**4**

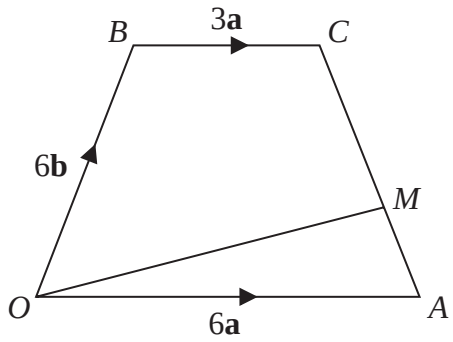


Diagram **NOT** accurately drawn

**Figure 2**

In Figure 2, $OACB$ is a trapezium in which $\overrightarrow{OA} = 6\mathbf{a}$, $\overrightarrow{OB} = 6\mathbf{b}$ and $\overrightarrow{BC} = 3\mathbf{a}$

$M$ is the point on $AC$ such that $AM : AC = 1 : 3$

(a) Find, in terms of **a** and **b**, simplifying your answer where possible,

(i) $\overrightarrow{AB}$ (ii) $\overrightarrow{AC}$ (iii) $\overrightarrow{AM}$

**(3)**

The point $N$ is such that $\overrightarrow{ON} = \mu\overrightarrow{OM}$ where $\mu > 1$ and such that $BCN$ is a straight line.

(b) Find and simplify an expression, in terms of **a** and **b**, for $\overrightarrow{ON}$.

**(4)**

Given that the area of $\triangle OAM$ is $12\,\text{cm}^2$

(c) find the area, in $\text{cm}^2$, of $\triangle NMC$.

**(3)**

**Question 4 continued**

**Question 4 continued**

**Question 4 continued**

**(Total for Question 4 is 10 marks)**