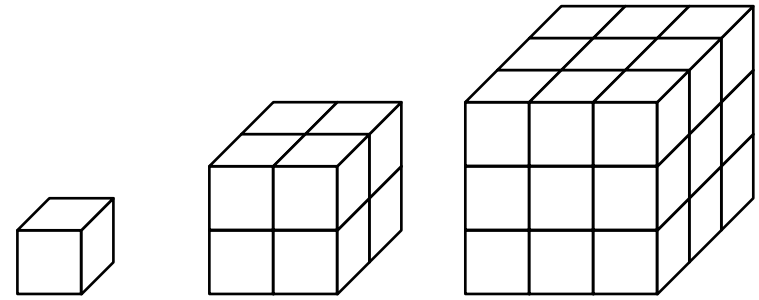
Advanced Challenge Level 1 Problem #10 _____

Consider each of the figures drawn below. They represent 'cubes' that have been built using blocks. Each block is one inch long, one inch wide, and one inch tall. Cube number one consists of only one block. Cube number two consists of eight blocks. Cube number three consists of 27 blocks. The blocks are unpainted wood originally. After the cubes are assembled, the outside of each cube is painted green. Clearly, in cube number one, all six faces of the block will be painted green. In cube number two, each of the eight blocks used will have three faces painted green. Finally, in cube number three, 8 blocks will have three faces painted green, 12 blocks will have two faces painted green, 6 blocks will have one face painted green, and 1 block will be unpainted. Assume that other similar cubes are built. Fill out the table below.



cube 1 cube 2 cube 3

Cube Number	1	2	3	4	5	6	x	10	20
Number of Blocks Used	1	8	27						
Blocks with 6 faces painted	1	0	0						
Blocks with 3 faces painted	0	8	8						
Blocks with 2 faces painted	0	0	12						
Blocks with 1 face painted	0	0	6						
Blocks with 0 faces painted	0	0	1						

Describe how you got your answers in the table. This would include any patterns or formulas that you used.