GCSE HIGHER · REVISION MAT 4

Vectors

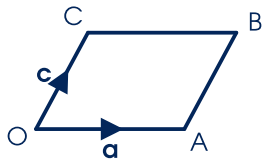
1 $\mathbf{a} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} -2 \\ 2 \end{pmatrix}$

Find $\mathbf{a} - \mathbf{b}$.

2 Find the magnitude of $\begin{pmatrix} 5 \\ 12 \end{pmatrix}$.

3 Show that $\begin{pmatrix} 8 \\ 2 \end{pmatrix} = 2\begin{pmatrix} 4 \\ 1 \end{pmatrix}$.

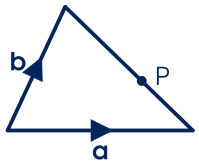
4 OABC is a parallelogram.
M is the midpoint of AB.



Find OM in terms of **a** and **c**.

5 Show that $\mathbf{a} + 2\mathbf{b}$ and $3\mathbf{a} + 6\mathbf{b}$ are parallel.

6 P divides AB in the ratio 2 : 3.



Find OP in terms of **a** and **b**.

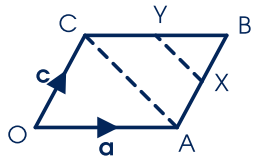
7 $\mathbf{v} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$.

Show that $2\mathbf{v}$ has magnitude 10.

8 OABC is a parallelogram with OA = **a** and OC = **c**.

X is the midpoint of AB and
Y is the midpoint of BC.

Show that XY is parallel to AC.



Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Vectors

1 $\begin{pmatrix} 3 \\ -5 \end{pmatrix}$

2 $\sqrt{25 + 144}$

13

3 Each part is doubled.

4 $\overrightarrow{AB} = \mathbf{c}$

$\overrightarrow{OM} = \mathbf{a} + \frac{1}{2}\mathbf{c}$

5 $3\mathbf{a} + 6\mathbf{b} = 3(\mathbf{a} + 2\mathbf{b})$

6 $\overrightarrow{OP} = \mathbf{a} + \frac{2}{5}(\mathbf{b} - \mathbf{a})$

$\overrightarrow{OP} = \frac{3}{5}\mathbf{a} + \frac{2}{5}\mathbf{b}$

7 $2\mathbf{v} = \begin{pmatrix} 6 \\ 8 \end{pmatrix}$

$\sqrt{36 + 64} = 10$

8 $\overrightarrow{XY} = \frac{1}{2}\mathbf{c} - \frac{1}{2}\mathbf{a} = \frac{1}{2}(\mathbf{c} - \mathbf{a})$

$\overrightarrow{AC} = \mathbf{c} - \mathbf{a}$

$\overrightarrow{XY} = \frac{1}{2}\overrightarrow{AC}$

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