G204 Vectors 1

Q1.

$\mathbf{a} = \begin{pmatrix} 3 \\ -7 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$

Work out **b** − 2**a** as a column vector.

.....

(Total for question = 2 marks)

Q2.

$\mathbf{a} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

Work out **a − 2b** as a column vector.

$\begin{pmatrix} \cdots\cdots \\ \cdots\cdots \end{pmatrix}$

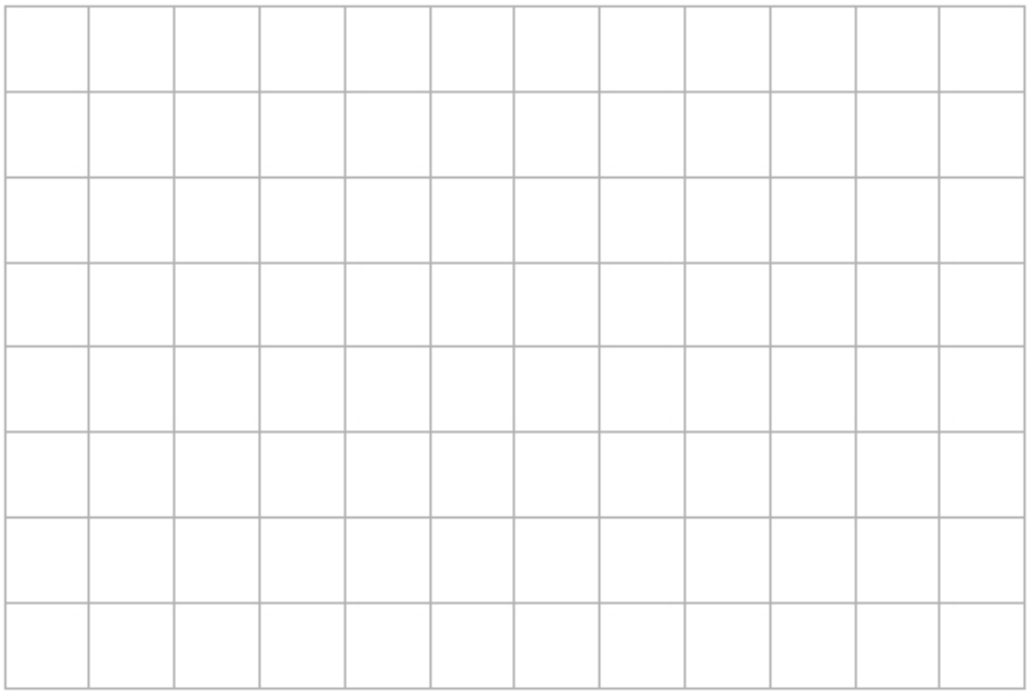
(Total for question = 2 marks)

Q3.

Here are two column vectors.

$$\mathbf{a} = \begin{pmatrix} 5 \\ 2 \end{pmatrix} \qquad \mathbf{b} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$$

On the grid below, draw and label the vector $\mathbf{a} - 2\mathbf{b}$



(Total for question = 3 marks)

Q4.

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

(a) Write down as a column vector

(i) **a** + **b**

.....

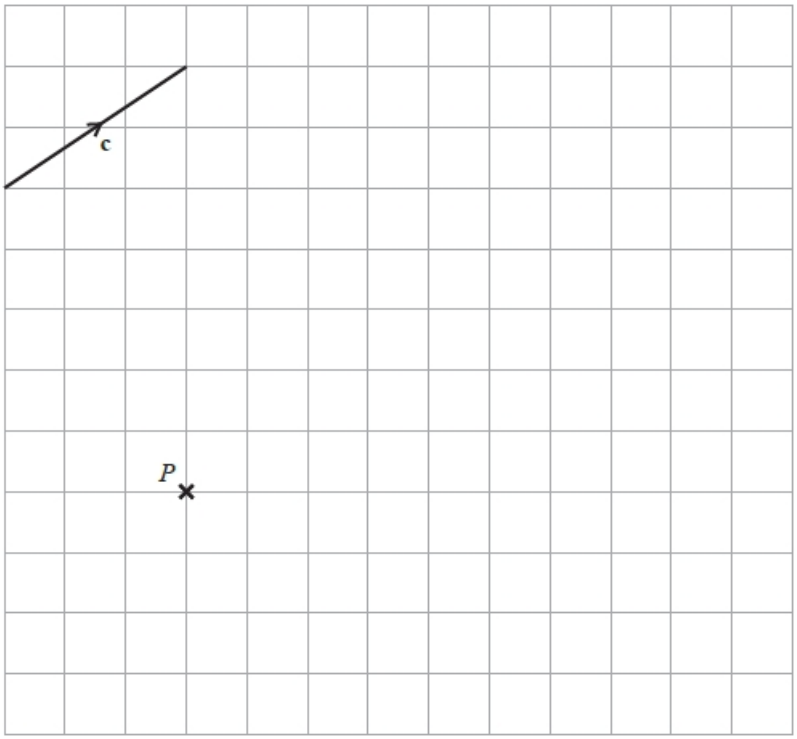
(1)

(ii) 2**a** + 3**b**

.....

(2)

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

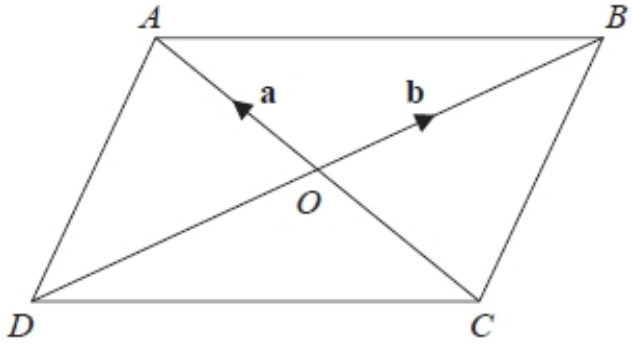


(b) From the point *P*, draw the vector 3**c**

(1)

(Total for question = 4 marks)

Q5.



ABCD is a parallelogram.
The diagonals of the parallelogram intersect at *O*.

$\overrightarrow{OA}$ = **a** and $\overrightarrow{OB}$ = **b**

(a) Find, in terms of **b**, the vector $\overrightarrow{DB}$.

.....

(1)

(b) Find, in terms of **a** and **b**, the vector $\overrightarrow{AB}$.

.....

(1)

(c) Find, in terms of **a** and **b**, the vector $\overrightarrow{AD}$.

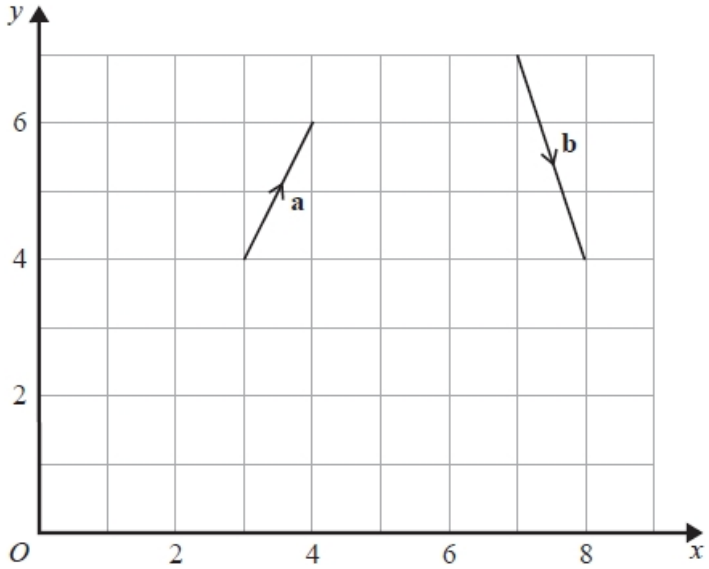
.....

(1)

(Total for question = 3 marks)

Q6.

The vector **a** and the vector **b** are shown on the grid.



(a) On the grid, draw and label vector –2**a**

(1)

(b) Work out **a** + 2**b** as a column vector.

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

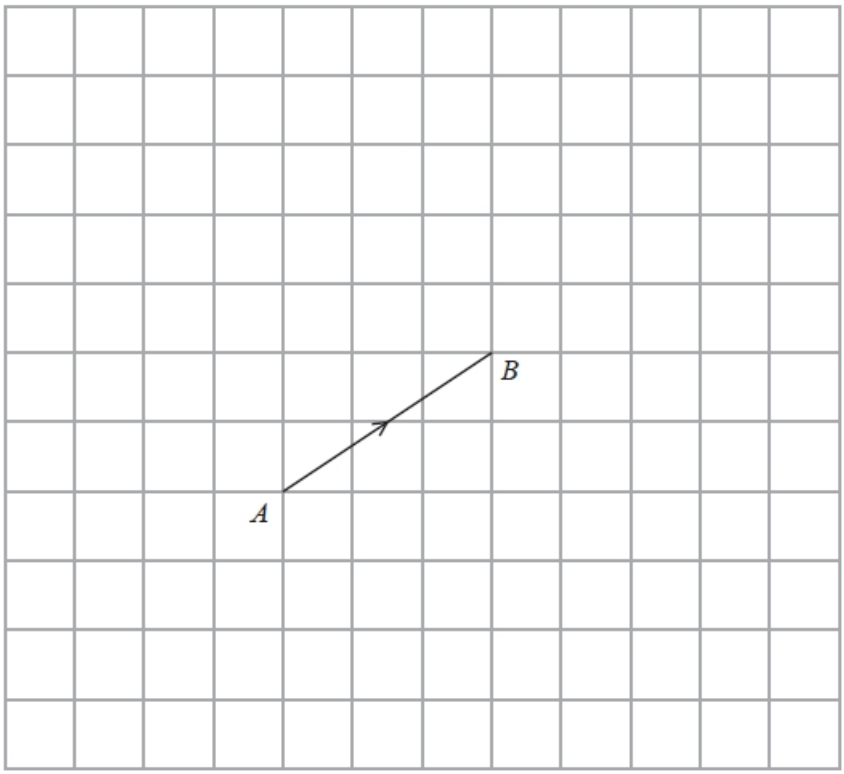
(2)

(Total for question = 3 marks)

Q7.

$\overrightarrow{AB} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ and $\overrightarrow{BC} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

$\overrightarrow{AB}$ is shown on the grid.



(a) On the grid, draw $\overrightarrow{BC}$.

(1)

$\overrightarrow{AD} = \overrightarrow{AB} - \overrightarrow{BC}$

(b) On the grid, mark with a cross (×) the position of *D*.

Label this point *D*.

(2)

(Total for question = 3 marks)

Q8.

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

(a) Write down as a column vector

(i) **a** + **b**

.....

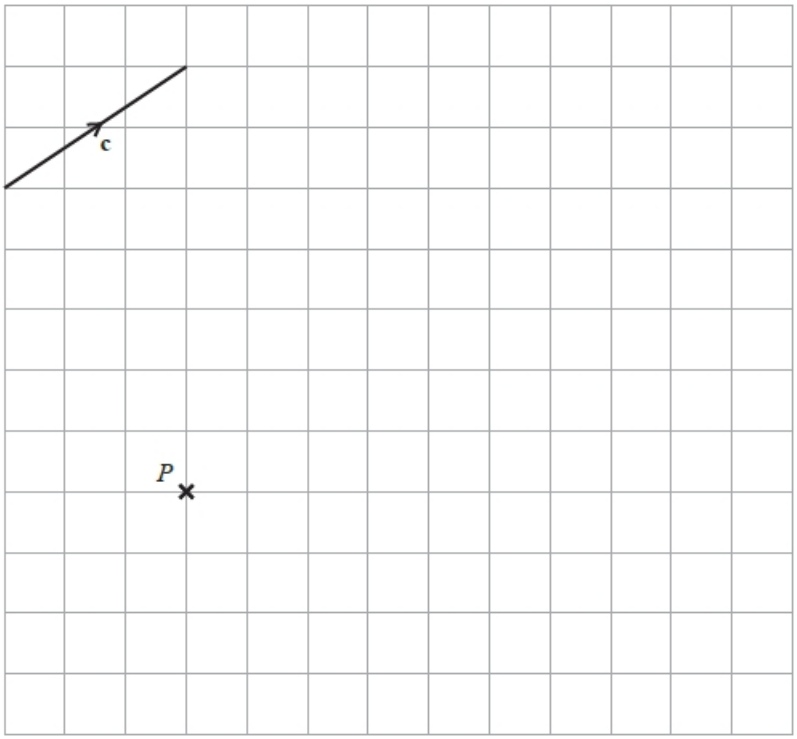
(1)

(ii) 2**a** + 3**b**

.....

(2)

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



(b) From the point *P*, draw the vector 3**c**

(1)

(Total for question = 4 marks)