

Triangle Similarity and Congruence 7.1 & 7.2  
(Similar Triangles & Corresponding Parts)

**Content Objective:** I will use proportions to identify similar polygons

**Language Objective:** I will be able to solve problems using scale factors

**Question:** How can equations be written to prove that two triangles are similar?

Study Question(s)

Similar Polygons

Polygons that have the same shape but may be of different size.

Example:

A small and a large square.



- **∠'s in similar shapes are  $\cong$**

Symbol:  $\sim$

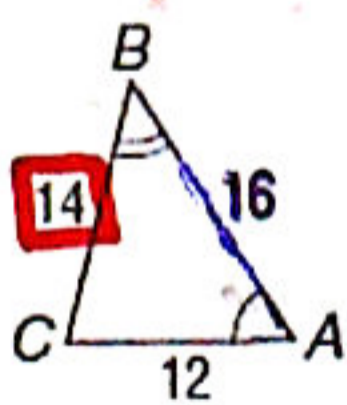
**Ex.  $\triangle ABC \sim \triangle DEF$**

Scale Factor

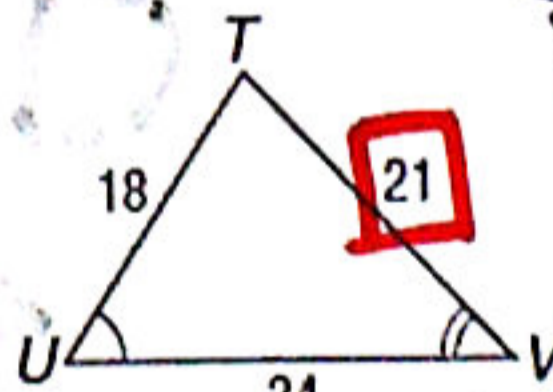
- **The number you multiply by to get your new image.**  
The ratio of corresponding sides of similar figures.

Ex #1

The polygons are similar. Find the scale factor.



**ORIGINAL IMAGE**



**NEW IMAGE**

**SCALE FACTOR =  $\frac{\text{NEW}}{\text{ORIGINAL}}$**

**S.F. =  $\frac{21}{14} = \frac{3}{2}$**

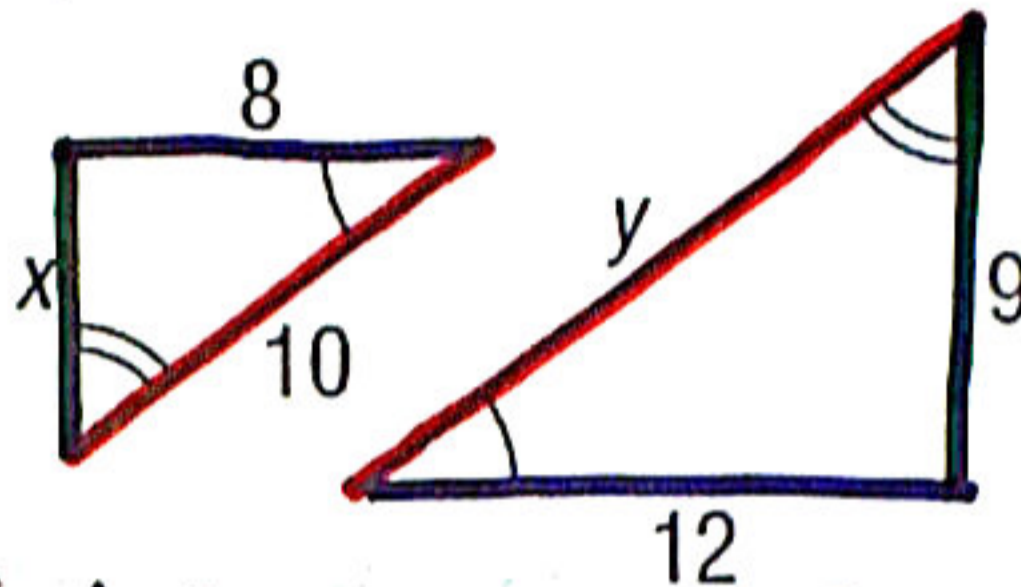
Summary

Triangle Similarity and Congruence 7.1 & 7.2  
(Similar Triangles & Corresponding Parts)

Example 2

The polygons are similar. Find the value of  $x$  and  $y$ .

A)



Find  $x$ :

$$\frac{9}{x} = \frac{12}{8}$$

$$12x = 72$$

$$x = 6$$

Find  $y$ :

$$\frac{y}{10} = \frac{12}{8}$$

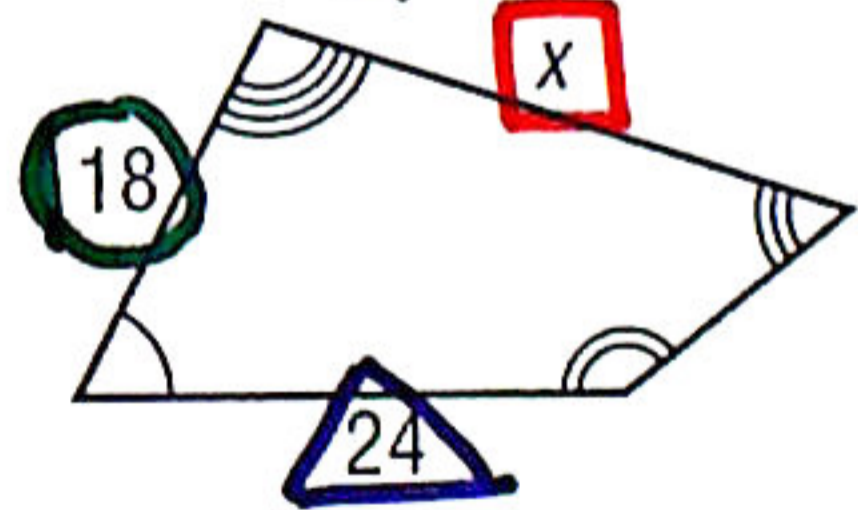
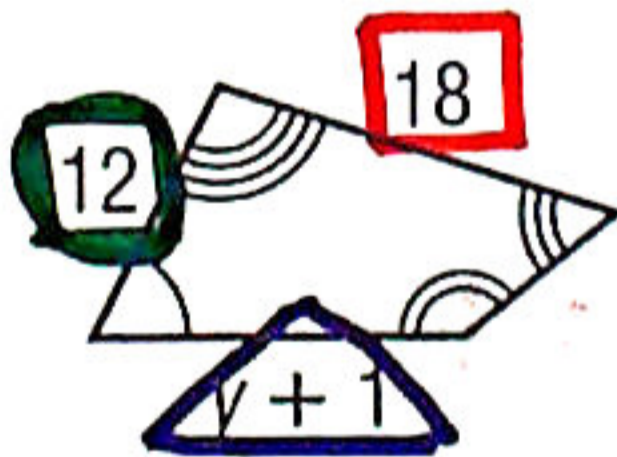
$$\frac{y}{10} = \frac{3}{2}$$

$$2y = 30$$

$$y = 15$$

you can simplify

B)



Find  $x$ :

$$\frac{x}{18} = \frac{18}{12}$$

$$\frac{x}{18} = \frac{3}{2}$$

$$2x = 54$$

$$x = 27$$

Find  $y$ :

$$\frac{24}{y+1} = \frac{18}{12}$$

$$\frac{24}{y+1} = \frac{3}{2}$$

$$3(y+1) = 48$$

$$3y + 3 = 48$$

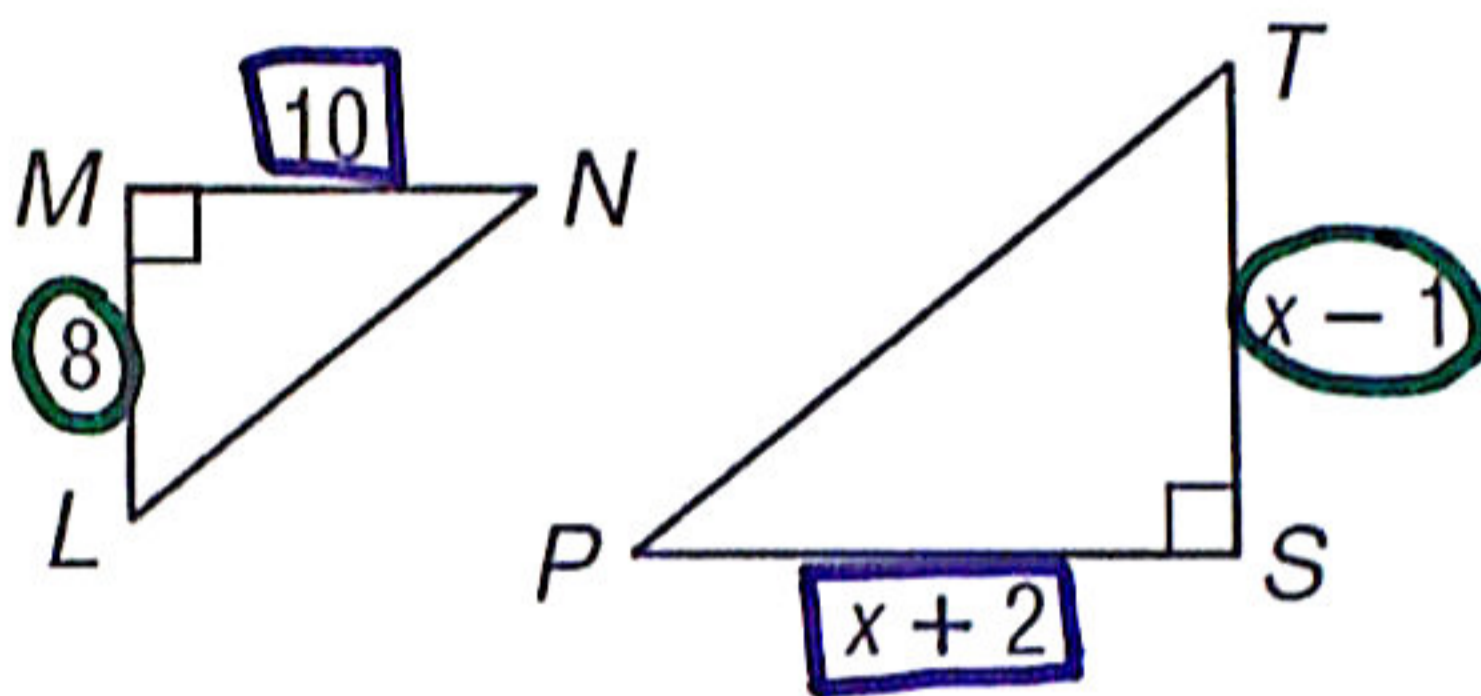
$$3y = 45$$

$$y = 15$$

Triangle Similarity and Congruence 7.1 & 7.2  
(Similar Triangles & Corresponding Parts)

Example 2  
(continued)

C) Solve for  $x$ . Then, write a similarity statement.



$$\frac{x-1}{8} = \frac{x+2}{10}$$

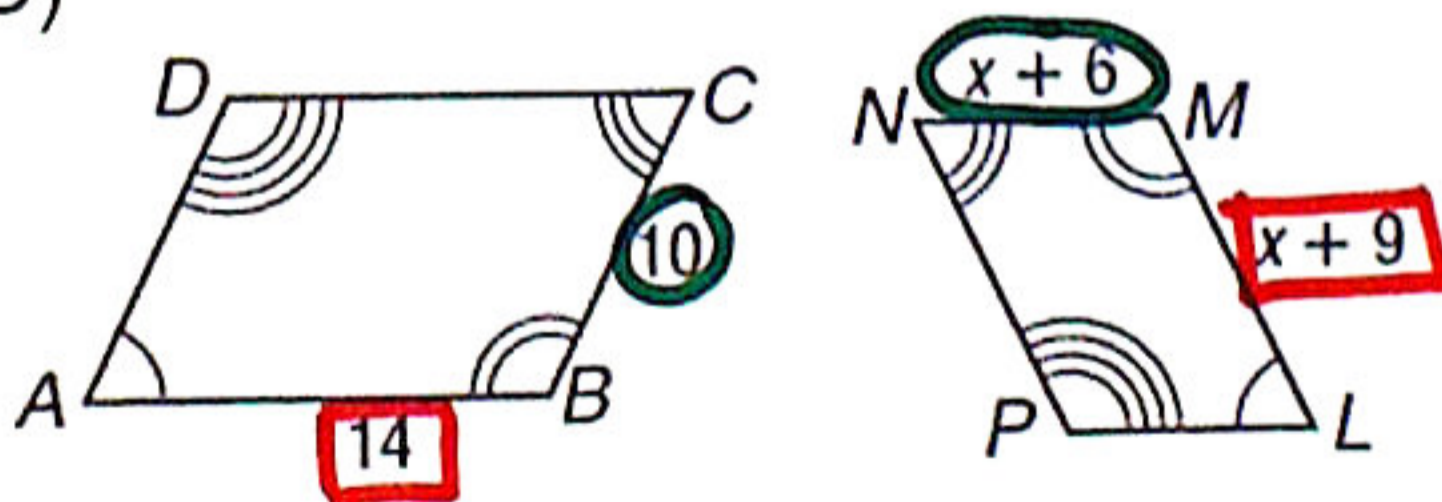
$$10(x-1) = 8(x+2)$$

$$10x - 10 = 8x + 16$$

$$2x = 26$$

$$x = 13$$

D)



$$\frac{x+6}{10} = \frac{x+9}{14}$$

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

$$10x + 90 = 14x + 84$$

$$90 = 4x + 84$$

$$\begin{array}{r} 90 \\ -84 \\ \hline 6 \end{array} = \begin{array}{r} 4x + 84 \\ -84 \\ \hline 4x \end{array}$$

$$6 = 4x$$

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

or

$$\frac{3}{2} = x$$

or

$$1.5 = x$$