1014-05-573 **Rachell Ashley*** (rachell_a@hotmail.com), Department of Mathematics and Statistics, Rochester Institute of Technology (RIT), Rochester, NY 14623-5603, **Aisosa Ayela-Uwangue** (aisosa.ayela@gmail.com), Department of Electrical Engineering, RIT, Rochester, NY 14623-5603, **Frances Cabrera** (cabrera.frances@gmail.com), Civil Engineering Technology, Environmental Management and Safety Dept., RIT, Rochester, NY 14623, **Carol Callesano** (carol.callesano@gmail.com), Department of Mathematics and Statistics, RIT, Rochester, NY 14623-5603, **Darren A. Narayan** (dansma@rit.edu), Department of Mathematics and Statistics, RIT, Rochester, NY 14623-5603, and **Allen J. Schwenk** (allen.schwenk@wmich.edu), Department of Mathematics, Western Michigan University, Kalamazoo, MI 49008-5248. *Necessary and Sufficient Conditions for Tiling with* 4×6 *and* 5×7 *Rectangles.*

Problem B-3 on the 1991 William Lowell Putnam Examination asked "Does there exist a natural number L, such that if m and n are integers greater than L, then an $m \times n$ rectangle may be expressed as a union of 4×6 and 5×7 rectangles, any two of which intersect at most along their boundaries?" Darren Narayan and Allen Schwenk showed in 2002 that L can be reduced to 33, and that this value is best possible. We explore the general problem of classifying which $m \times n$ rectangles can be tiled using 4×6 and 5×7 rectangles, and which ones cannot. We give a definitive answer for all but a finite number of cases. (Received September 21, 2005)