

7  $O, A, B$  and  $C$  are fixed points such that

$$\vec{OA} = 8\mathbf{i} - 6\mathbf{j} \quad \vec{OB} = 15\mathbf{i} - 6\mathbf{j} \quad \vec{OC} = 8\mathbf{i} + \mathbf{j}$$

(a) Find  $\vec{BC}$  as a simplified expression in terms of  $\mathbf{i}$  and  $\mathbf{j}$  (2)

(b) Find a unit vector parallel to  $\vec{BC}$  (2)

The point  $M$  is the midpoint of  $OA$  and the point  $N$  lies on  $OB$  such that  $ON:NB = 1:2$

(c) Show that the points  $M, N$  and  $C$  are collinear. (4)

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### Question 7 continued

Handwriting practice area with horizontal dotted lines.



**Question 7 continued**

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**(Total for Question 7 is 8 marks)**

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