Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Proving Similarity Relationships**

Monica

Geometry Period:\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:** During the last two days, we discovered that if two figures have a similarity ratio of *a:b*, then the ratio of their perimeters is a:b and the ratio of their areas is . For three-dimensional figures, the ratio of their surface areas is also , and the ratio of their volumes is . Consider the scenarios below and use algebra to demonstrate why this is true.

**SCENARIO 1:**

A triangle has side lengths *x, y,* and *z,* where *x* is the base and *y* is the height. Each side length is multiplied by a scale factor of *h*. Determine the perimeter and area of each triangle (the original and the similar triangle) and show that the ratio of the perimeters is the same as the similarity ratio, and show that the ratio of the areas is the same as the similarity ratio squared.

**SCENARIO 2:**

A rectangular prism has a length, width, and height of *x, y,* and *z*. Each side length is multiplied by a scale factor of *h*. Determine the surface area and volume of each rectangular prism (the original and the similar solid) and show that the ratio of the perimeters is the same as the similarity ratio, and show that the ratio of the areas is the same as the similarity ratio squared.