

1106-51-1922      **Michael McAsey\*** (mcasey@bradley.edu), 1501 W Bradley Ave, Bradley University, Peoria, IL 61625, and **Libin Mou**. *Maximal regular polygons inscribed in a triangle*. Preliminary report.

In analogy with the incircle of a triangle, we consider maximal inscribed regular polygons in a triangle. The radius and center of such an  $n$ -gon are found. It is not surprising that as  $n \rightarrow \infty$ , the inscribed polygons tend to the inscribed circle. Following a problem stated (and solved) by Calabi on squares in a triangle and work by Jerrard-Wetzel on equilateral triangles inscribed in a triangle, we consider triangles so that the maximal regular polygon can be inscribed in different ways inside its triangle. Jerrard-Wetzel and Calabi each found unique (non-equilateral) triangles for which the maximal equilateral triangle and square (respectively) can be inscribed in different ways. For regular  $n$ -gons with  $n > 6$ , it turns out that there are increasingly many triangles having different ways to inscribe their maximal polygons. An example of the results is that the number of triangles with regular  $n$ -gons inscribed in different ways is bounded below by  $\lfloor n/4 \rfloor$ . So for  $n$  large, such triangles are far from unique. (Received September 15, 2014)