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Numbers Simultaneously Polygonal and Centered Polygonal.

Recently, while teaching a course in number theory for practicing secondary mathematics teachers, I introduced the topic of polygonal numbers and centered polygonal numbers. While doing so a question came to mind: which numbers are both \( k \)-polygonal and \( k \)-centered polygonal? To my surprise, I could not find the answer to this question anywhere. In this session I will present a complete classification of the numbers that are simultaneously \( k \)-polygonal and \( k \)-centered polygonal and, as a consequence, share an infinite family of previously unknown integer sequences. (Received August 29, 2007)