Math 1312 Section 5.2 Similar Polygons

Definition:

Two polygons are **similar** (~) if and only if two conditions are satisfied:

- 1. All pairs of corresponding angles are congruent.
- 2. The ratios of the measures of corresponding sides are equal.

The symbol "~" means "similar to"

Definition:

Scale Factor (constant of proportionality) is the ratio of the lengths of two corresponding sides of two similar polygons.

Example 1:

The following quadrilaterals are similar:



Why are they similar? Because......

- 1) $\angle A \cong \angle E \qquad \angle B \cong \angle F \qquad \angle C \cong \angle G \qquad \angle D \cong \angle H$

Similar figures have the same shape but not necessarily the same size.

Example 2:

Which figures are similar?





Two congruent polygons are also similar.

Question:

Two similar polygons are always congruent, true or false

Example 3:

Small

Which figures must be similar?



b. set up a proportion (make sure to put ratios of the proportions in the same order)



c. cross multiply



d. solve

x = 15

Example 5:

Complete each statement - RSTU ~ EFGH



Example 6:

Complete each statement - ABCDE~RSTUV





Example 8:

In order to find the distance AB across a lake, a surveyor constructed $\triangle OCD$ similar to $\triangle OBA$. He measured OB (36m), OC (20m), and CD (150m) directly to obtain the lengths shown. Find the length of AB.

