

# Understanding the Making of Fractals

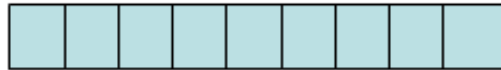
Lesson Goal: For students to understand how a fractal is made. Students will understand the four terms associated with fractal building: reduce, replicate, rebuild and iteration.

A powerpoint presentation has been designed to use with connected cubes. The powerpoint presentation introduces the 4 terms to the students.

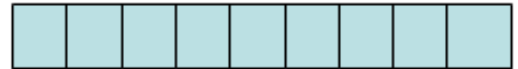
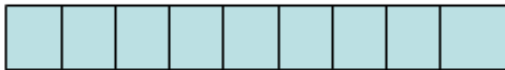
Have students form a string of 27 connected cubes on one color. Introduce this as Stage 0. The first stage in any fractal is always called Stage 0.



Begin to build understanding for the four terms by telling students you are going to reduce the length of the string by making a string that is  $\frac{1}{3}$  the length of the original. Have students make this string.



To introduce step two ask students to replicate this reduced model so they have two of them.



Then ask students to rebuild the first string with the two replicated models by using them on the two ends and filling in the middle section with a new color. This new string is called Stage 1.

Now we are going to iterate the steps we just used to make Stage 1 from Stage 0, but this time we will do the iteration steps to Stage 1.





each step by using the lines on the grid.

For a follow up lesson students could study the rectangular fractal included on the website.