1 $\mathbf{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$ $\mathbf{c} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$

(a) Work out as a column vector

(i) $\mathbf{a} + \mathbf{b}$

$\begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$

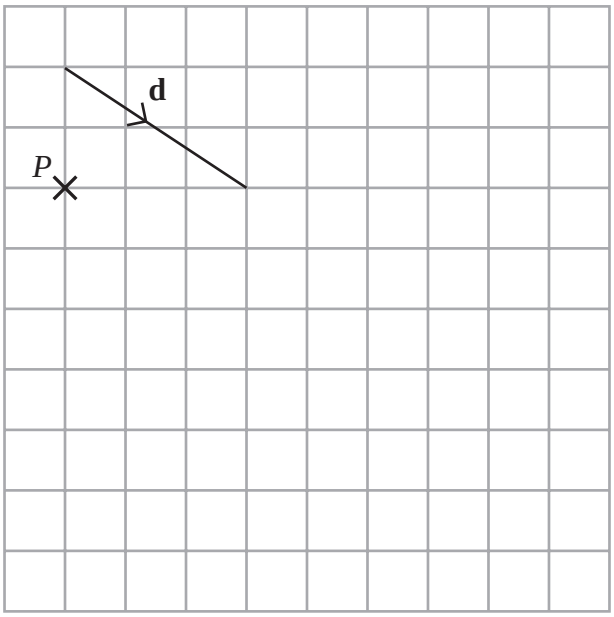
(1)

(ii) $2\mathbf{a} - \mathbf{c}$

$\begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$

(2)

The vector **d** is drawn on the grid.

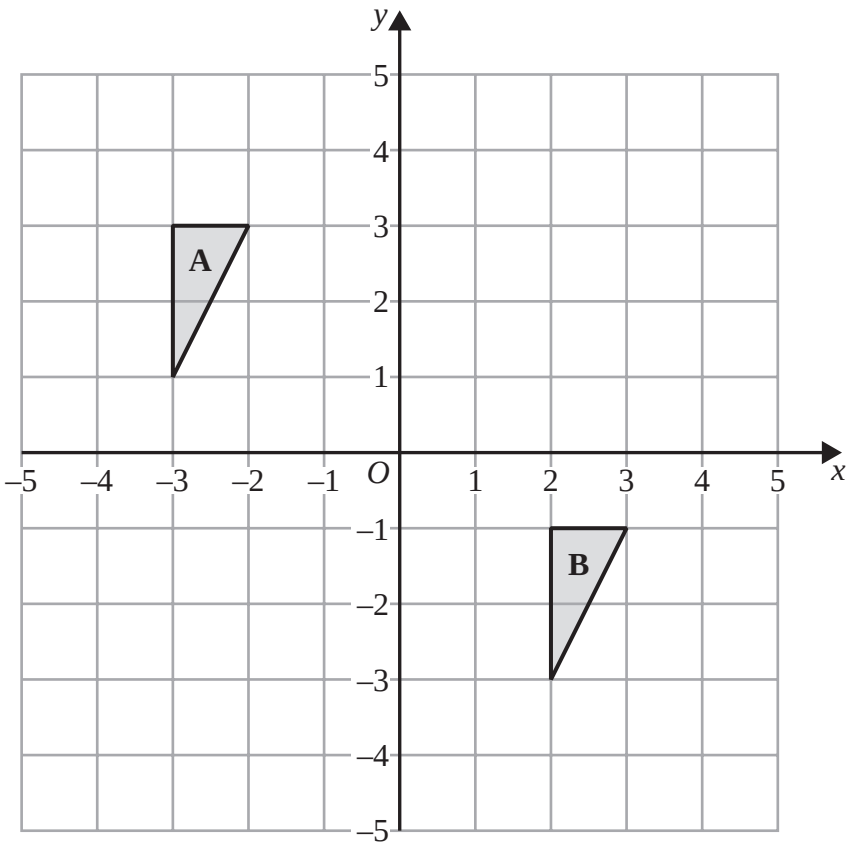


(b) From the point *P*, draw the vector $2\mathbf{d}$

(1)

(Total for Question 1 is 4 marks)

2



Describe fully the **single** transformation that maps triangle **A** onto triangle **B**.

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(Total for Question 2 is 2 marks)