22 The diagram shows triangle OAB with OA extended to E

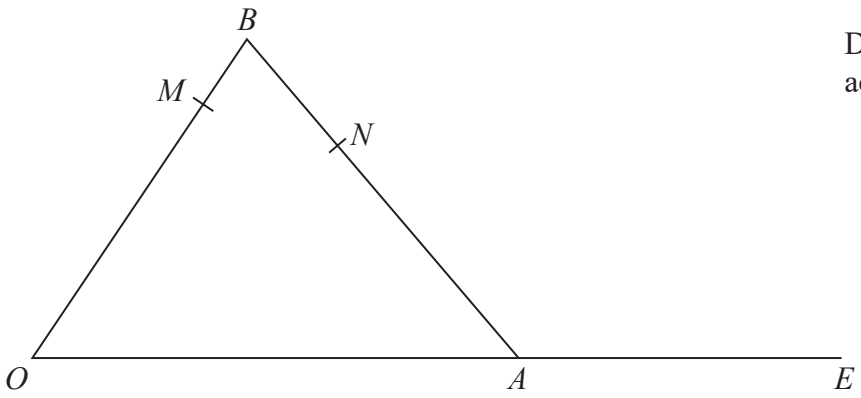


Diagram **NOT** accurately drawn

$\overrightarrow{OA} = \mathbf{a}$ $\overrightarrow{OB} = \mathbf{b}$

M is the point on OB such that $OM : MB = 4 : 1$
N is the point on AB such that $AN : NB = 3 : 2$
$OA : AE = 5 : 3$

(a) Find an expression for $\overrightarrow{ON}$ in terms of **a** and **b**
Give your answer in its simplest form.

$\overrightarrow{ON} =$ .....

(2)

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(b) Use a vector method to show that *MNE* is a straight line.

(3)

(Total for Question 22 is 5 marks)

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