

Polygons are **similar** if and only if:

- All pairs of corresponding sides are **Proportional/have same scale factor**
- All pairs of corresponding angles are **\cong** .

Notation for Similarity:

\sim

Using similarity statements: If $\triangle ABC \sim \triangle DEF$ then corresponding...

ANGLES ARE \cong	SIDES ARE Proportional	DIAGRAM
$\angle A \cong \angle D$ $\angle B \cong \angle E$ $\angle C \cong \angle F$	$\frac{DE}{AB} = \frac{EF}{BC} = \frac{DF}{AC}$	

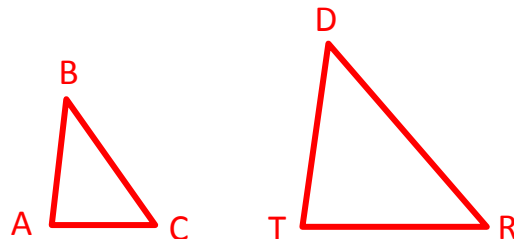
Examples:

1. Given that $\triangle AFG \sim \triangle DRH$. Complete the following.

$$\angle H \cong \angle \underline{G} \qquad \frac{DR}{AF} = \frac{DH}{\underline{AG}} \qquad \angle D \cong \angle \underline{A} \qquad \frac{\underline{FG}}{RH} = \frac{AG}{DH}$$

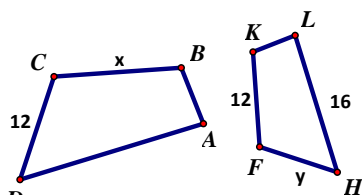
2. $\triangle ABC$ is similar to another triangle. Provided is some information about the two triangles, $\frac{BC}{DR} = \frac{AB}{TD}$. From this information determine the triangle similarity statement.

$$\triangle ABC \sim \triangle \underline{TDR}$$



3. Use the scale factor to determine the missing values.

a) $CBAD : FKLH$ is 3:2



$$\frac{3}{2} = \frac{12}{y}$$

$$3y = 2(12)$$

$$3y = 24$$

$$y = 8$$

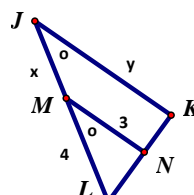
$$\frac{3}{2} = \frac{x}{12}$$

$$3(12) = 2x$$

$$36 = 2x$$

$$x = 18$$

b) $\triangle LMN : \triangle LJK$ is 1:2



$$\frac{1}{2} = \frac{3}{y}$$

$$y = 6$$

$$\frac{1}{2} = \frac{4}{4+x}$$

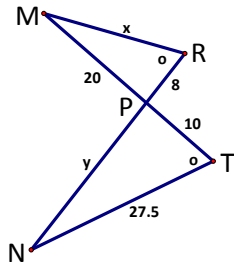
$$1(4+x) = 2(4)$$

$$4+x = 8$$

$$x = 4$$

4. Solve for the missing information, given that the two triangles in each question are SIMILAR. Write a similarity statement first.

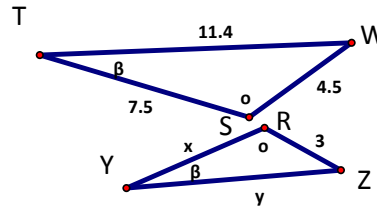
a) Similarity Statement: $\triangle MRP \sim \triangle NTP$



$$\frac{20}{y} = \frac{8}{10}$$

$$\frac{x}{27.5} = \frac{8}{10}$$

b) Similarity Statement: $\triangle TWS \sim \triangle YZR$



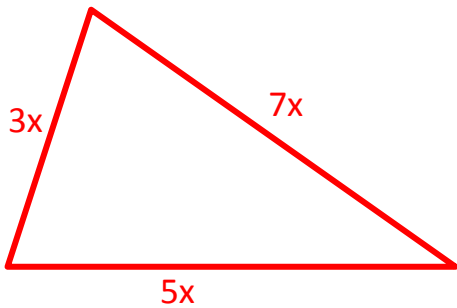
$$\frac{7.5}{x} = \frac{4.5}{3}$$

$$\frac{11.4}{y} = \frac{4.5}{3}$$

x = 22 y = 25

x = 5 y = 7.6

5. If the three sides of a triangle are in ratio of 3:5:7 and the perimeter of the triangle is 12 cm. What is the length of the longest side?



$$3x + 7x + 5x = 12$$

$$15x = 12$$

$$x = 0.8$$

$$7(0.8) = 5.6 \text{ cm}$$