Turkey Junior National Olympiad 2004

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by xeroxia

1 Let $[AD]$ and $[CE]$ be internal angle bisectors of $\triangle ABC$ such that D is on $[BC]$ and E is on $[AB]$. Let K and M be the feet of perpendiculars from B to the lines AD and CE, respectively. If $|BK| = |BM|$, show that $\triangle ABC$ is isosceles.

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2 The positive integer n is the sum of two positive integers that divide $n + 6$. Find all possible values of n

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3 On the evening, more than $\frac{1}{3}$ of the students of a school are going to the cinema. On the same evening, More than $\frac{3}{10}$ are going to the theatre, and more than $\frac{4}{11}$ are going to the concert. At least how many students are there in this school?
