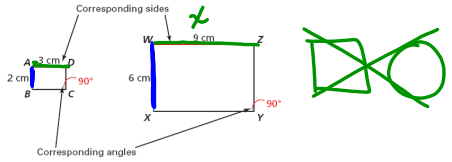
7.4 Similar Figures

Pg. 366 4/25/18

Apr 11-10:52 AM

Learn to use proportions to find missing measures in similar figures.

Matching sides of two or more polygons are called **corresponding sides**, and matching angles are called **corresponding angles**.



$\frac{AB}{WX} = \frac{AD}{WZ}$

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

Apr 11-10:52 AM

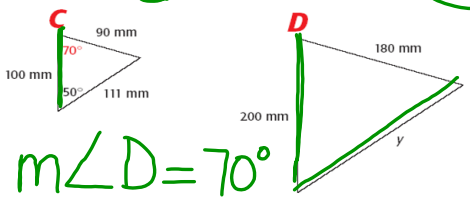
Similar figures have the same shape but not necessarily the same size.

Similar Figures

Two figures are similar if
- the measures of the corresponding angles are equal
- the ratios of the lengths of the corresponding sides are proportional

Apr 11-10:53 AM

The two triangles are similar. Find the missing length *y* and the measure of ∠*D*.



$m\angle D = 70°$

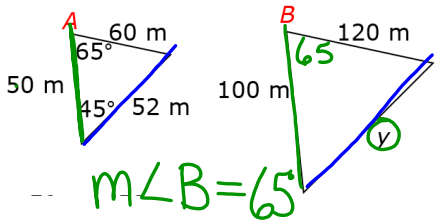
$\frac{100}{200} = \frac{111}{y}$

$\frac{1}{2} \times \frac{111}{y}$

$y = 222$ mm

Apr 11-10:53 AM

The two triangles are similar. Find the missing length *y* and the measure of ∠*B*.



$m\angle B = 65°$

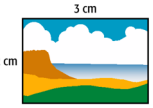
$$\frac{50}{100} = \frac{52}{y}$$

$$\frac{1}{2} = \frac{52}{y}$$

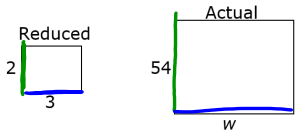
$$y = 104 \text{ m}$$

Apr 11-10:54 AM

This reduction is similar to a picture that Katie painted. The height of the actual painting is 54 centimeters. What is the width of the actual painting?



Draw a diagram to represent the situation. Use the corresponding sides to write a proportion.



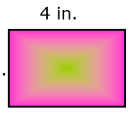
$$\frac{2}{54} = \frac{3}{w} \qquad 162 = 2w \qquad w = 81$$

$$\frac{1}{27} = \frac{3}{w}$$

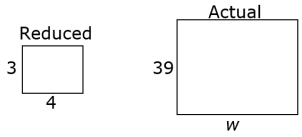
$$w = 81 \text{ cm}$$

Apr 11-10:55 AM

This reduction is similar to a picture that Marty designed. The height of the actual picture is 39 inches. What is the width of the actual picture?



Draw a diagram to represent the situation. Use the corresponding sides to write a proportion.



$$\frac{3}{39} = \frac{4}{w} \qquad 3w = 156$$

$$\frac{1}{13} = \frac{4}{w}$$

$$w = 52 \text{ in}$$

Apr 11-10:56 AM

$\frac{x}{5} = \frac{6}{1}$ $x = 30$ in

Lesson Quiz

These two triangles are similar.

1. Find the missing length *x*.

$$\frac{x}{5} = \frac{18}{3}$$

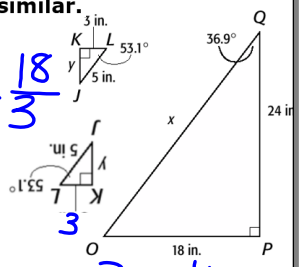
2. Find the measure of ∠*J*.

$36.9°$

3. Find the missing length *y*.

4. Find the measure of ∠*P*.

$90°$



$$\frac{3}{18} = \frac{y}{24}$$

$$\frac{1}{6} = \frac{y}{24}$$

$$y = 4 \text{ in}$$

Apr 11-10:57 AM

5. Susan is making a wood deck from plans for an 8 ft by 10 ft deck. However, she is going to increase its size proportionally. If the length is to be 15 ft, what will the width be?

Apr 11-10:59 AM