MegaMenger Graphs

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In October 2014, many faculty and students at Calvin College worked to build a model of the Menger sponge, a type of fractal, out of business cards. This model can itself be modeled using graph theory, with each vertex representing a small cube, and an edge between two vertices whenever they share a face. We study graphs representing different steps of building the Menger sponge and Sierpinski carpet to determine their order, size, vertex degrees, chromatic number, and degeneracy, along with the surface area of the Menger sponge. Calculating these quantities requires solving many recurrence relations.