GCSE HIGHER · REVISION MAT 1

Vectors

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

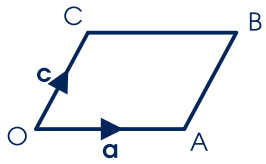
Find $\mathbf{a} + \mathbf{b}$.

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

Find $2\mathbf{a} - \mathbf{b}$.

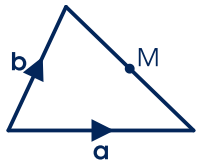
3 Show that $\begin{pmatrix} 6 \\ -4 \end{pmatrix}$ is parallel to $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$.

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



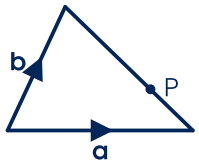
Find OM in terms of $\mathbf{a}$ and $\mathbf{c}$.

5 M is the midpoint of AB.



Show that OM = $\frac{1}{2}(\mathbf{a} + \mathbf{b})$.

6 P lies on AB with AP : PB = 1 : 2.

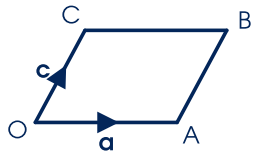


Find OP in terms of $\mathbf{a}$ and $\mathbf{b}$.

7 Show that $2\mathbf{a} + 6\mathbf{b}$ is parallel to $\mathbf{a} + 3\mathbf{b}$.

8 OABC is a parallelogram.
M is the midpoint of BC.

OD = $2\mathbf{c}$.



Prove that A, M and D lie on a straight line.

ANSWERS · REVISION MAT 1

Vectors

1 $\begin{pmatrix} 2 \\ 6 \end{pmatrix}$

2 $\begin{pmatrix} 6 \\ 4 \end{pmatrix} - \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

$\begin{pmatrix} 7 \\ 0 \end{pmatrix}$

3 $\begin{pmatrix} 6 \\ -4 \end{pmatrix} = -2\begin{pmatrix} -3 \\ 2 \end{pmatrix}$, a multiple, so they are parallel.

4 $AC = -\mathbf{a} + \mathbf{c}$

$OM = \mathbf{a} + \frac{1}{2}(\mathbf{c} - \mathbf{a})$

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

5 $AB = \mathbf{b} - \mathbf{a}$

$OM = \mathbf{a} + \frac{1}{2}(\mathbf{b} - \mathbf{a})$

$\frac{1}{2}(\mathbf{a} + \mathbf{b})$

6 $OP = \mathbf{a} + \frac{1}{3}(\mathbf{b} - \mathbf{a})$

$OP = \frac{2}{3}\mathbf{a} + \frac{1}{3}\mathbf{b}$

7 $2\mathbf{a} + 6\mathbf{b} = 2(\mathbf{a} + 3\mathbf{b})$

8 $AM = \mathbf{c} - \frac{1}{2}\mathbf{a}$

$AD = 2\mathbf{c} - \mathbf{a} = 2(\mathbf{c} - \frac{1}{2}\mathbf{a})$

AD = 2AM, and they share point A.

Mr&Mrs MATHS