

LESSON: Fractals & Fractions in Triangles**GRADE: 3****OBJECTIVES:****Mathematics****Geometry-****Reason with shapes & their attributes**

- **3.G.2.** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.

Physical Education

- **P.E. Standard 1-** Demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities.

MATERIALS & RESOURCES:

- Access to Sierpinski Triangle found at Fractal Foundation website - <http://fractalfoundation.org/resources/fractivities/sierpinski-triangle/>
- Template for Sierpinski Triangle – <http://fractalfoundation.org/fractivities/FractalTriangles.pdf>
- Markers or crayons
- Scissors
- Paper

PRESENTATION:

The Sierpinski Triangle activity illustrates the fundamental principles of fractals - how a pattern can repeat again and again at different scales, and how this complex shape can be formed by simple repetition. Each student will make their own fractal triangle, in which they make smaller and smaller triangles. Then, they will cut out their triangles and assemble them all into a larger, fractal pattern that replicates the same shape.

DIRECTIONS:

1. Following the directions from the worksheet, have each child draw, divide and color their triangle. Then have them join all the triangles to create a large Sierpinski Triangle.
2. Talk about fractals and fractions. What fraction of the triangle is used each time it is divided? Does the fraction change with each iteration? (The fraction of the original triangle gets smaller, however the fraction of a triangle being divided at any given time remains the same.)

TIME:

45 min