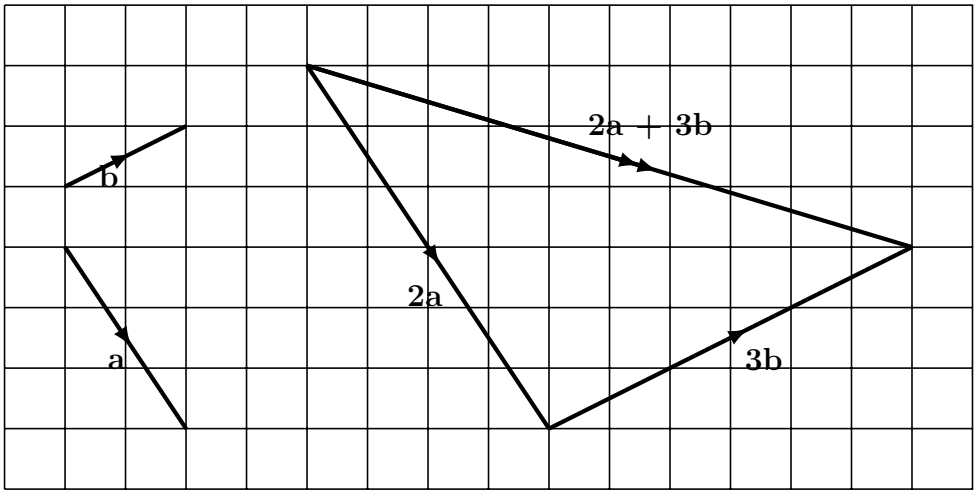
1. Here are some vectors.



(a) Complete these column vectors from the diagram.

(i) $\mathbf{a} = \begin{pmatrix} ..... \\ ..... \end{pmatrix}$ (ii) $\mathbf{b} = \begin{pmatrix} ..... \\ ..... \end{pmatrix}$ (iii) $2\mathbf{a} + 3\mathbf{b} = \begin{pmatrix} ..... \\ ..... \end{pmatrix}$

To work out $2\mathbf{a} + 3\mathbf{b}$ write down (iv) $\mathbf{2a} = \begin{pmatrix} ..... \\ ..... \end{pmatrix}$ and (v) $\mathbf{3b} = \begin{pmatrix} ..... \\ ..... \end{pmatrix}$

(b) Check that working out $2\mathbf{a} + 3\mathbf{b}$ gives the same vector as (iii)

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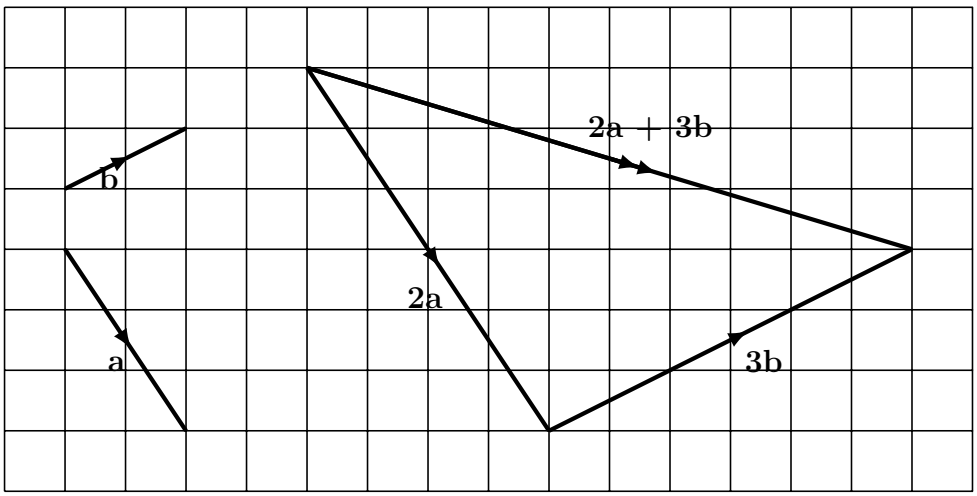

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2. $\mathbf{a} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -2 \\ 4 \end{pmatrix}$

Work out $2\mathbf{a} + \mathbf{b}$ as a column vector.

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

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

Work out $3\mathbf{a} + 2\mathbf{b}$ as a column vector.

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

translate and vector (12) answers

1 (a)(i) $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$ (ii) $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$ (iii) $\begin{pmatrix} 10 \\ -3 \end{pmatrix}$ (iv) $\begin{pmatrix} 4 \\ -6 \end{pmatrix}$ (v) $\begin{pmatrix} 6 \\ 3 \end{pmatrix}$ 2. $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$ 3. $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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