Prize Problem

Point B is on line segment $\overline{AC}$ with $|AB| = 9$ and $|BC| = 21$. Point D is *not* on $\overline{AC}$ so that $|AD| = |CD|$, and both $|AD|$ and $|BD|$ are integers. Let Σ be the sum of all possible perimeters of $\triangle ACD$. Calculate Σ.