

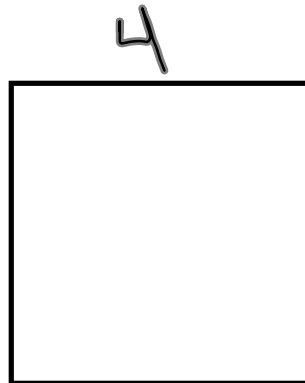
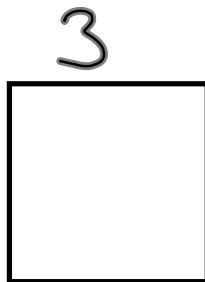
**Bellwork**  
**04/12/12**

1. Simplify  $\sqrt{96}$ .

$$\begin{aligned} &\sqrt{16 \cdot 6} \\ &\sqrt{16} \cdot \sqrt{6} \\ &4\sqrt{6} \end{aligned}$$

$$\frac{96}{16 \overline{)6}}$$

2. Two polygons are similar and the ratio of corresponding sides is 3:4. What is the ratio of the perimeters? 3:4



**Geometry**  
**11.3 Perimeter and Area of Similar Figures**  
**Standard(s): 1, 3**

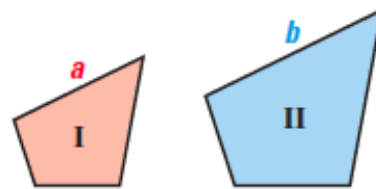
**Vocabulary:****THEOREM***For Your Notebook***THEOREM 11.7** Areas of Similar Polygons

If two polygons are similar with the lengths of corresponding sides in the ratio of  $a:b$ , then the ratio of their areas is  $a^2:b^2$ .

$$\frac{\text{Side length of Polygon I}}{\text{Side length of Polygon II}} = \frac{a}{b}$$

$$\frac{\text{Area of Polygon I}}{\text{Area of Polygon II}} = \frac{a^2}{b^2}$$

*Justification:* Ex. 30, p. 742



Polygon I ~ Polygon II

*Note: Ratio of side lengths is the same as ratio of perimeters!*

Ratio of  
sides & perim.  
3:4

Ratio of  
area  
9:16

1:2

1:4

5:7

25:49

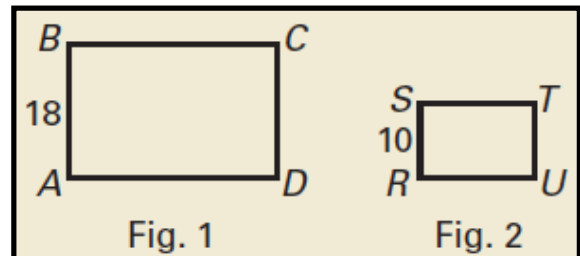
## Find Ratios

In the diagram, Figure I ~ Figure II. Find the indicated ratio.

1. The ratio of the perimeters

$$18:10 \quad \frac{18}{10}$$

$$9:5$$



2. The ratio of the areas

$$81:25$$

The ratio of the areas of two similar figures is given. Write the ratio of the lengths of corresponding sides.

$$\text{Ratio of Areas} = \sqrt{49} : \sqrt{16}$$

$$7:4$$

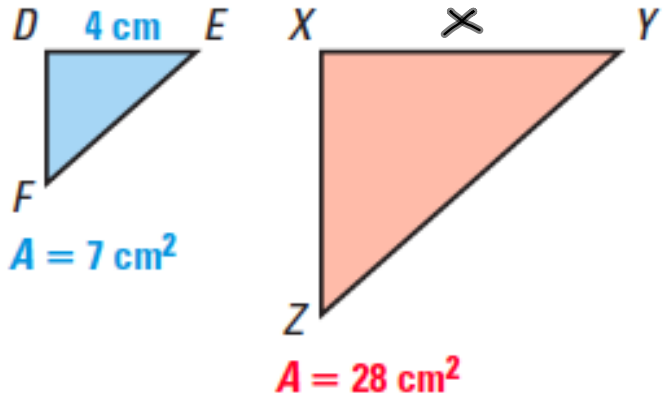
$$\text{Ratio of Areas} = \sqrt{121} : \sqrt{144}$$

$$11:12$$

## Find Side Lengths

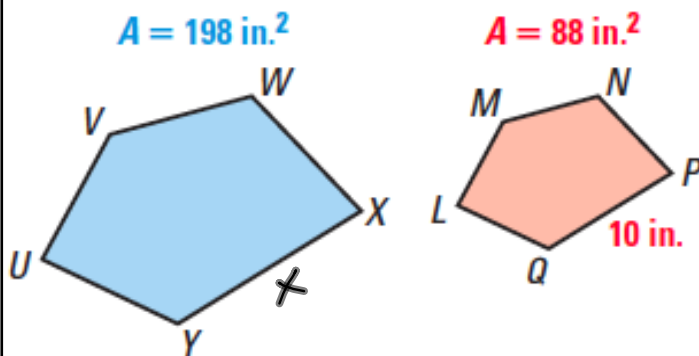
Use the given area to find  $XY$ .

$$\triangle DEF \sim \triangle XYZ$$



$$\begin{aligned} \sqrt{7} : \sqrt{28} \\ \cancel{1\sqrt{7}} : \cancel{2\sqrt{7}} \\ 1 : 2 \\ \frac{1}{2} = \frac{4}{x} \\ x = 8 \text{ cm} \end{aligned}$$

$$UVWXY \sim LMNPQ$$



$$\begin{aligned} \sqrt{198} : \sqrt{88} \\ 3\sqrt{\cancel{22}} : 2\sqrt{\cancel{22}} \\ 3 : 2 \\ \frac{3}{2} = \frac{x}{10} \\ 2x = 30 \\ x = 15 \text{ in.} \end{aligned}$$

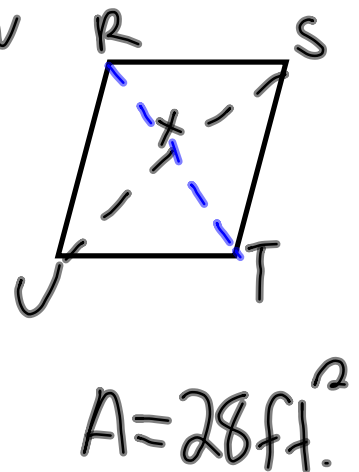
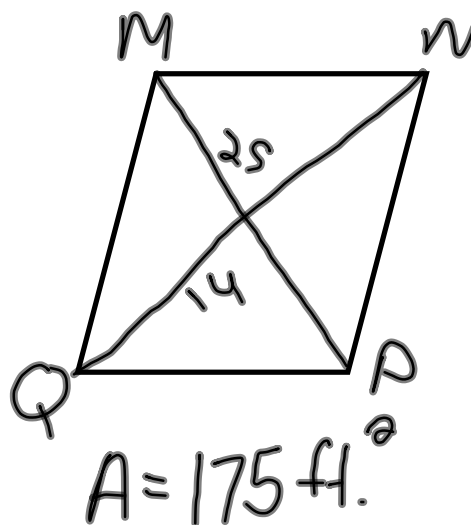
## Find Area

Rhombuses  $MNPQ$  and  $RSTU$  are similar. The area of  $RSTU$  is  $28 \text{ ft}^2$ . The diagonals of  $MNPQ$  are 25 ft. long and 14 ft. long. Find the area of  $MNPQ$ . Then use the ratio of the areas to find the lengths of the diagonals of  $RSTU$ .

$$A = \frac{1}{2} d_1 d_2$$

$$A = \frac{1}{2} (14)(25)$$

$$A = 175$$



$$\sqrt{175} : \sqrt{28}$$

$$5\sqrt{7} : 2\sqrt{7}$$

$$5 : 2$$

$$\frac{5}{2} = \frac{14}{x}$$

$$5x = 28$$

$$x = 5.6 \text{ ft.}$$

$$\frac{5}{2} = \frac{25}{x}$$

$$5x = 50$$

$$x = 10 \text{ ft.}$$

## **Homework Assignment**

### **Worksheet 11.3B**