

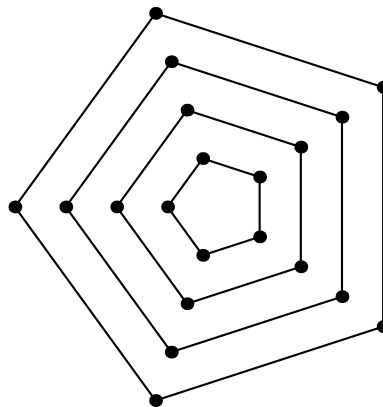
Turkey Junior National Olympiad 1999

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by xeroxia

- 1 The chord $[CD]$ is parallel to the diameter $[AB]$ of a circle with center O . The tangent line at A meet BC and BD at E and F . If $|AB| = 10$, calculate $|AE| \cdot |AF|$.

- 2 Each of integers from 1 to 20 are placed into the dots below. Two dots are *adjacent*, if below figure contains a line segment connecting them. Prove that how the numbers are arranged, it is possible to find an adjacent pair such that the difference between the numbers written on them is greater than 3.



- 3 Let $d(n)$ denote the largest odd integer divides n . Calculate the sum $d(1) + d(2) + d(3) + \dots + d(2^{99})$.