3.5-3.6 (Extension): Similar Figures

Goals: *Determine if two figures are similar by setting up a proportion
*Find the missing side of a figure based on similarity

Congruent figures: two figures that are both the same ___shape_____ and the same ___size_____

$\cong$

Similar Figures: two figures that are the same __shape_____ but do not have to be the same __size_____. (They could be though)

$\sim$

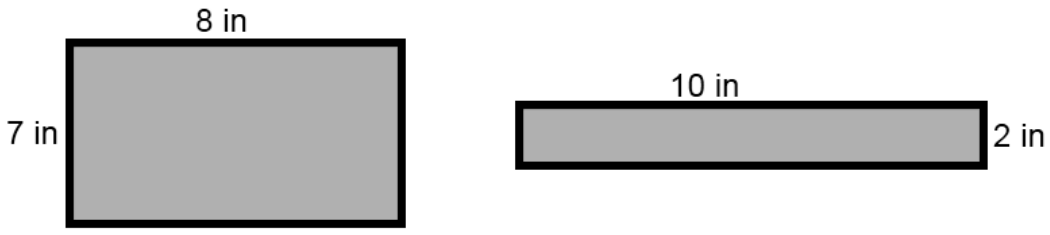
Corresponding parts: two __sides_____ of two similar figures that have the same relative position. They are in the "same spot"

SIDES OF SIMILAR FIGURES ARE ___proportional_____

*this means they form a ____proportion_____

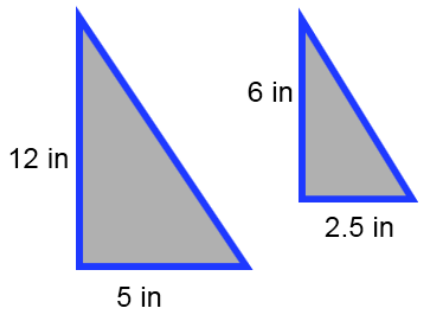
Decide if the given pairs of figures are similar or not.

Ex:



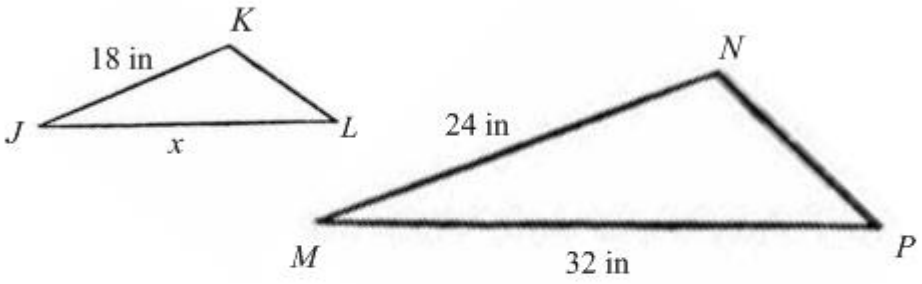
No, $\frac{7}{8} ? \frac{2}{10}$ when you cross multiply you get 70 and 16, so they do not form a proportion so they are not similar figures.

Ex:



Yes, when you set up the two ratios and cross multiply they both equal 30. So they form a proportion which means they are similar figures.

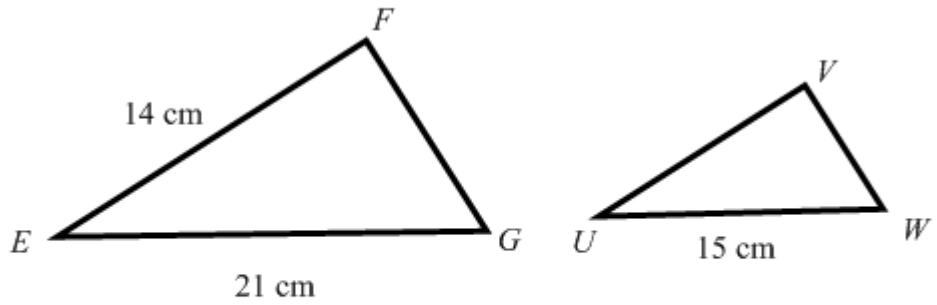
Ex: $\triangle JKL \sim \triangle MNP$. Find JL.



$\frac{18}{x} = \frac{24}{32}$

$x = 24$ in

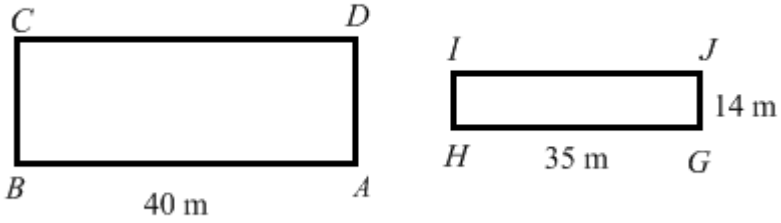
Ex: $\triangle EFG \sim \triangle UVW$. Find UV.



$\frac{14}{x} = \frac{21}{15}$

$x = 10$ cm

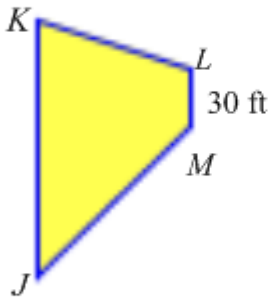
Ex: $ABCD \sim GHIJ$. Find AD.

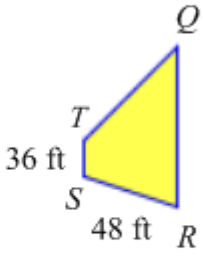


$\frac{40}{35} = \frac{x}{14}$

$x = 16$ m

Ex: *JKLM* ~ *QRST*. Find *KL*.





$\frac{x}{48} = \frac{30}{36}$

$x = 40$ ft

Ex: Cape Hatteras Lighthouse in North Carolina casts a shadow 83.2 feet long. A man who is 5.8 feet tall casts a shadow of 2.5 feet. Draw a diagram and use your knowledge of similar figures to determine the height of the lighthouse.

$$\frac{x}{5.8} = \frac{83.2}{2.5}$$

$x = 193.024$ feet