

Parts of Similar Triangles

G.7 (2016)

Practice

Proportional Perimeters Theorem

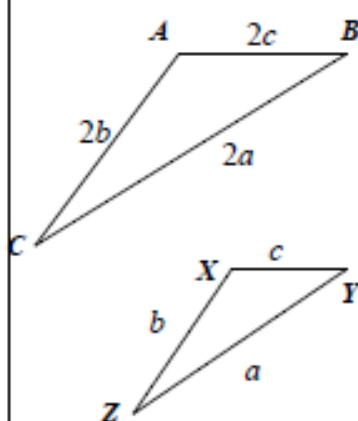
If two polygons are similar, then the perimeters are proportional to the measures of the corresponding sides.

$$\triangle ABC \sim \triangle XYZ$$

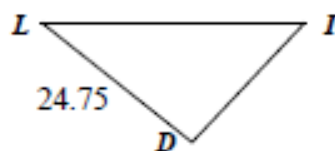
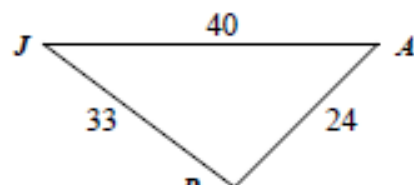
$$\text{Scale factor} = 2$$

$$\therefore \frac{P_{\triangle ABC}}{P_{\triangle XYZ}} = \frac{2a + 2b + 2c}{a + b + c}$$

$$\frac{2(a + b + c)}{1(a + b + c)} = \frac{2}{1} = 2$$



Example 1: If $\triangle JAR \sim \triangle LID$, find the perimeter of $\triangle LID$.



$$\frac{P_{\triangle JAR}}{P_{\triangle LID}} = \frac{JR}{LD}$$

$$\frac{97}{x} = \frac{33}{24.75}$$

$$33x = 2400.75$$

$$x = 72.75$$

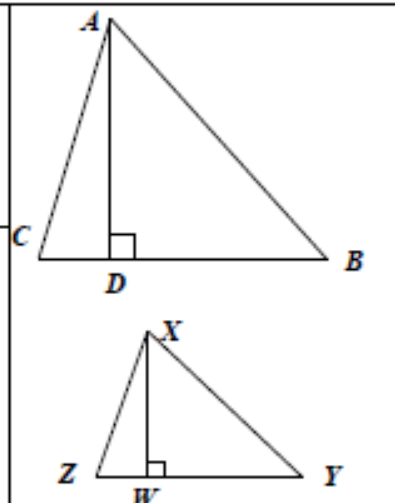
The perimeter is 72.75 units.

1. Write a proportion using the Proportional Perimeters Theorem.
2. Substitute known distances.
3. Solve for x.

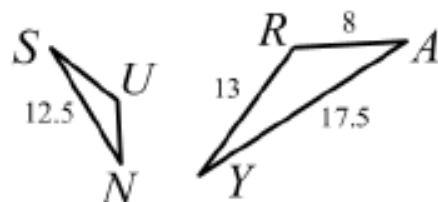
If two triangles are similar, then the measures of the corresponding altitudes are proportional to the measures of the corresponding sides.

$\sim \Delta$'s have corr. altitudes proportional to corr. sides

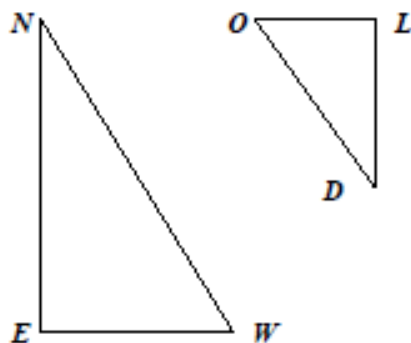
$$\triangle ABC \sim \triangle XYZ \therefore \frac{AC}{XZ} = \frac{AB}{XY} = \frac{BC}{YZ} = \frac{AD}{XW}$$



1. Find the perimeter of $\triangle SUN$ if $\triangle SUN \sim \triangle YRA$



2. If $\triangle NEW \sim \triangle DLO$, $NE = 36$, $EW = 15$, $NW = 39$, and $DL = 12$. Find the perimeter of $\triangle DLO$.

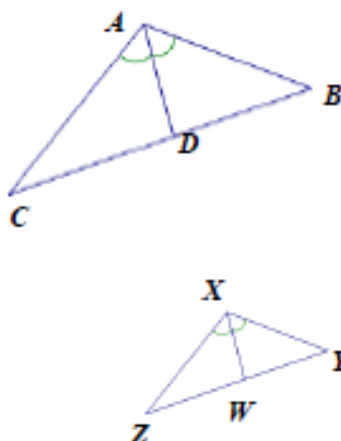


If two triangles are similar, then the measures of the corresponding **angle bisectors** are proportional to the measures of the corresponding sides.

$\sim \Delta$'s have corr. angle bisectors proportional to corr. sides

$$\triangle ABC \sim \triangle XYZ \therefore$$

$$\frac{AC}{XZ} = \frac{AB}{XY} = \frac{BC}{YZ} = \frac{AD}{XW}$$

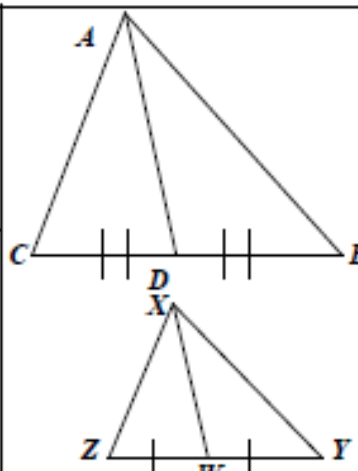


If two triangles are similar, then the measures of the corresponding **medians** are proportional to the measures of the corresponding sides.

$\sim \Delta$'s have corr. medians proportional to corr. sides

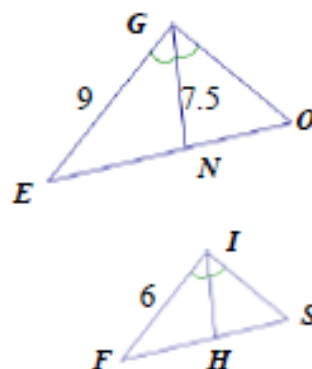
$$\triangle ABC \sim \triangle XYZ \therefore$$

$$\frac{AC}{XZ} = \frac{AB}{XY} = \frac{BC}{YZ} = \frac{AD}{XW}$$



Example 2:

Find the length of IH if $\triangle EGO \sim \triangle FIS$.



$$\frac{GE}{IF} = \frac{GN}{IH}$$

$$\frac{9}{6} = \frac{7.5}{IH}$$

$$9(IH) = 45$$

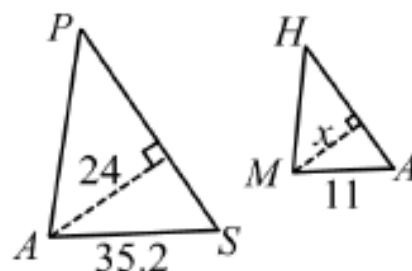
$$IH = 5$$

1. Write a proportion showing that the ratio of the angle bisectors is proportional to the ratio of the corresponding sides.

2. Substitute known distances.

3. Solve for IH .

3. Find x if $\triangle PAS \sim \triangle HMA$.



4. $\triangle ESB \sim \triangle CTR$
Find the perimeter of $\triangle CTR$.

