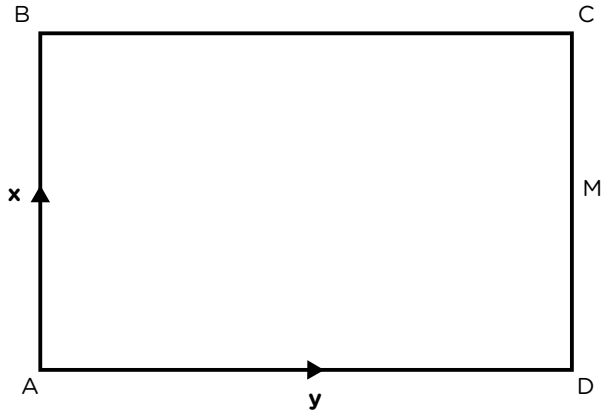
Addition and Subtraction of Vectors
GCSE Mathematics
FG21 HG21

1. In the rectangle ABCD $\overrightarrow{AB}$ = x and $\overrightarrow{AD}$ = y.
M is the midpoint of CD.
Find in terms of **x** and **y**:

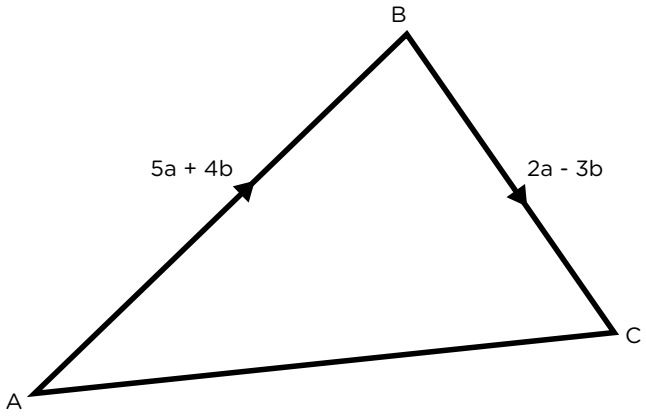


a) $\overrightarrow{AC}$

b) $\overrightarrow{BD}$

c) $\overrightarrow{AM}$

2. In the diagram $\overrightarrow{AB}$ = 5**a** + 4**b** and $\overrightarrow{BC}$ = 2**a** – 3**b**.



Find $\overrightarrow{AC}$ in terms of **a** and **b**.

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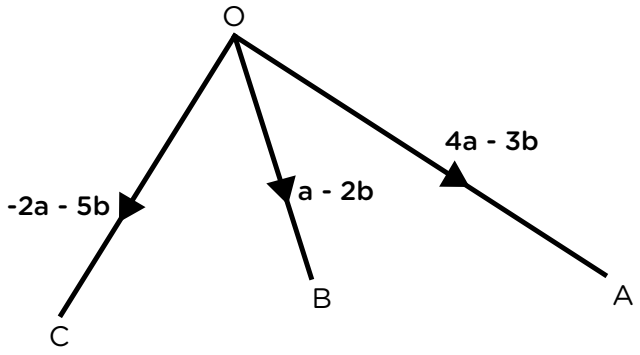
3. In the following diagram

$\overrightarrow{OA} = 4\mathbf{a} - 3\mathbf{b}$ $\overrightarrow{OB} = \mathbf{a} - 2\mathbf{b}$ $\overrightarrow{OC} = -2\mathbf{a} - 5\mathbf{b}$



(a) Find $\overrightarrow{AB}$ in terms of **a** and **b**.

(b) Find $\overrightarrow{AC}$ in terms of **a** and **b**.

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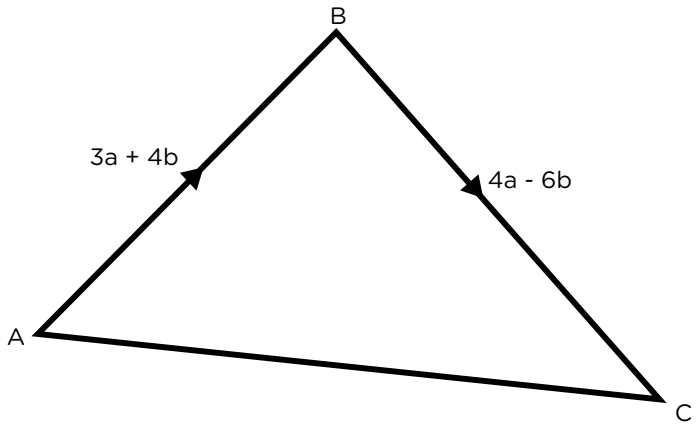
4. In the diagram $\overrightarrow{AB} = 3\mathbf{a} + 4\mathbf{b}$ and $\overrightarrow{BC} = 4\mathbf{a} - 6\mathbf{b}$.



(a) Find $\overrightarrow{AC}$ in terms of **a** and **b**.

(b) Knowing that M is the midpoint of BC find $\overrightarrow{AM}$ in terms of **a** and **b**.