Menger Sponge
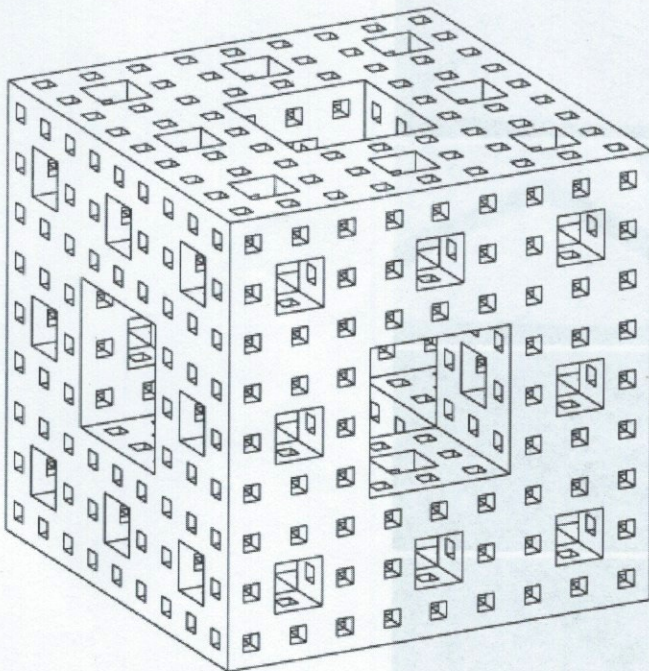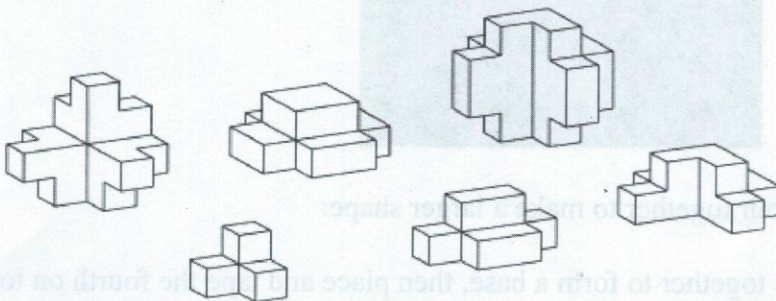
Take a cube, divide it into 27 (3 x 3 x 3) smaller cubes of the same size; now remove the cube in the center of each face plus the cube at the center of the whole. You are left with a structure consisting of the eight small corner cubes plus twelve small edge cubes holding them together. Now, imagine repeating this process on each of these remaining 20 cubes. Repeat again. And again, ad infinitum ...

1. Build a Menger sponge out of business card cubes. One cube is level zero. Can you build a level 1 sponge?

2. Can you build a level 1 sponge out of 4 single tripods and 4 additional cubes?

3. Can you build a level 2 sponge? Does a big collection of level 1 sponges help?

4. Bonus: What do you get if you slice through the center of the sponge? If your slice is through the midpoints of the edges?

Tripods   QUADRUPLE

BASIC   DOUBLE   TRIPLE