

# Perimeters and Areas of Similar Figures Guide Notes

**SIMILAR FIGURES** are figures whose corresponding angles are congruent and corresponding side lengths are proportional. Corresponding sides of similar figures are in proportion.

**SCALE FACTOR** or **SIMILARITY RATIO** is the ratio of the lengths of the corresponding sides of two similar figures.

The perimeters and areas are related by the scale factor.

### SCALE FACTOR

$$\frac{a}{b}$$

### RATIO OF PERIMETERS

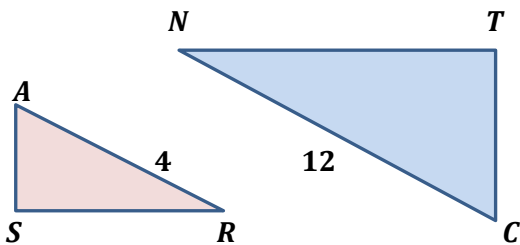
$$\frac{P_1}{P_2} = \frac{a}{b}$$

### RATIO OF AREAS

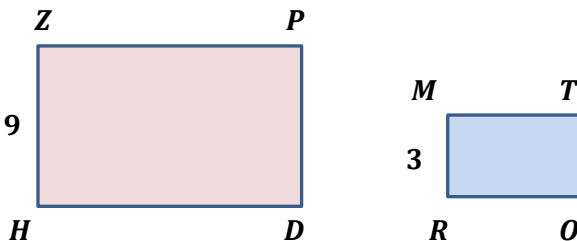
$$\frac{A_1}{A_2} = \frac{a^2}{b^2}$$

**Sample Problem 1:** The figures in each pair are similar. Compare the first figure to the second. Find the scale factor and give the ratio of the perimeters and the ratio of the areas.

a.  $\triangle ASR \sim \triangle CTN$



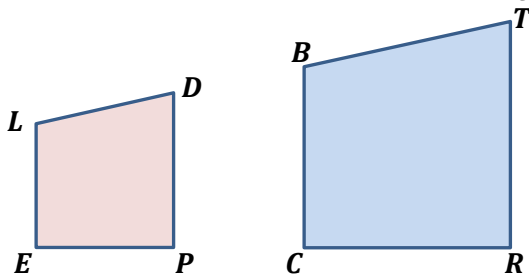
b.  $ZPDH \sim MTOR$



**Sample Problem 2:** The figures in each pair are similar. Find the area of the other figure.

$LDPE \sim BTRC$

$$A_{LDPE} = 12 \text{ m}^2 \quad \overline{LE} = 4 \text{ m} \quad \overline{BC} = 8 \text{ m} \quad A_{BTRC} = ?$$

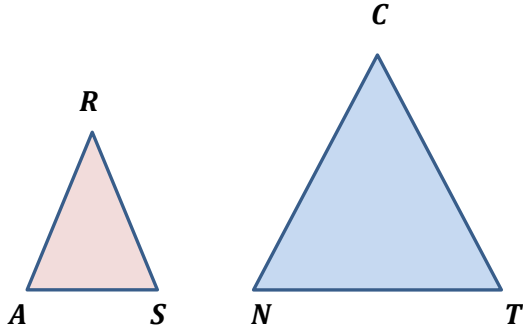


# Perimeters and Areas of Similar Figures Guide Notes

**Sample Problem 3:** Find the scale factor and the ratio of perimeters for each pair of similar figures.

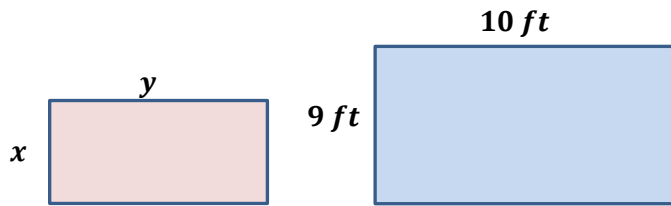
$$\triangle ASR \sim \triangle NTC$$

$$A_{ASR} = 8\sqrt{3} m^2 \quad A_{NTC} = 128\sqrt{3} m^2$$



**Sample Problem 4:** Find the values of  $x$  and  $y$  when the smaller similar rectangle shown here has the area given.

$$A_1 = 10 ft^2 \quad x = ? \quad y = ?$$



**Sample Problem 5:** The figures in each pair are similar. Find the value of missing side.

$$\triangle BEV \sim \triangle SEF$$

$$A_{BEV} = 36 m^2 \quad A_{SEF} = 12 m^2 \quad \overline{BV} = 6 m \quad \overline{SF} = ?$$

