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Elaine F. Magee* (emagee@su.edu), Shenandoah University, Mathematics Dept., 1460 University Drive, Winchester, VA 22601. *Why Include Fractal Geometry in a Non-Euclidean Geometry Course?*

Fractals have shapes with counterparts in the real world. To calculate the dimension of the square, cube and Sierpinski triangle, use the formula $a = 1/(s^D)$ where a = number of pieces a shape is divided into; s = reduction factor and D = dimension. This illustrates why a square has two dimensions, a cube has three dimensions and a Sierpinski triangle has the fractal dimension of 1.585. A table of stages where the number of stages approaches infinity can be used to illustrate the fractal paradox of finite area and infinite perimeter of the Sierpinski triangle. The grid method can be used to approximate the dimension of a fractal coastline using the formula $D = (\log N)/(\log(1/L))$, where $1/L$ is the size of the grid cell, N is the number of grid cells, and D is dimension. Having students generate fractal bushes provides an introduction to the applications of fractal models and the iterative process. Starting with a figure and using the rule to construct the fractal allows students to see how fractals generate. The rule would be given as a drawing in class. Looking at examples of fractals in nature (fern leaf, cauliflower) helps illustrate the use of fractals in such areas as the diagnosis of breast cancer, AIDS virus, and fiber optics. (Received September 26, 2006)