Problem of the Week
Grade 11 and 12

Seeing Red

A cube has edges of length n, where n is a positive integer. Three faces, meeting at a corner, are painted red. The cube is then cut into n^3 smaller cubes of unit length. That is, the side lengths of the new cubes are 1 unit.

If exactly 125 of these cubes have no faces painted red, determine the value of n.