Exploring similar Perimeters & Areas

**Part 1: Exploring Similar Rectangles**

1. Draw a small non-square rectangle on graph paper and label it R1. Then draw 3 similar rectangles and label them R2, R3, and R4
2. Now find the area and perimeter of each.

|  |  |  |
| --- | --- | --- |
| **Name** | **Area** | **Perimeter** |
| R1 |  |  |
| R2 |  |  |
| R3 |  |  |
| R4 |  |  |

1. Find the similarity ratios, the perimeter ratios, and the area ratios for the following rectangles. Simplify all ratios.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rectangles** | **Similarity Ratio** | **Perimeter Ratio** | **Area Ratio** |
| R1 : R2 |  |  |  |
| R1 : R3 |  |  |  |
| R2 : R3 |  |  |  |
| R3 : R4 |  |  |  |

1. Make a conjecture about the relationship of the perimeter ratio to the similarity ratio.
2. Make a conjecture about the relationship of the area ratio to the similarity ratio.

**Part 2: Exploring larger polygons**

Does the same rule apply for larger polygons? Let’s find out

1. Draw a polygon with more than 4 sides on graph paper and label it P1. (It works best to keep your drawing to the grid lines.) Then draw 2 similar polygons and label them P2, P3. Make sure that you enlarge or reduce *all* sides by the same similarity ratio.
2. Now find the area and perimeter of each.

|  |  |  |
| --- | --- | --- |
| **Name** | **Area** | **Perimeter** |
| P1 |  |  |
| P2 |  |  |
| P3 |  |  |

1. Find the similarity ratios, the perimeter ratios, and the area ratios for the following polygons. Simplify all ratios.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rectangles** | **Similarity Ratio** | **Perimeter Ratio** | **Area Ratio** |
| P1 : P2 |  |  |  |
| P1 : P3 |  |  |  |
| P2 : P3 |  |  |  |

1. Make a conjecture about the relationship of the perimeter ratio to the similarity ratio.
2. Make a conjecture about the relationship of the area ratio to the similarity ratio.

Now compare your conjectures to theorem 8-6 on pg. 455