

STEP II, 2007, Q8 MS

- Q8** If you don't know what is wanted in (i), then you really shouldn't be doing this question. It also really helps if you realise that if s and t are positive, then X is the point between B and C such that $BX : XC = t : s$. Once you have these ideas in place, this question involves nothing more than finding the points of intersection referred to, by equating two different line equations at a time. You will need to introduce a new pair of parameters each time, but if you keep each stage of working separate, then there is no reason not to use the same two symbols each time; and then solve pairs of simultaneous equations, gained by equating the **b**- and **c**-components of the two relevant line vector equations, for these two parameters in terms of β and γ . The result displayed is known as *Ceva's Theorem*.

Answers: (i) The straight line through B and C .



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