

LEARNING OBJECTIVE: We will explore different ways to prove that two triangles are similar. (G8M3L8)

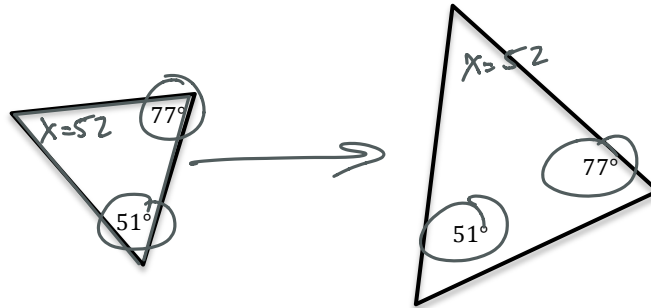
CONCEPT DEVELOPMENT:

AA Similarity: Two triangles with two pairs of equal angles are similar.

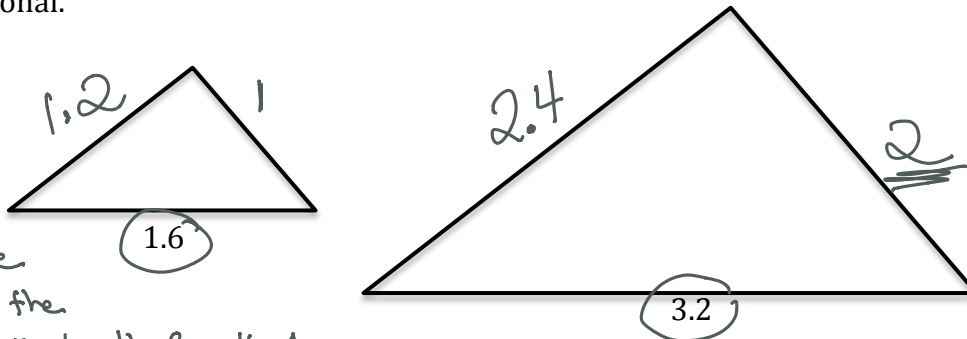
Example:

Angle
Angle

$$\begin{array}{r} 77 \quad 180 \\ + 51 \quad - 128 \\ \hline 128 \quad 52 \end{array}$$



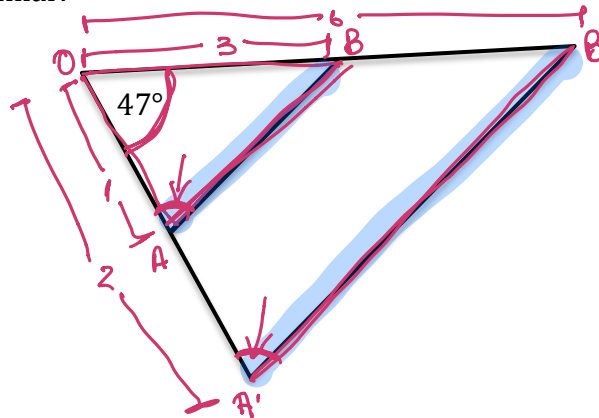
Similar Triangles: Lengths of corresponding sides of similar triangles are also proportional.



If these 2 Δ 's are similar, all sides of the larger Δ will be 2x the length of smaller Δ .

SAS Similarity: If two triangles have one pair of equal corresponding angles and the ratio of the two corresponding sides that form the angle are equal, then the triangles are similar.

SIDE
ANGLE
SIDE



The ratio of corresponding sides are equal, so $AB \parallel A'B'$

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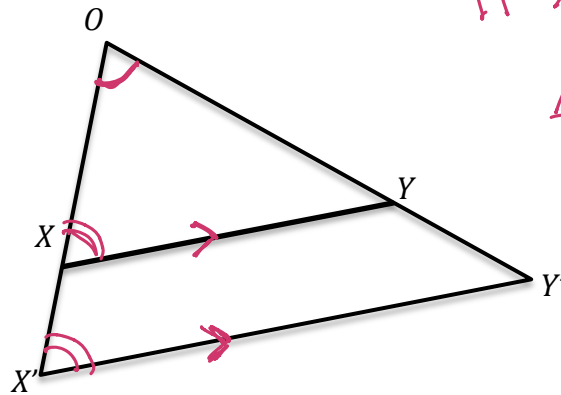
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Similarity as a Result of Parallel Lines:

If we assume $\overline{XY} \parallel \overline{X'Y'}$, then $\Delta OXY \sim \Delta OX'Y'$

Example:

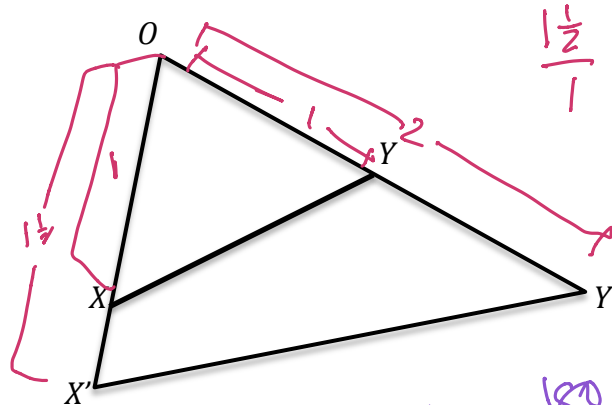


If $XY \parallel X'Y'$ then

$\Delta OXY \sim \Delta OX'Y'$

AA Similarity.

Non-Example:

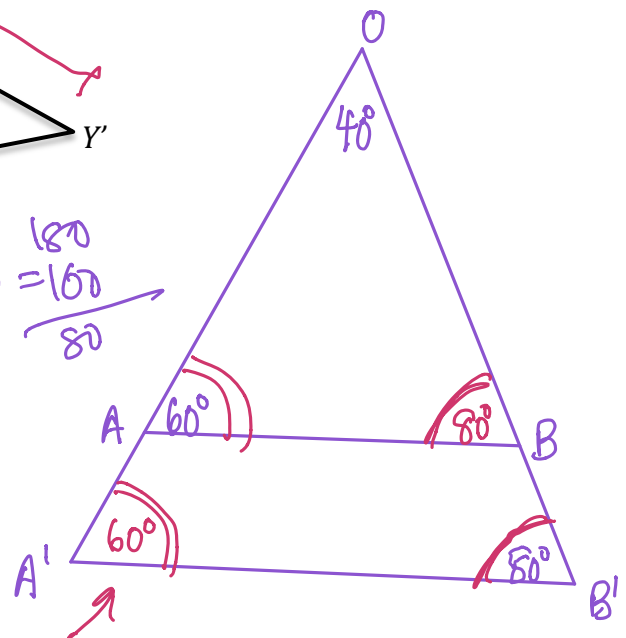


$\frac{1\frac{1}{2}}{1} \neq \frac{2}{1}$

$\overline{AB} \parallel \overline{A'B'}$

$\Delta OAB \sim \Delta OA'B'$

$\frac{40 + 60}{80} = \frac{100}{80}$



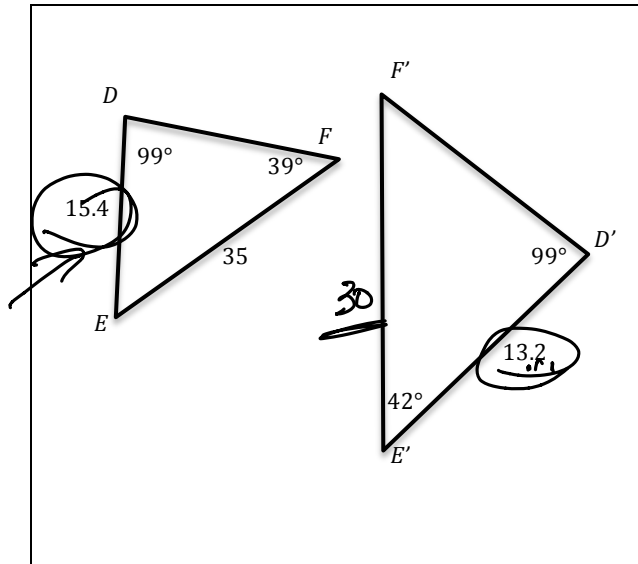
GUIDED PRACTICE:

Steps for Determining Unknown Side Lengths of Similar Triangles

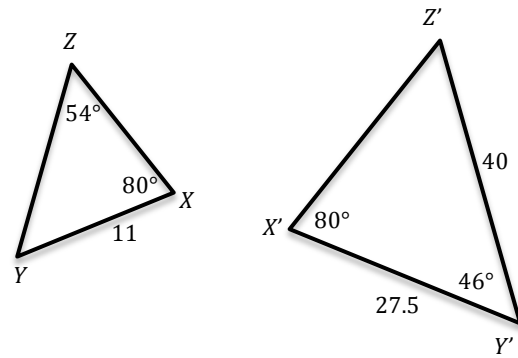
1. Verify that the triangles you are comparing are similar.
2. Set up a proportion to find corresponding side lengths and determine unknown side length.

****Triangles not drawn to scale**

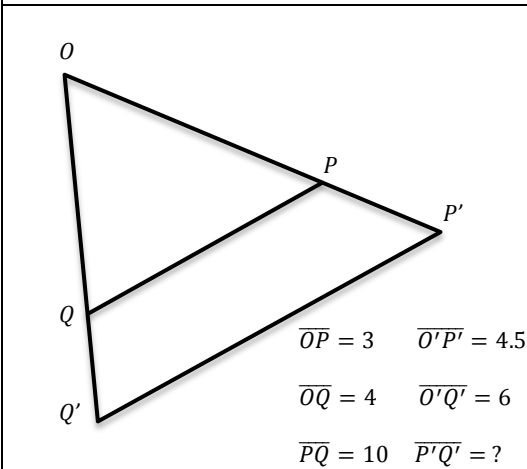
<p>AA Similarity</p> $\frac{XY}{X'Y'} = \frac{XZ}{X'Z'}$ $5.1 \cdot XY = (4.5 \cdot 8.5)$ $XY = \frac{38.25}{5.1} \quad XY = 7.5$	<p>Find the length of \overline{AC}.</p> $\frac{AC}{4} = \frac{4}{3.2}$ $3.2 \cdot AC = 16$ $AC = \frac{16}{3.2} = 5$
<p>Find the length of $\overline{B'C'}$</p> $\frac{B'C'}{18} = \frac{20}{18}$ $5 \cdot B'C' = 72$ $B'C' = 14.4$	<p>Find the length of $\overline{D'E'}$</p> $\frac{x}{19.5} = \frac{2}{2.6}$ $2.6x = 390$ $x = 15$



Find the length of $\overline{E'F'}$.



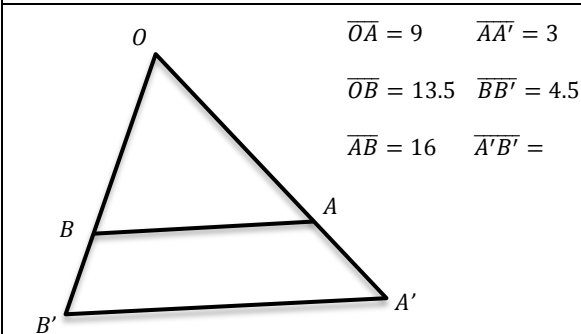
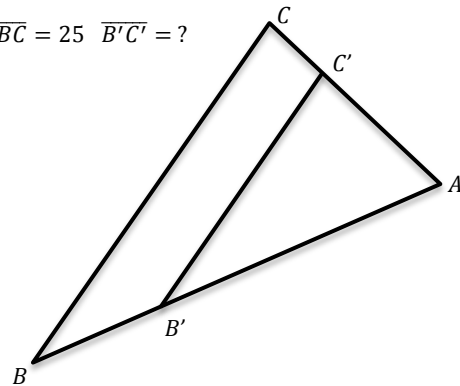
Find the length of \overline{YZ}



$\overline{AB} = 16$ $\overline{A'B'} = 12$

$\overline{AC} = 10$ $\overline{A'C'} = 7.5$

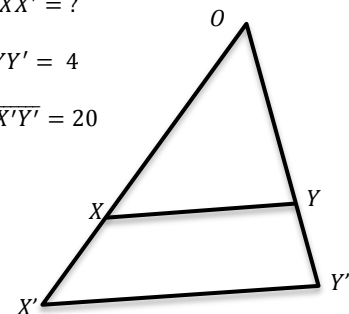
$\overline{BC} = 25$ $\overline{B'C'} = ?$



$\overline{OX} = 9$ $\overline{O'X'} = ?$

$\overline{OY} = ?$ $\overline{O'Y'} = 4$

$\overline{XY} = 15$ $\overline{X'Y'} = 20$



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INDEPENDENT PRACTICE:

GIVE EXIT TICKETS FOR Lessons 10 and 11 for Independent Practice.

ACTIVATING PRIOR KNOWLEDGE:

CLOSURE:

TEACHER NOTES:

Combine 10 and 11