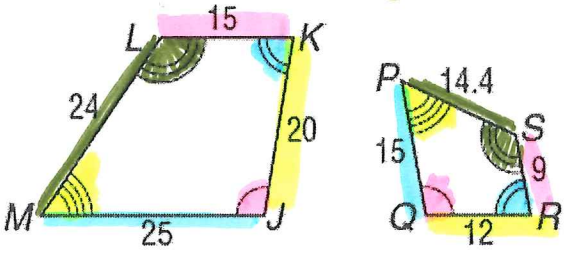
Name: Key

Similar Polygons Focus Intervention

1. What two concepts must be true in order for polygons to be similar?

a.) ≅ corr. angles (≅ matching ∠s) b.) side length ratios equal!

2. Determine if the figures are similar. Justify your reasoning as modeled in class.



$\frac{KJ}{RQ} = \frac{20 \div 4}{12 \div 4} = \frac{5}{3}$ ✓

$\frac{KL}{RS} = \frac{15 \div 3}{9 \div 3} = \frac{5}{3}$ ✓ (1.6)

$\frac{LM}{SP} = \frac{24}{14.4} = 1.\overline{6} = \frac{5}{3}$ ✓

$\frac{MJ}{PQ} = \frac{25 \div 5}{15 \div 5} = \frac{5}{3}$ ✓

∠J ≅ ∠Q ∠S ≅ ∠L

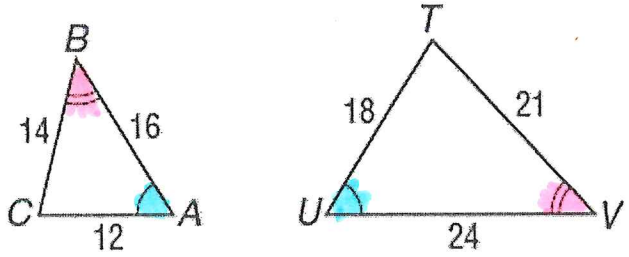
∠R ≅ ∠K ∠P ≅ ∠M

A.) So all 4 corresponding (matching) angles are congruent.

B.) So all side length ratios are equal.

C.) Conclude: Quad JKLM ~ Quad QRSP because it has ≅ corresp. ∠'s and equal side length ratios.

3. Determine if the figures are similar. Justify your reasoning as modeled in class.

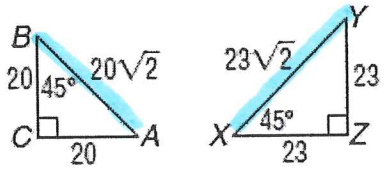


∠A ≅ ∠U and ∠B ≅ ∠V

So, △ABC ~ △UVT by AA Similarity

The similar △ short cut that we know.

4. Determine if the figures are similar. Justify your reasoning as modeled in class.

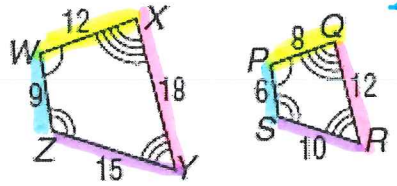


$\angle X \cong \angle B$

$\angle C \cong \angle Z$

★ SO $\triangle ABC \sim \triangle YXZ$ by AA Similarity ★

5. Determine if the figures are similar. Justify your reasoning as modeled in class.



$\angle W \cong \angle P$, $\angle Z \cong \angle S$

$\angle Y \cong \angle R$ $\angle X \cong \angle Q$

Can't use AA Sim because it is NOT a $\triangle$. question.

A.) $\cong$ corr. $\angle$s

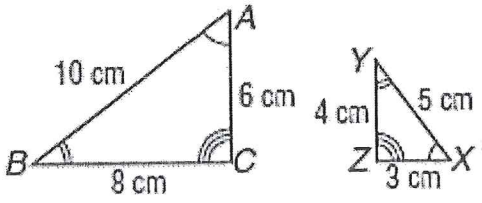
B) SLR =

$\frac{WZ}{PS} = \frac{9}{6} = \frac{3}{2}$ ✓ $\frac{XY}{QR} = \frac{18}{12} = \frac{3}{2}$ ✓

$\frac{WX}{PQ} = \frac{12}{8} = \frac{3}{2}$ ✓ $\frac{YZ}{RS} = \frac{15}{10} = \frac{3}{2}$ ✓

C.) Quad WZYX ~ Quad PSRQ

6. Determine if the figures are similar. Justify your reasoning as modeled in class.



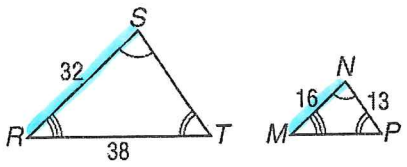
$\angle A \cong \angle X$

$\angle C \cong \angle Z$

SO $\triangle ABC \sim \triangle XYZ$ by AA Similarity.

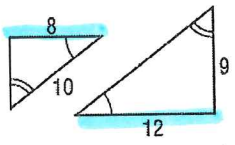
7. Find the scale factor of the following similar figures.

a.)



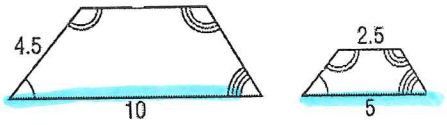
$SF = \frac{32}{16} = 2$

b.)



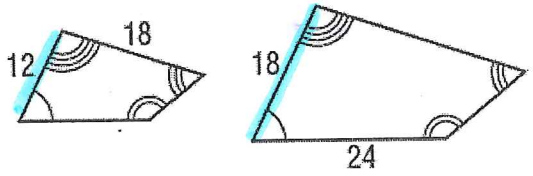
$SF = \frac{8}{12} = \frac{2}{3}$

c.)



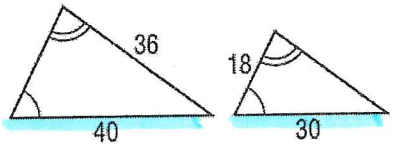
$SF = \frac{10}{5} = 2$

d.)



$SF = \frac{12}{18} = \frac{2}{3}$

e.)



$SF = \frac{40}{30} = \frac{4}{3}$

8. **The two polygons are similar.**

A. Write a similarity statement

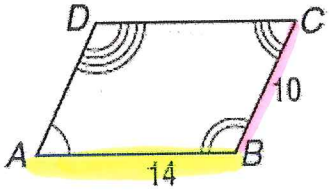
Quad ABCD ~ quad LMNP

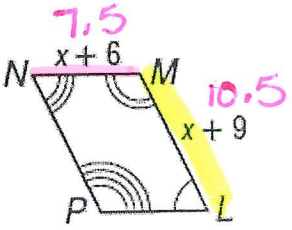
B. Find the scale factor. (We need to wait for x.)

$\frac{7.5}{10} = .75 = \frac{3}{4}$

C. Find x.

$\overline{LM}$ and $\overline{MN}$





$\frac{ML}{BA} = \frac{NM}{CB}$ $\quad \frac{x+9}{14} = \frac{x+6}{10}$

$10(x+9) = 14(x+6)$

$10x + 90 = 14x + 84$

$6 = 4x$

$\frac{6}{4} = x$

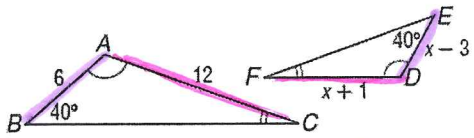
$1.5 = x$

D. Find MN and ML.

MN = 7.5 $\quad$ ML = 10.5

9. The two polygons are similar.

$\overline{DE}$ and $\overline{DF}$



A. Write a similarity statement $\triangle ABC \sim \triangle DEF$

B. Find the scale factor. (TBD after we find x)

$\frac{DF}{AC} = \frac{8 \div 4}{12 \div 4} = \frac{2}{3}$

C. Find x.

$\frac{FD}{AC} = \frac{ED}{AB}$ $\quad \frac{x+1}{12} = \frac{x-3}{6}$

$6(x+1) = 12(x-3)$

$6x + 6 = 12x - 36$

$42 = 6x$

$7 = x$

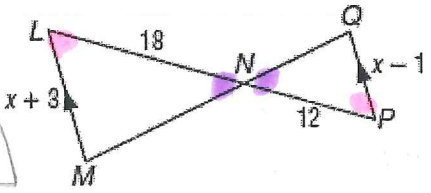
D. Find DE and DF.

$DE = 4$

$DF = 8$

10. The two polygons are similar.

$\overline{LM}$ and $\overline{QP}$



A. Write a similarity statement $\triangle LNM \sim \triangle PNQ$

B. Find the scale factor.

$\frac{LN}{PN} = \frac{18 \div 6}{12 \div 6} = \frac{3}{2}$ $\quad SF = \frac{3}{2}$

C. Find x.

$\frac{x+3}{x-1} = \frac{18}{12}$ $\quad 12(x+3) = 18(x-1)$

$12x + 36 = 18x - 18$

$-12x \quad -12x$

$36 = 6x - 18$

$54 = 6x$

$9 = x$

D. Find LM and QP.

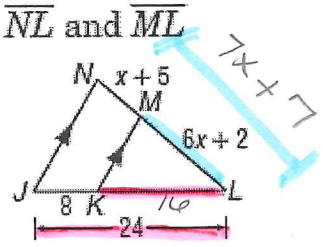
$LM = 9 + 3$

$LM = 12$

$QP = 9 - 1$ $\quad QP = 8$

11. The two polygons are similar.

$\overline{NL}$ and $\overline{ML}$



A. Write a similarity statement $\triangle NLJ \sim \triangle MLK$

B. Find the scale factor.

$\frac{KL}{JL} = \frac{16}{24} = \frac{2}{3}$

C. Find x.

$\frac{7x+7}{6x+2} = \frac{24}{16}$ $\quad 16(7x+7) = 24(6x+2)$

$112x + 112 = 144x + 48$

$112 = 32x + 48$

$64 = 32x$

$2 = x$

D. Find NL and ML.

$NL = 7(2) + 7 = 21 = NL$

$ML = 6(2) + 2$ $\quad ML = 14$