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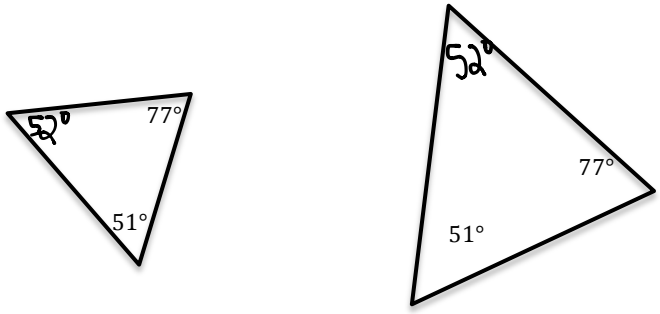
LEARNING OBJECTIVE: We will explore different ways to prove that two triangles are similar. (G8M3L8)

CONCEPT DEVELOPMENT:

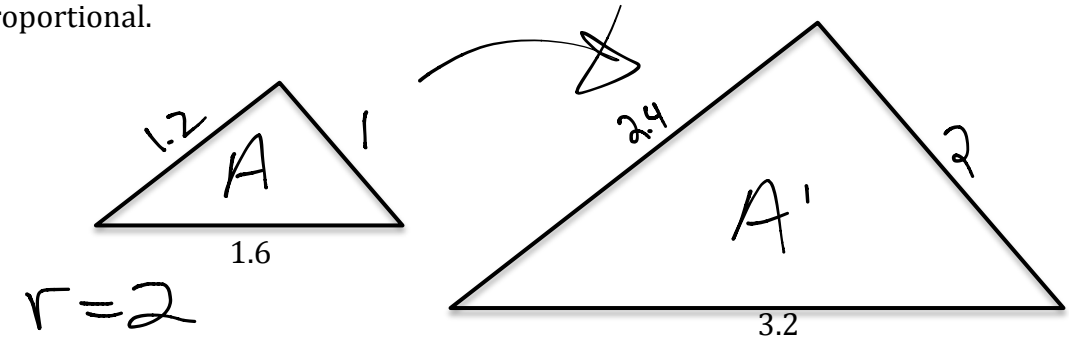
Angle Angle

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

Example:

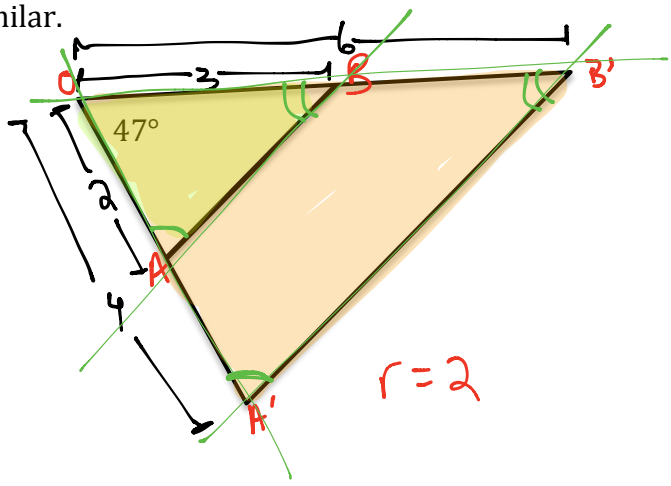


Similar Triangles: Lengths of corresponding sides of similar triangles are also proportional.



Side Angle Side

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.



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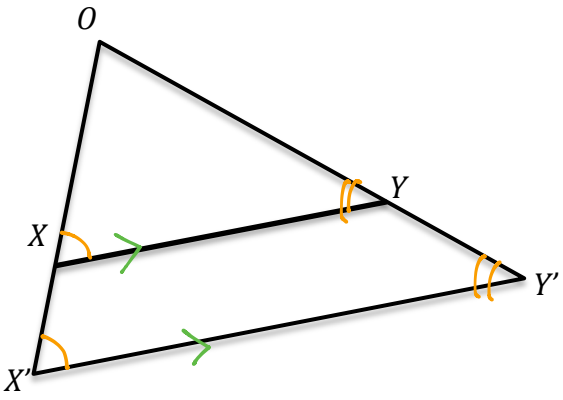
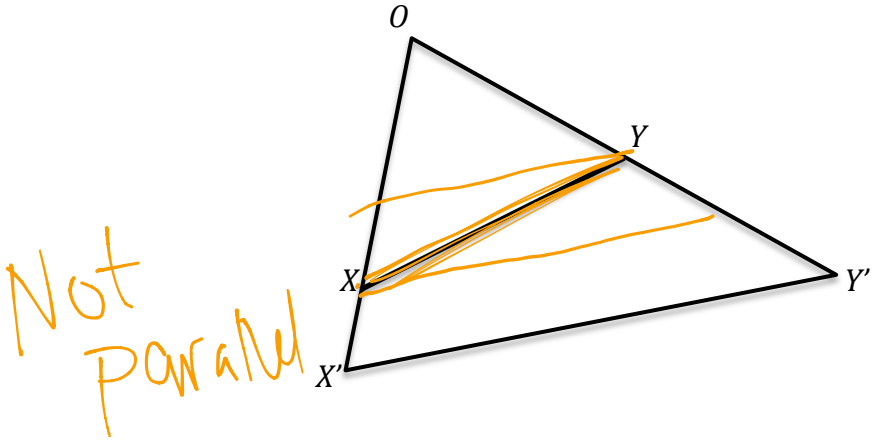
Similarity as a Result of Parallel Lines:

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

Example:



Non-Example:



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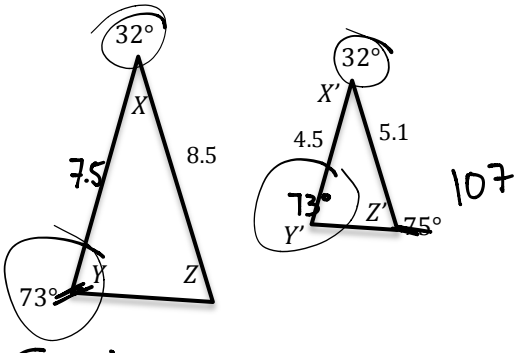
GUIDED PRACTICE:

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**



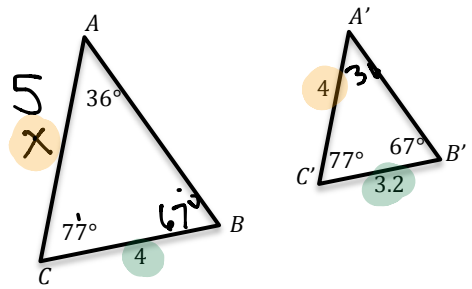
AA Similarity.

Find the length of $\overline{XY}$.

$\frac{x}{4.5} = \frac{8.5}{5.1}$

$\frac{x}{4.5} = \frac{5}{3}$ $3x = 4.5 \cdot 5$

$x = 7.5$ $\frac{3x}{3} = \frac{22.5}{3}$



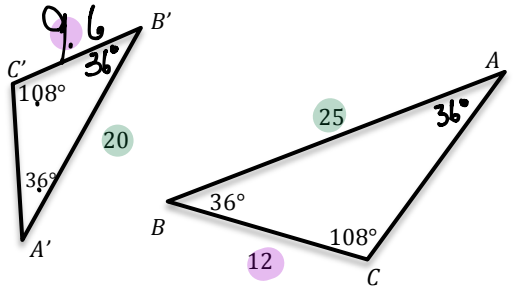
AA Similarity

Find the length of $\overline{AC}$.

$\frac{x}{4} = \frac{4}{3.2}$

$3.2x = 16$

$x = 5$

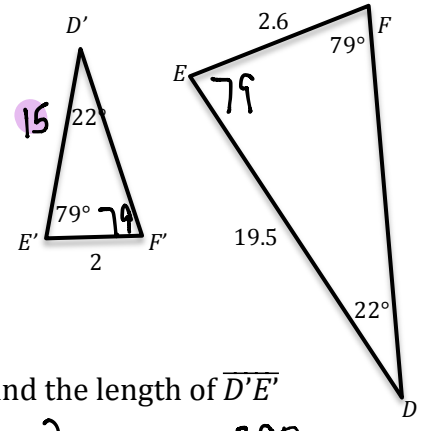


AA Similarity

Find the length of $\overline{B'C'}$ $\frac{x}{12} = \frac{20}{25}$

$x = 12 \cdot \left(\frac{20}{25}\right)$

$x = 12 \cdot \frac{4}{5} = 9\frac{3}{5}$



Find the length of $\overline{D'E'}$

$\frac{2}{2.6} \cdot 19.5 = \frac{390}{2.6} = 15$

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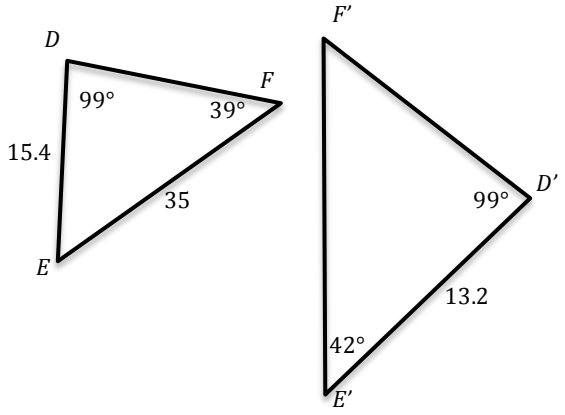
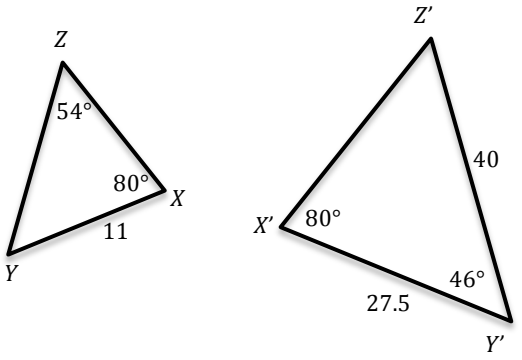
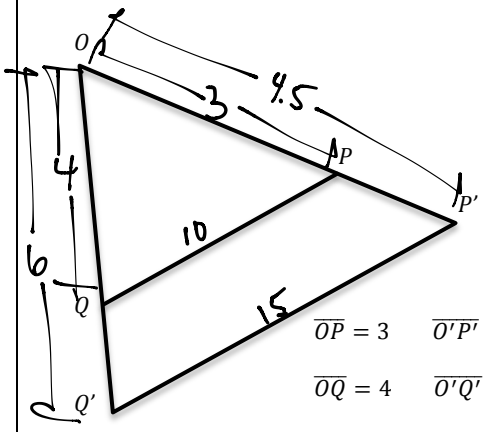


Find the length of $\overline{E'F'}$.



Find the length of $\overline{YZ}$



$\overline{OP} = 3$ $\overline{O'P'} = 4.5$

$\overline{OQ} = 4$ $\overline{O'Q'} = 6$

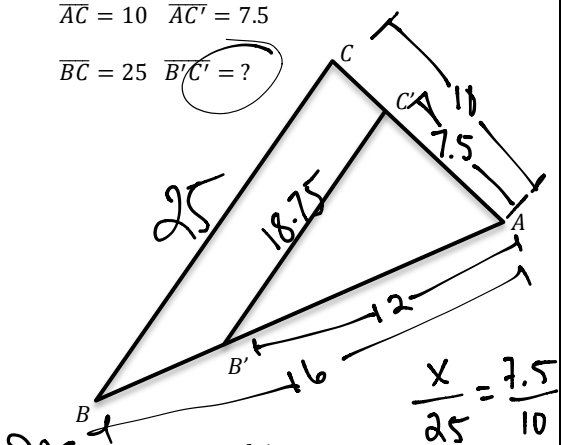
$\overline{PQ} = 10$ $\overline{P'Q'} = ?$

SAS similarity

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

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

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



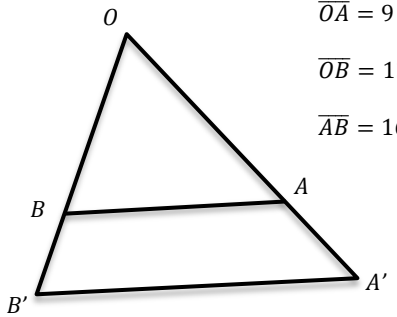
SAS similarity

$\frac{x}{25} = \frac{7.5}{10}$

$\frac{x}{25} = .75$

$x = 25 \cdot .75$

$x = 18.75$



$\overline{OA} = 9$ $\overline{AA'} = 3$

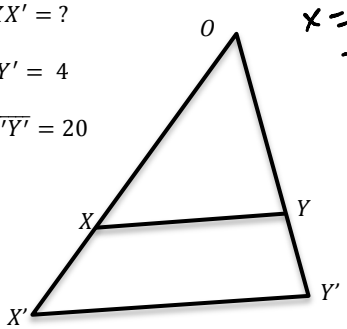
$\overline{OB} = 13.5$ $\overline{BB'} = 4.5$

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

$OX = 9$ $XX' = ?$

$OY = ?$ $YY' = 4$

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



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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