The Painted Cube Problem

A cube falls into a bucket of paint and comes out covered on all 6 faces. The cube is then cut into smaller cubes, each 1 inch on an edge.

If the original cube was 2 inches on each edge, how many pieces will there be?

How many of those pieces will have paint on 3 faces? On 2 faces? On 1 face? On zero faces?

What if the original cube was 3 inches on each side? 4 inches on each side? 5 inches on each side? .....

Length of one side of cube	0 sides painted	1 side painted	2 sides painted	3 sides painted	Total Cubes
2 inches					
3 inches					
4 inches					
5 inches					
6 inches					
7 inches					
8 inches					
9 inches					
10 inches					
Pattern?					
Rule?					