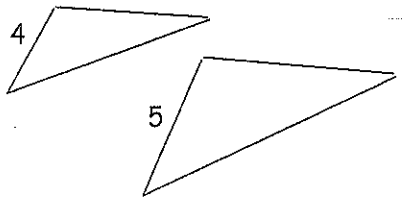
Study Guide – 10-4 Perimeters and Areas of Similar Figures

If the similarity ratio of two similar figures is $\frac{a}{b}$, then

(1) the ratio of their perimeters is $\frac{a}{b}$ and

(2) the ratio of their areas is $\frac{a^2}{b^2}$.



Example 1: The triangles at the right are similar.

(a) Find the ratio (larger to smaller) of the perimeters.

(b) If the perimeter of the smaller triangle is 18 cm, find the perimeter of the larger triangle.

(c) Find the ratio (larger to smaller) of the areas.

(d) If the area of the larger triangle is 410 cm^2, find the area of the smaller triangle.

Example 2: The ratio of the lengths of the corresponding sides of two regular octagons is $\frac{8}{3}$. The area of the larger octagon is 320 ft^2. Find the area of the smaller octagon.

Example 3: Benita plants the same crop in two rectangular fields, each with side lengths in a ratio of 2:3. Each dimension of the larger field is $3\frac{1}{2}$ times the dimension of the smaller field. Seeding the smaller field costs \$8. How much money does seeding the larger field cost?

Example 4: The areas of two similar polygons are 32 $in.^2$ and 72 $in.^2$ If the perimeter of the smaller polygon is 15 in, find the perimeter of the larger polygon.