(* Adam Beck *)

(* Calculate the fractional dimension of the Sierpinski carpet and "sponge" *)

(* Sierpinski carpet *)

In[12]:= (* consider a 2D square. As discussed in class, we need $(1/\text{epsilon})$^2 objects
 to "fill" the square, where epsilon is the diameter. Let E refer to epsilon. *)
(* dimension = log[N{E,A}] / log[1/E] *)
(* log[N{E,A}] is calculated by taking the mass of the current iteration of the carpet,
and plugging E into that mass equation. *)

(* For the first iteration, the mass of the carpet is $8/9$, the next is 8/9 squared,
then cubed, and so on. These are all multiplied by $(1/E)$ squared. A
 For loop can be used to iterate through a few iterations of the carpet,
and converge on an answer. Let epsilon be raised to the 1,
2nd, 3rd, etc. power for every iteration *)

epsilon = 1/3;
mass = 8/9;
For[i = 1, i < 6, i++, (
    x = 4; y = i)];