



## Problem of the Week

### Problem E

#### Painting Faces

A cube has side length  $n$ , where  $n$  is a positive integer. Exactly three faces, which meet at a corner, are painted purple. The cube is then cut into  $n^3$  smaller cubes with side length 1. If exactly 125 of these smaller cubes have no faces painted purple, then determine the value of  $n$ .

