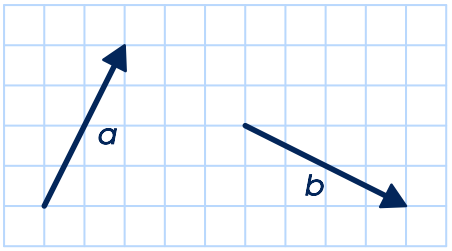
GCSE FOUNDATION · REVISION MAT 4

Vectors

1 Write the vectors **a** and **b** as column vectors.



2 $\mathbf{a} = \begin{pmatrix} 6 \\ -2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -3 \\ 1 \end{pmatrix}$

Work out

(a) $\mathbf{a} + \mathbf{b}$ (b) $4\mathbf{a}$

3 Are the vectors $\begin{pmatrix} -1 \\ 4 \end{pmatrix}$ and $\begin{pmatrix} 3 \\ -12 \end{pmatrix}$ parallel?

Explain your answer.

4 $\mathbf{c} = \begin{pmatrix} 3 \\ 0 \end{pmatrix}$ $\mathbf{d} = \begin{pmatrix} -2 \\ 4 \end{pmatrix}$

Show that $3\mathbf{c} - 2\mathbf{d} = \begin{pmatrix} 13 \\ -8 \end{pmatrix}$

5 P is the point (2, –3). P is translated to Q (–1, 1).

(a) Write down the vector that translates P to Q.

(b) Q is then translated by $\begin{pmatrix} 4 \\ 3 \end{pmatrix}$ to R. Find the coordinates of R.

(c) Write the vector that translates P to R.

6 $x\begin{pmatrix} 1 \\ 5 \end{pmatrix} + \begin{pmatrix} 6 \\ y \end{pmatrix} = \begin{pmatrix} 11 \\ 22 \end{pmatrix}$

Work out the values of x and y.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Vectors

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

2 (a) $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$ (b) $\begin{pmatrix} 24 \\ -8 \end{pmatrix}$

3 **Yes:** $\begin{pmatrix} 3 \\ -12 \end{pmatrix} = -3 \times \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

4 $3\mathbf{c} = \begin{pmatrix} 9 \\ 0 \end{pmatrix}$, $2\mathbf{d} = \begin{pmatrix} -4 \\ 8 \end{pmatrix}$

$\begin{pmatrix} 9 \\ 0 \end{pmatrix} - \begin{pmatrix} -4 \\ 8 \end{pmatrix} = \begin{pmatrix} 13 \\ -8 \end{pmatrix}$ ✓

5 (a) $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$

(b) R = **(3, 4)**

(c) $\begin{pmatrix} 1 \\ 7 \end{pmatrix}$

6 Top: $1x + 6 = 11$, so $x = 5$

Bottom: $5 \times 5 + y = 22$, so $y = -3$

Mr&Mrs MATHS