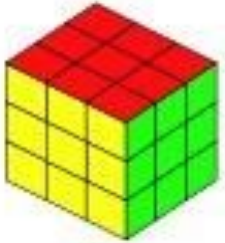
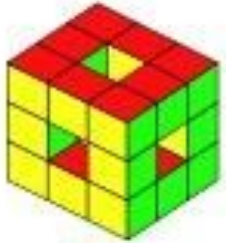
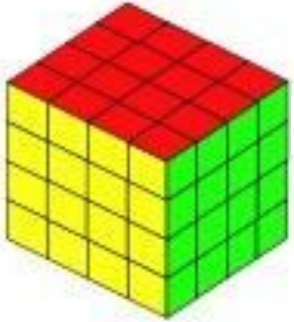
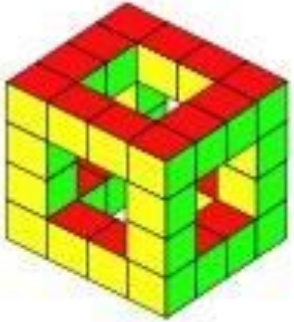
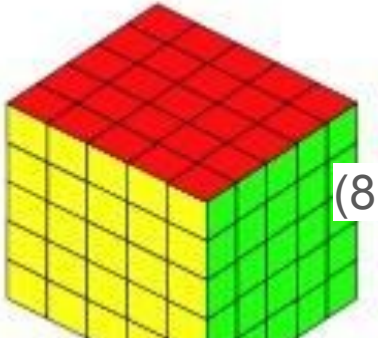
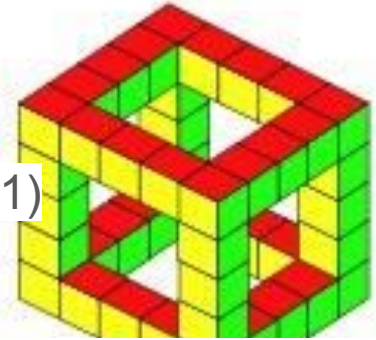
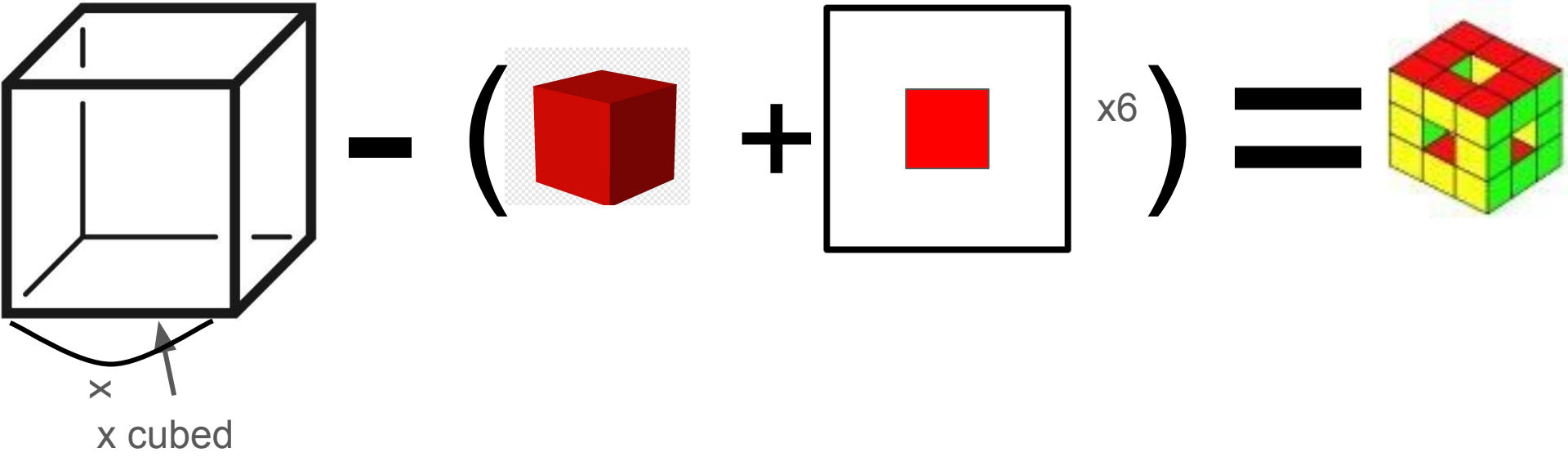
	Solid	Difference	Frame	
27 cubes		(7)		20 cubes
64 cubes		(32)		32 cubes
125 cubes		(81)		44 cubes

From Solid to Frame



Solid - (1 cube + 6 squares) = Frame

How to find the difference and the Frame cube volume from 3x3x3 cubes to infinity. (*x* is the variable)

First, I need to find what the volume of the cube inside is. This can be expressed with $x\text{-}2^3$, x is the number for any side of the cube, 2 is for the blocks remaining on the edges, and it is cubed as it is a cube. Then, I can find how to get the blocks on each side. This can be expressed by $6 \times (x\text{-}2)^2$. The x is the number for any side of the cube, 2 is for the remaining cubes on the edges, and it is squared as it is a square. It is multiplied by 6, as there are 6 sides to the cube. So, the formula is $(x\text{-}2)^3 + 6 \times (x\text{-}2)^2$. To find the Frame cube's volume, I need to subtract $(x\text{-}2)^3 + 6 \times (x\text{-}2)^2$ from the volume of the Solid cube.

Solid - (1 cube + 6 squares) = Frame

If x is 3 and the volume is 27…

Solid - $\{(x-2)^3 + 6 \times (x-2)^2\}$= Frame

27 - $\{(3-2)^3 + 6 \times (3-2)^2\}$= Frame

27 - $(1^3 + 6 \times 1^2)$ = Frame

27 - $(1 + 6 \times 1)$ = 20

If x is 5 and the volume is 125…

Solid - $\{(x-2)^3 + 6 \times (x-2)^2\}$= Frame

125 - $\{(5-2)^3 + 6 \times (5-2)^2\}$= Frame

125 - $(3^3 + 6 \times 3^2)$ = Frame

125 - $(27 + 6 \times 9)$ = 44