1116-51-1240 **Elizabeth McGrady*** (emcgrady@smith.edu), **Rose Goueth** (rgoueth@smith.edu), **Alyssa Kaplan** (akaplan@smith.edu), **Claire Kerper** (ckerper@smith.edu) and **Gillian Tisdale** (gtisdale@smith.edu). *Number Theory on Square-tiled Surfaces II.* Preliminary report.

This is a continuation of "Number Theory on Square-tiled Surfaces I". We study geodesics on square-tiled surfaces that are composed of diagonals of the squares. The dimensions of a surface are"relatively prime" if there are no loops. The"gcd" is related to the number of loops and the "lcm" is related to the lengths of loops and paths between vertices. We have results for additional surfaces. (Received September 18, 2015)