

Geometry

Chapter 7 Section 7-2

Vocabulary

Similar
Figures

Two figures that are the same shape but not *necessarily* the same size.

**Symbol for similar is \sim

Scale
Drawing

A drawing of an object where all lengths are proportional to original to the corresponding actual lengths

Scale
Factor

The ratio of measurement between corresponding sides of similar figures

Using Proportions

A movie theater screen measures 45 feet long and 25 feet tall. Your big screen TV can have aspect ratios of 16:9, 8:5, 5:4, and 4:3. Would a picture shown on the theater and your TV be similar figures? ****Assume rectangles**

$$45:25 = 9:5 = 1.8$$

No, the figures are not similar

Which aspect ratio on your TV would be the closest?

$4:3 = 1.333$	$5:4 = 1.25$	$8:5 = 1.6$	$16:9 = 1.778$
---------------	--------------	-------------	----------------

Similar Polygons

An extended proportion is a set of equations that state three or more ratios are equal.

$$\frac{AB}{GH} = \frac{BC}{HI} = \frac{CD}{IJ} = \frac{AD}{GJ}$$

Take note

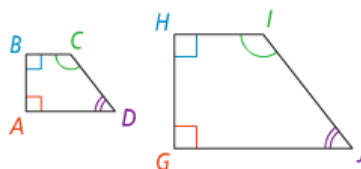
Key Concept Similar Polygons

Define

Two polygons are **similar polygons** if corresponding angles are congruent and if the lengths of corresponding sides are proportional.

Diagram

$$ABCD \sim GHIJ$$



Symbols

$$\begin{aligned} \angle A &\cong \angle G \\ \angle B &\cong \angle H \\ \angle C &\cong \angle I \\ \angle D &\cong \angle J \\ \frac{AB}{GH} &= \frac{BC}{HI} = \frac{CD}{IJ} = \frac{AD}{GJ} \end{aligned}$$

THE ORDER OF THE LETTERS IS IMPORTANT

Similar Polygons

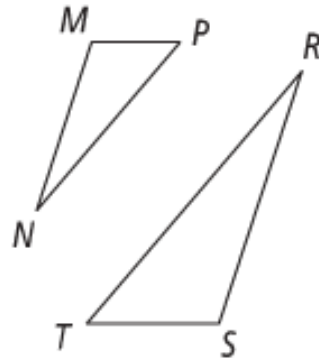
$$\triangle MNP \sim \triangle SRT$$

Which angle pairs are congruent?

$$\angle M \cong \angle S, \angle N \cong \angle R, \angle P \cong \angle T$$

Write an extended proportion of the three sides.

$$\frac{MN}{RS} = \frac{MP}{ST} = \frac{PN}{RT}$$



Similar Polygons

$$\triangle MNP \sim \triangle SRT$$

$$MN=9, PN=15, ST=6, RS=12.$$

Find MP

$$\frac{MN}{RS} = \frac{MP}{ST}$$

$$\frac{9}{12} = \frac{MP}{6}$$

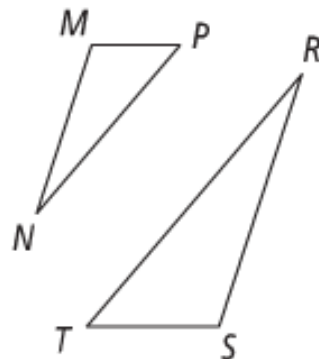
$$MP = 4.5$$

Find RT

$$\frac{MN}{RS} = \frac{PN}{RT}$$

$$\frac{9}{12} = \frac{15}{RT}$$

$$RT = 20$$



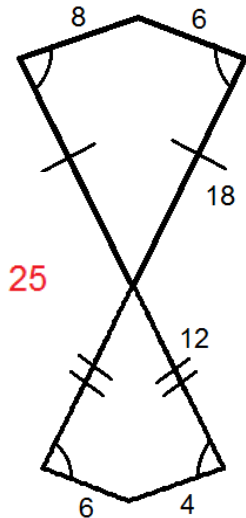
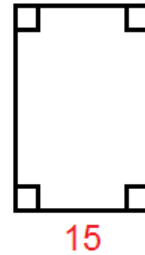
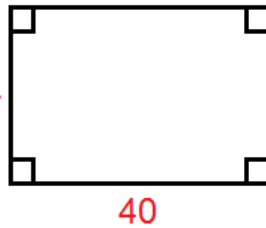
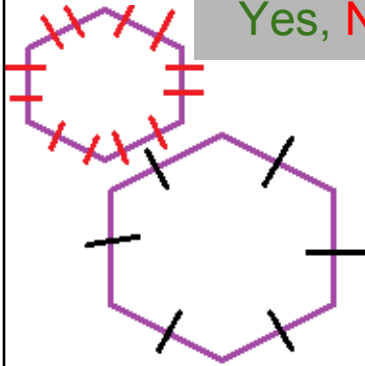
What is the Scale Factor?

$$\frac{3}{4} \text{ or } .75$$

Determining Similarity

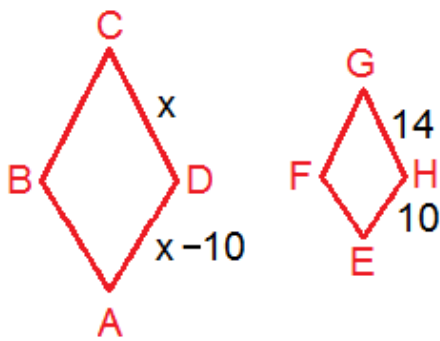
Are the figures similar?

Yes, No, or Not Enough Info

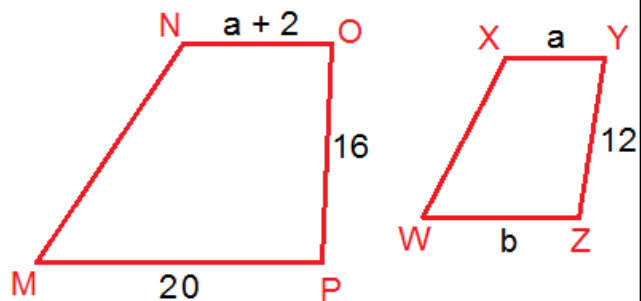


Using Similar Figures

Find the value of the variables.



$ABCD \sim EFGH$



$MNOP \sim WXYZ$

Homework

Pages 444 - 446

10 - 30 even, 37, 38