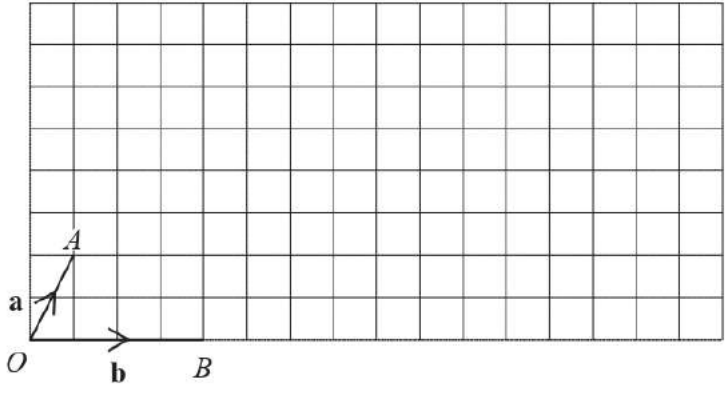
3



The diagram shows the points A and B, which have position vectors $\mathbf{a}$ and $\mathbf{b}$ with respect to an origin O.

The points C and D have position vectors, with respect to the origin O, such that $\mathbf{c} = \mathbf{a} + 3\mathbf{b}$ and $\mathbf{d} = 3\mathbf{a} + \mathbf{b}$.

(a) Mark and label the points C and D on the diagram in the **Printed Answer Booklet**. **[2]**

(b) **(i)** Find the following vectors. Give your vectors in a simplified form in terms of $\mathbf{a}$ and $\mathbf{b}$.

- $\overrightarrow{AB}$
- $\overrightarrow{DC}$

[3]

(ii) Hence explain why $ABCD$ is a trapezium. **[1]**