on OB such that $OM:MB = 7:3$
The point P lies on AB such that CMP is a straight line.

(a) Find, in terms of $\mathbf{a}$ and $\mathbf{c}$, simplifying your answer, the vector $\overrightarrow{CM}$

$\overrightarrow{CM} = $ ....

(3)

(b) Using a vector method, and showing your working clearly, find $AP:PB$ in the form
$x:y$ where x and y are integers.
Show your working clearly.

$AP:PB = $ ....

(4)

(Total for Question 25 is 7 marks)