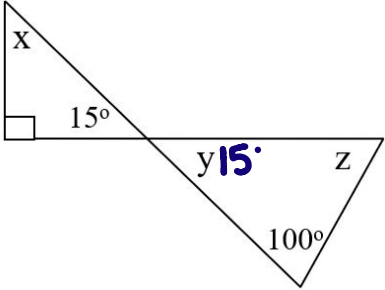
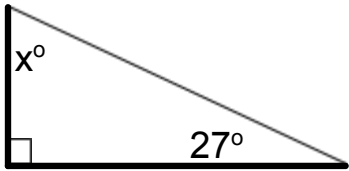
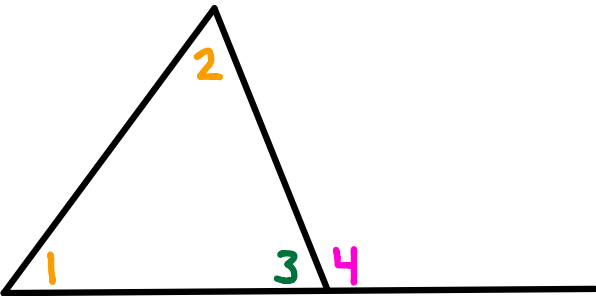
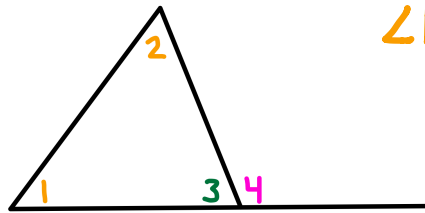


9.1.2-9.1.4 NOTES: Angle Relationships in Triangles

<p>Triangle Sum Theorem</p>	<p>When the 3 angles of a triangle are added together, their sum is equal to 180.</p>	
<p><u>Example 1</u> Find x, y, and z.</p> 	$\begin{array}{r} x+90+15=180 \\ x+105=180 \\ \underline{-105 \quad -105} \\ \boxed{x=75^\circ} \end{array}$	$\boxed{y=15^\circ}$ <p>Vertical angles</p> $\begin{array}{r} z+15+100=180 \\ z+115=180 \\ \underline{-115 \quad -115} \\ \boxed{z=65^\circ} \end{array}$
<p>Equilateral Triangles</p>	<p>A triangle with 3 equal sides.</p>	
<p><u>Example 2</u> Find x.</p> 	$\begin{array}{r} x+90+27=180 \\ x+117=180 \\ \underline{-117 \quad -117} \\ \boxed{x=63^\circ} \end{array}$	
<p>Exterior Angles and Remote Interior Angles</p>	 <p>$\angle 4$ is an exterior angle $\angle 1$ and $\angle 2$ are remote interior angles</p>	

Exterior Angle Theorem

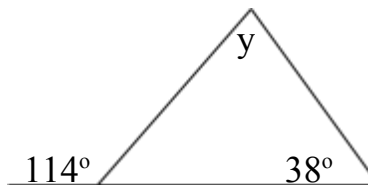
When the remote interior angles are added together, their sum is equal to the exterior angle.



$$\angle 1 + \angle 2 = \angle 4$$

Example 3

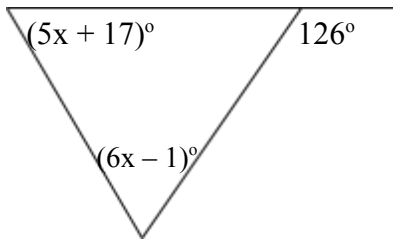
Find y .



$$\begin{array}{r} y + 38 = 114 \\ -38 \quad -38 \\ \hline y = 76 \end{array}$$

Example 4

Find x .

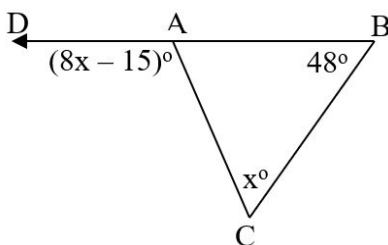


$$\begin{array}{r} 5x + 17 + 6x - 1 = 126 \\ 11x + 16 = 126 \\ -16 \quad -16 \\ \hline 11x = 110 \\ \frac{11}{11} \quad \frac{11}{11} \\ \hline x = 10 \end{array}$$

$$\begin{array}{r} 5x + 17 \\ 5(10) + 17 \\ 50 + 17 = 67 \\ \hline 6x - 1 \\ 6(10) - 1 \\ 60 - 1 = 59 \end{array}$$

Example 5

Find x and $m\angle DAC$.

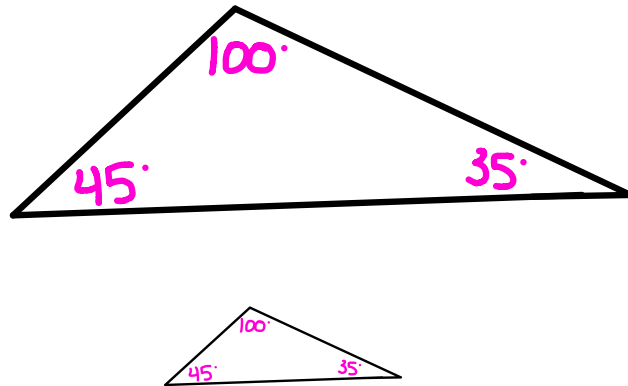


$$\begin{array}{r} x + 48 = 8x - 15 \\ -x \quad -x \\ \hline 48 = 7x - 15 \\ +15 \quad +15 \\ \hline 63 = 7x \\ \frac{63}{7} \quad \frac{7x}{7} \\ \hline x = 9 \end{array}$$

$$\begin{array}{r} 8x - 15 \\ 8(9) - 15 \\ 72 - 15 \\ \hline 57 \end{array}$$

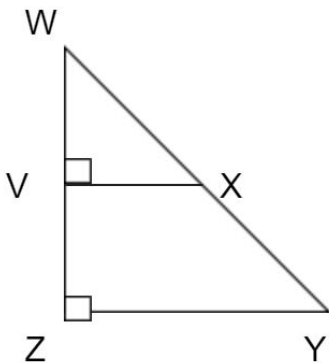
Angle-Angle
Similarity
(AA)

Two triangles are similar if the corresponding angles are congruent.



EXAMPLE 6:

Explain why
 $\triangle WVX \sim \triangle WZY$



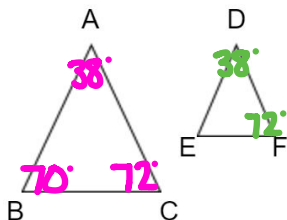
$\angle VNX = \angle ZWY$ because they're the same angle.

$\angle WVX = \angle WZY$ because they're both right angles.

Therefore the 2 triangles are similar due to AA~.

EXAMPLE 7:

Are the triangles similar? EXPLAIN.



$m\angle A = 38^\circ, m\angle B = 70^\circ,$
 $m\angle F = 72^\circ, m\angle D = 38^\circ$

$$\begin{aligned} 38 + 70 + c &= 180 \\ 108 + c &= 180 \\ c &= 72 \end{aligned}$$

$\angle A = \angle D$ and $\angle C = \angle F$. Therefore, the triangles are similar due to AA~.

