

Vocabulary	Definition	Example(s)
Congruent $\cong$	Equal in size and shape	$\triangle ABC \cong \triangle DEF$ 
Similar $\sim$	<ul style="list-style-type: none"> <li>• same shape</li> <li>• equal angles</li> <li>• Sides proportional</li> </ul>	$\triangle ABC \sim \triangle DEF$ 
Triangle 	3 sided polygon, with 3 angles that sum to $180^\circ$	

Bisector 	A line that divides something into 2 equal parts	
Perpendicular Lines 	Lines meeting at right angles ( $90^\circ$ )	
Parallel Lines 	Lines that <u>never</u> meet & the same distance apart	
Transversal 	A line that cuts across 2 or more parallel lines	

## Solving Proportions

Example 1:  $\frac{5x}{12} = \frac{10}{6}$

$$\frac{120}{30} = \frac{30x}{30}$$

$$\boxed{X=4}$$

Example 2:  $\frac{x}{4} = \frac{x+1}{16}$

$$16x = 4(x+1)$$

$$16x = 4x + 4$$

$$\begin{array}{r} -4x \quad -4x \\ \hline \end{array}$$

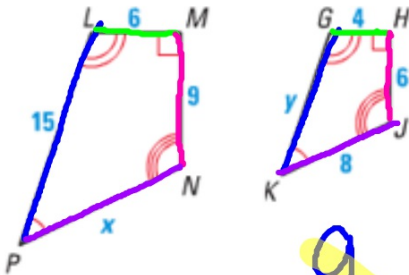
$$\frac{12x}{12} = \frac{4}{12}$$

$$\boxed{X = \frac{1}{3}}$$

## Similar Figures

Given the figures are similar, solve for x and y.

1.  $\square PLMN \sim \square KGHJ$



Proportion to solve for  $x$ :

$x = \underline{12}$

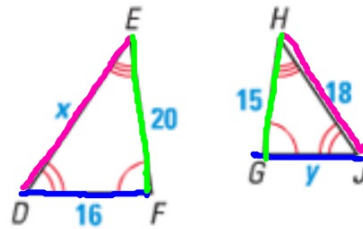
~~$\frac{9}{x} = \frac{6}{8}$~~

Proportion to solve for  $y$ :

$y = \underline{10}$

~~$\frac{9}{15} = \frac{6}{y}$~~

2.  $\triangle FDE \sim \triangle GJH$



Proportion to solve for  $x$ :

$x = \underline{24}$

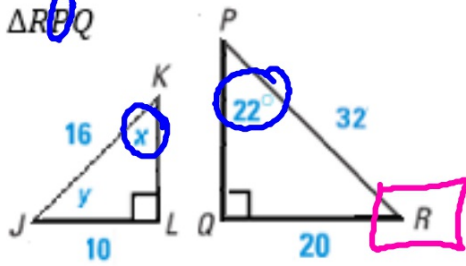
~~$\frac{20}{15} = \frac{x}{18}$~~

Proportion to solve for  $y$ :

$y = \underline{12}$

~~$\frac{20}{16} = \frac{15}{y}$~~

3.  $\triangle JKL \sim \triangle RPQ$



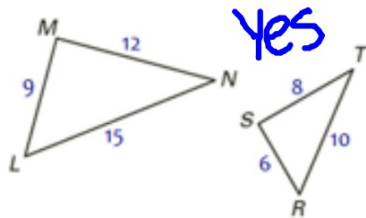
$$x = \underline{22^\circ}$$

$$y = \underline{68^\circ}$$

$$180 - 90 - 22 = 68$$

Are the triangles similar? Explain how you know.

4.



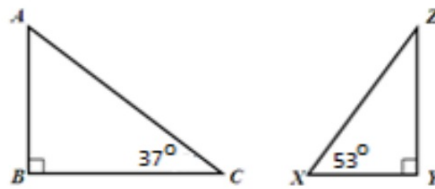
- a) Yes,  $\Delta QRP \sim$  \_\_\_\_\_ by AA.
- b) Yes,  $\Delta QRP \sim$  \_\_\_\_\_ by SAS.
- c) Yes,  $\Delta QRP \sim$  \_\_\_\_\_ by SSS.
- d) No, these triangles are not similar.

$$\frac{15}{10} = \frac{3}{2}$$

$$\frac{12}{8} = \frac{3}{2}$$

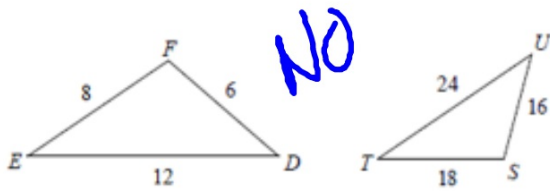
$$\frac{6}{9} = \frac{2}{3}$$

5.



- a) Yes,  $\Delta ABC \sim$  \_\_\_\_\_ by AA.
- b) Yes,  $\Delta ABC \sim$  \_\_\_\_\_ by SAS.
- c) Yes,  $\Delta ABC \sim$  \_\_\_\_\_ by SSS.
- d) No, these triangles are not similar.

6.

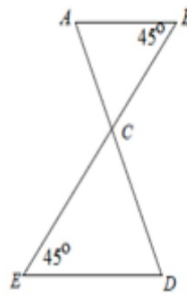


- a) Yes,  $\triangle QRP \sim$  \_\_\_\_\_ by AA.
- b) Yes,  $\triangle QRP \sim$  \_\_\_\_\_ by SAS.
- c) Yes,  $\triangle QRP \sim$  \_\_\_\_\_ by SSS.
- d) No, these triangles are not similar.

$$\frac{12}{24} = \frac{1}{2}$$

$$\frac{8}{18} = \frac{4}{9}$$

7.



- a) Yes,  $\triangle ABC \sim$  \_\_\_\_\_ by AA.
- b) Yes,  $\triangle ABC \sim$  \_\_\_\_\_ by SAS.
- c) Yes,  $\triangle ABC \sim$  \_\_\_\_\_ by SSS.
- d) No, these triangles are not similar.