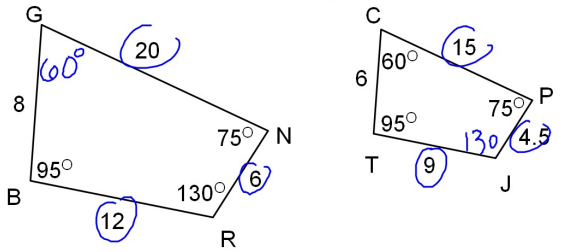
To prove Polygons are similar you must:

(1) Show all pairs of Corresponding Angles are Congruent
(same shape)

(2) Show all pairs of Corresponding Sides are Proportional
(differfent size)

Are these figures similar? Yes



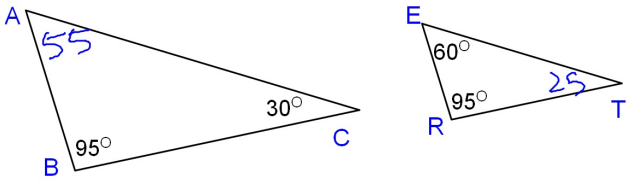
Corr ∠s are ≅ ✓

$\frac{B}{L}\ \frac{12}{9} = \frac{6}{4.5} = \frac{20}{15} = \frac{8}{6} = 1.\overline{33}$ corr sides are prop.

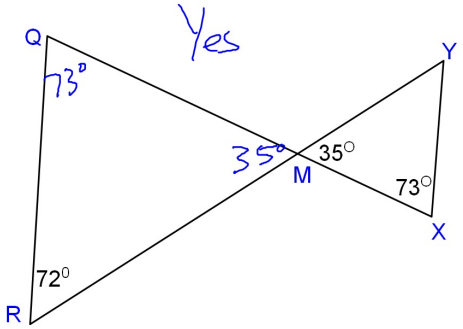
Angle-Angle Similarity (AA) Postulate

If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.

Are the triangles similar? NO



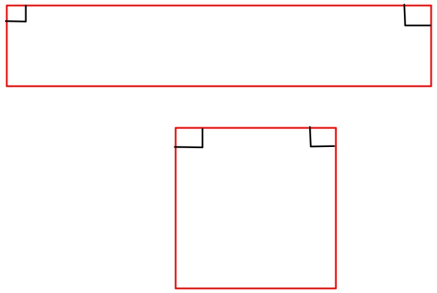
Are the triangles similar?



Yes

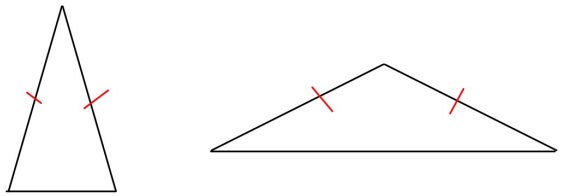
Do you think that showing two pairs of corresponding angles in Quadrilaterals is enough to prove that they are parallel?

NO

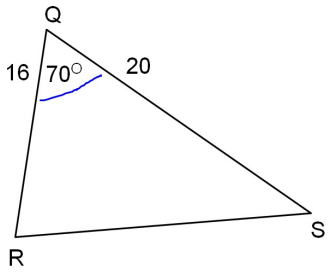


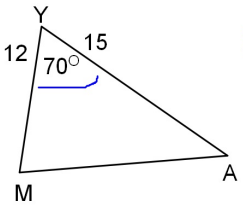
Do you think that there is a Side-Side Similarity Postulate for triangles?

NO



SAS similarity Theorem: If an angle of one triangle is congruent to an angle of another triangle, and the sides including these angles are proportional, then the triangles are similar.



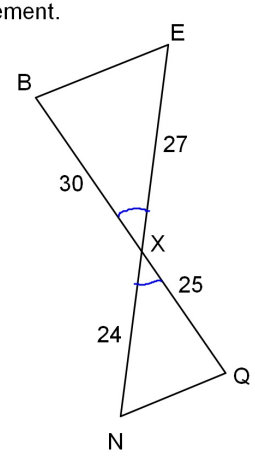


$\frac{20}{15} = 1.3\overline{3}$

$\frac{16}{12} = 1.3\overline{3}$

Yes, by SAS Similarity Theorem.
Corresponding sides are proportional a
and the included angles are congruent.

Are these triangles similar? If yes, write a similarity statement.



NO

Corresponding sides are NOT proportional.

SAS ✓

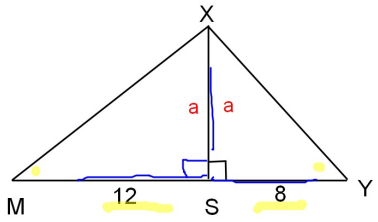
$\frac{30}{25} = \frac{6}{5}$

$\frac{27}{24} = \frac{9}{8}$

$\frac{30}{24} = \frac{5}{4}$

$\frac{27}{25}$

Are these triangles similar? If yes, write a similarity statement.



NO

Corresponding sides are not proportional.

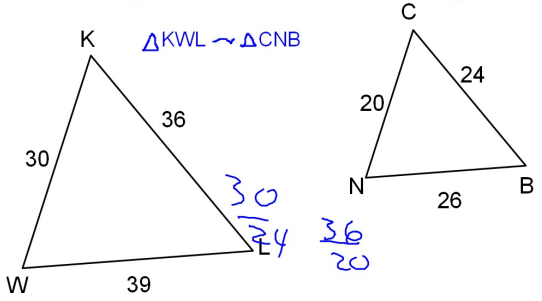
$\frac{a}{a} \neq \frac{12}{8}$ OR $\frac{a}{8} \neq \frac{12}{a}$

Side-Side-Side Similarity (SSS) Theorem

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

Are these triangles similar? If yes, write a similarity statement.

Yes, Triangles are similar due to SSS Similarity Theorem



$\frac{30}{20} = 1.5$

$\frac{36}{24} = 1.5$

$\frac{39}{26} = 1.5$

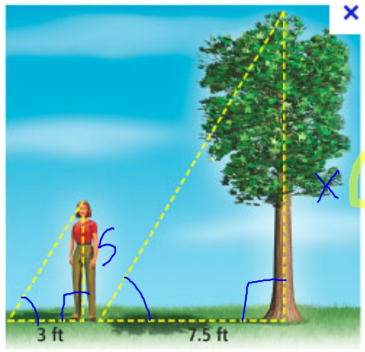
$\frac{30}{24}$ $\frac{36}{20}$

Indirect Measurement.

Finding a distance that is difficult to physically measure by using similar triangles

Are these triangles similar?

A 5ft tall lady casts a 3ft long shadow. If the shadow of the tree is 7.5 feet long how tall is it?



Triangles are similar due to AA Similarity Postulate

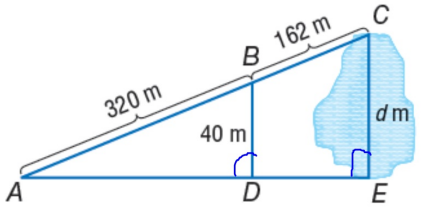
$\frac{5}{3} = \frac{X}{7.5}$ $X = 12.5$

or

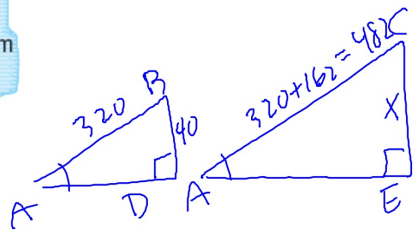
$\frac{7.5}{3} = \frac{X}{5}$

Given $\overline{BD}$ and $\overline{CE}$ are parallel, why are the triangles similar?

Find the distance across the body of water



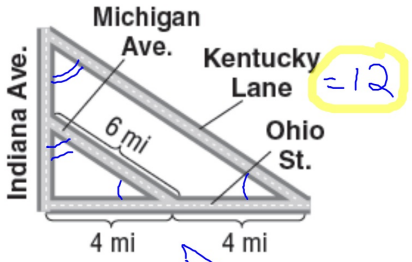
Triangles are similar due to AA Similarity Postulate



$\frac{320}{482} = \frac{40}{d}$

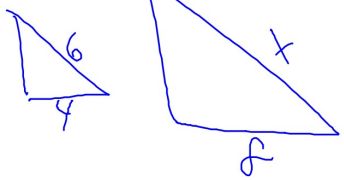
$d = 60.25$ m

Given the triangles are similar, find the length of Kentucky Lane.

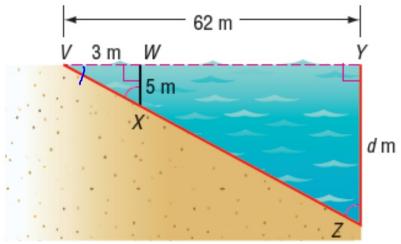


Triangles are similar due to AA Similarity Postulate

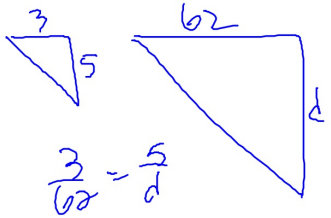
$\frac{6}{X} = \frac{4}{8}$



LAKES How deep is the water 62 meters from the shore?



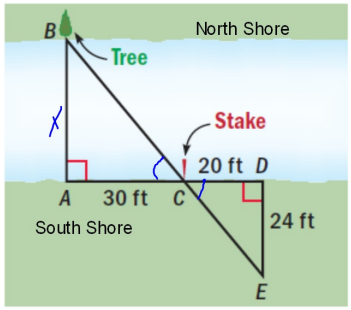
Triangles are similar due to AA Similarity Postulate



$\frac{3}{62} = \frac{5}{d}$

d = 103.33 m

How far is it from Pt A on the South Shore
to Pt. B on the North Shore?



Triangles are similar due to AA Similarity.

$$\frac{20}{30} = \frac{24}{x}$$

x = 36 ft.