Problem \textcircled{9}

Due in DSC 222 by 12 noon, \textbf{Friday, March 15, 2019}

\textbf{Problem:} Let $T$ be a triangle with sides 7, 8 and 9. (It is a solid triangle consisting of both interior and boundary points.)
Find the perimeter of a planar figure formed by all points with distance at most 1 from the triangle $T$.

\textbf{Rules:}

\begin{itemize}
  \item The competition is open to all undergraduate UNO students and it is supervised by the \textit{Upper Curriculum Committee} of the Mathematics Department.
  \item Submit your solutions to Andrzej Roslanowski in DSC 222 or to his mailbox.
  \item Every nontrivial step/claim in your solution must justified. You may cite-quote a result from your textbook, past problems of the week and other widely available sources. In each case you have to give full reference.
  \item There are no partial credits, so rather err on the side of caution and provide more explanations than less. If you are not sure that your sources/references are appropriate, please include the complete relevant proofs from there.
  \item Your answers should be be written clearly and legibly. We reserve the right to refuse grading your work if it is difficult to read it.
  \item The winners of Spring 2019 edition of POW will be determined at the end of the semester based on the number of correct solutions submitted.
  \item Problems will be posted by Friday 5pm and the solutions are due by the following Friday 12 noon.
\end{itemize}

\textbf{Prizes:}

\begin{itemize}
  \item Winners will receive books published by the American Mathematical Society. The titles actually awarded will be selected in cooperation with the awardees.
  \item Everybody scoring in the POW Competition qualifies for the grand finale: $\frac{\pi}{2}$ Mathematical Competition.
\end{itemize}