

Turkey Junior National Olympiad 2007

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by xeroxia

- 1 Let $ABCD$ be a trapezoid such that $AD \parallel BC$ and $|AB| = |BC|$. Let E and F be the midpoints of $[BC]$ and $[AD]$, respectively. If the internal angle bisector of $\triangle ABC$ passes through F , find $|BD|/|EF|$.

- 2 In a qualification group with 15 volleyball teams, each team plays with all the other teams exactly once. Since there is no tie in volleyball, there is a winner in every match. After all matches played, a team would be qualified if its total number of losses is not exceeding N . If there are at least 7 teams qualified, find the possible least value of N .

- 3 Find all odd positive integers less than 2007 such that the sum of all of its positive divisors is odd.
