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Joshua D Laison* (jlaison@willamette.edu), **Colin Starr** and **Andrea Walker**. *Prime Distance Graphs*.

A graph is a prime distance graph if its vertices can be labeled with distinct integers such that for any two adjacent vertices, the difference of their labels is prime. Surprisingly, the existence of prime distance labelings of some infinite families of graphs is closely related to several well-known statements in Number Theory. In particular, we show that Dutch windmill graphs and paper mill graphs are prime distance graphs if and only if the Twin Prime Conjecture and dePougnac's Conjecture are true, respectively. (Received July 28, 2011)