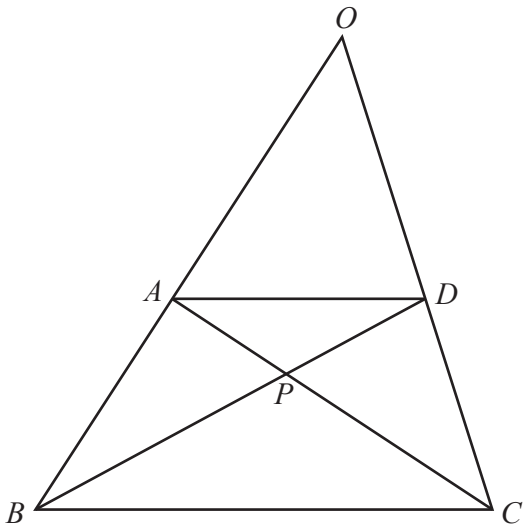
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The diagram shows a triangle OBC.
$OA : OB = 4 : 7$ and $OD : OC = 4 : 7$.

$$\overrightarrow{OB} = \mathbf{b} \text{ and } \overrightarrow{OC} = \mathbf{c}$$

The point P is the point of intersection of AC and BD such that $\overrightarrow{AP} = \lambda\overrightarrow{AC}$ and $\overrightarrow{BP} = \mu\overrightarrow{BD}$ where λ and μ are scalars.

(a) Find two expressions for $\overrightarrow{OP}$, each in terms of **b**, **c** and a scalar, and hence show that P divides both AC and DB in the ratio 4 : 7. [7]

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(b) The point Q is such that $\overrightarrow{OQ} = \frac{2}{7}\mathbf{b} + \frac{2}{7}\mathbf{c}$.

Use a vector method to show that O, Q and P are collinear. Justify your answer. [2]

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