Geometry 7.2

Use proportions to identify similar polygons

Solve problems using the properties of similar polygons

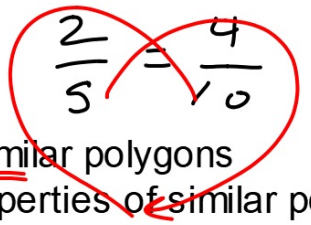
corresponding parts

similar

similarity statement

scale factor

Similarity Cut outs



sides in proper; all ∠s ≅

Sf

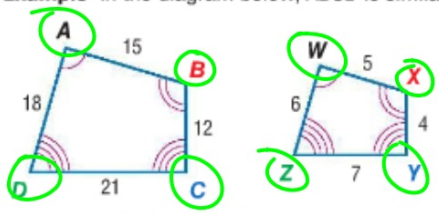
Corresp.

Cut out each polygon.
What do you notice?

KeyConcept Similar Polygons

Two polygons are similar if and only if their corresponding angles are congruent and corresponding side lengths are proportional.

Example In the diagram below, *ABCD* is similar to *WXYZ*.



Corresponding angles

$\angle A \cong \angle W$, $\angle B \cong \angle X$, $\angle C \cong \angle Y$, and $\angle D \cong \angle Z$

Corresponding sides

$$\frac{AB}{WX} = \frac{BC}{XY} = \frac{CD}{YZ} = \frac{DA}{ZW} = \frac{3}{1}$$

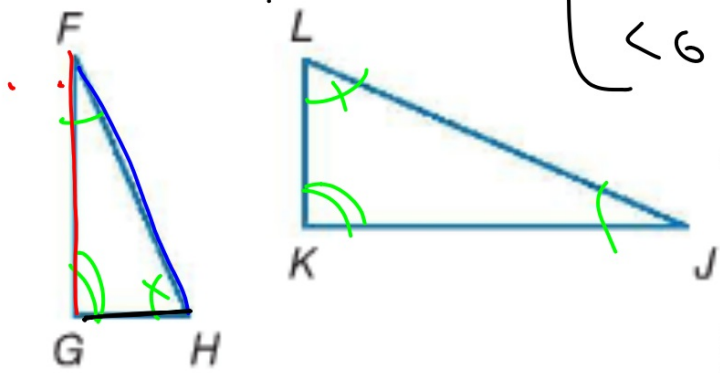
Symbols $ABCD \sim WXYZ$

ABCD ~ WXYZ

Similarity statement: $\frac{15}{5} = \frac{12}{4} = \frac{21}{7} = \frac{18}{6}$

Example 1 Use a Similarity Statement

If $\triangle FGH \sim \triangle JKL$, list all pairs of congruent angles, and write a proportion that relates the corresponding sides.



$\angle F \cong \angle J$

$\angle H \cong \angle L$

$\angle G \cong \angle K$

$\overline{GF} \cong \overline{KJ}$

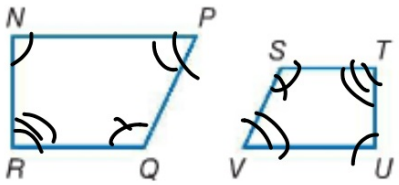
$\overline{FH} \cong \overline{JL}$

$\overline{GH} \cong \overline{KL}$

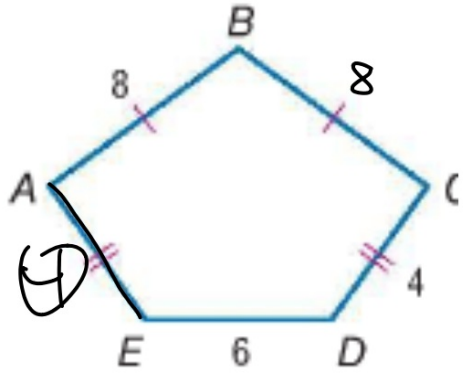
$\frac{GF}{KJ} = \frac{FH}{JL} = \frac{GH}{KL}$

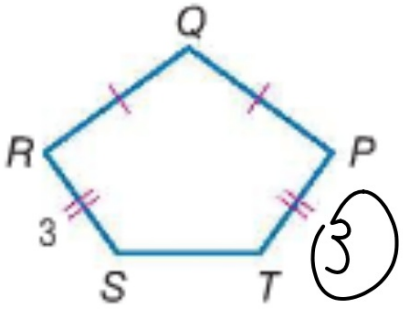
GuidedPractice

1. In the diagram, $NPQR \sim UVST$. List all pairs of congruent angles, and write a proportion that relates the corresponding sides.



Ex. 4





SF ABCDE:PQRST

Answer in order

PQRST:ABCDE

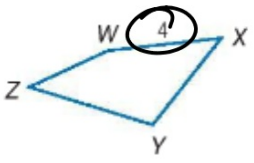
ABCDE ~ PQRST

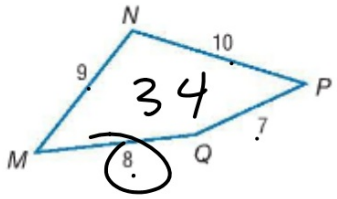
4:3

3:4

Guided Practice

4. If $MNPQ \sim XYZW$, find the scale factor of $MNPQ$ to $XYZW$ and the perimeter of each polygon.





4:8

8:4

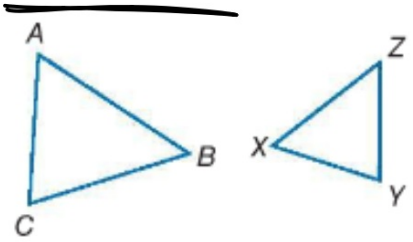
Answer in order that they ask the question:

MNPQ:XYZW 2:1

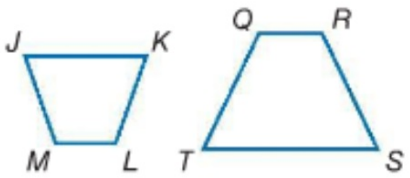
QM:WX $34, 17

List all pairs of congruent angles, and write a proportion that relates the corresponding sides for each pair of similar polygons.

1 $\triangle ABC \sim \triangle ZYX$



2. $JKLM \sim TSRQ$



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