Name _____ Date _____

LESSON 11.3

Practice

For use with pages 737–743

a:b $\xrightarrow{x^2}$ $a^2:b^2$

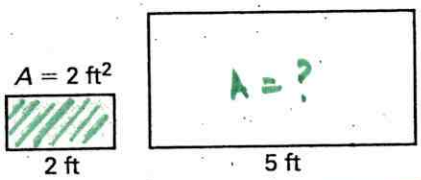
Complete the table of ratios for similar polygons.

	Ratio of corresponding side lengths	Ratio of perimeters	Ratio of areas
1.	5:8	5:8	25:64
2.	4:7	4:7	16:49
3.	13:6	13:6	169:36
4.	66:18 = ? 11:3	11:3	121:9

$\frac{a^2}{b^2} = \frac{A(\text{shaded})}{A(\text{unshaded})}$

Corresponding lengths in similar figures are given. Find the ratios (shaded to unshaded) of the perimeters and areas. Find the unknown area.

5.



Ratio sides/Perim. Ratio Areas

$\frac{2}{5} \xrightarrow{x^2} \frac{4}{25}$

Ratio Areas = Areas

$\frac{4}{25} = \frac{2}{x}$

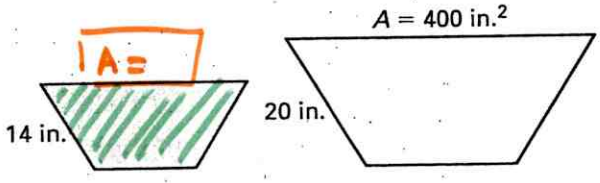
$4x = 50$

$x = 12.5$

A(unshaded)

$A = 12.5 \text{ ft}^2$

6.



Ratio sides $\frac{14}{20} = \frac{7}{10}$ Ratio Areas $\xrightarrow{x^2} \frac{49}{100}$

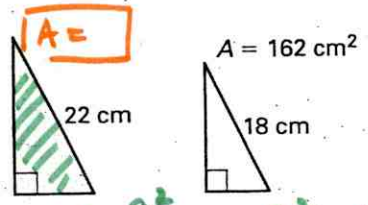
Ratio Areas = Areas

$\frac{49}{100} = \frac{x}{400}$

$49x = 40000$

$A(\text{shaded}) = 196 \text{ in}^2$

7.



$\frac{a}{b}$ $\frac{22}{18} = \frac{11}{9} \xrightarrow{x^2} \frac{a^2}{b^2}$ $\frac{121}{81}$

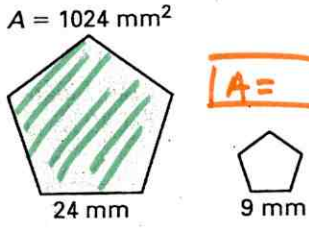
$\frac{a^2}{b^2} = \frac{A(\text{shaded})}{A(\text{unshaded})}$

$\frac{121}{81} = \frac{x}{162}$

$81x = 121(162)$

$A(\text{shaded}) = 242 \text{ cm}^2$

8.



$\frac{a}{b}$ $\frac{24}{9} = \frac{8}{3} \xrightarrow{x^2} \frac{a^2}{b^2}$ $\frac{64}{9}$

$\frac{a^2}{b^2} = \frac{A(\text{shaded})}{A(\text{unshaded})}$

$\frac{64}{9} = \frac{1024}{x}$

$A(\text{unshaded}) = 144 \text{ mm}^2$

The ratio of the areas of two similar figures is given. Write the ratio of the lengths of corresponding sides. $\frac{a^2}{b^2} \rightarrow \frac{a}{b}$

9. Ratio of areas = 16:81

$\frac{a^2}{b^2} \xrightarrow{\sqrt{x}} \frac{a}{b}$ $\frac{4}{9}$

10. Ratio of areas = 25:196

$\frac{a^2}{b^2} \xrightarrow{\sqrt{x}} \frac{a}{b}$

$\frac{25}{196} \xrightarrow{\sqrt{x}} \frac{5}{14}$

11. Ratio of areas = 144:49

$\frac{a^2}{b^2} \xrightarrow{\sqrt{x}} \frac{a}{b}$

$\frac{144}{49} \xrightarrow{\sqrt{x}} \frac{12}{7}$

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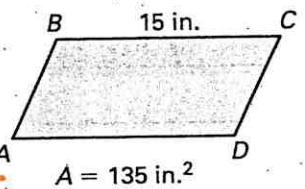
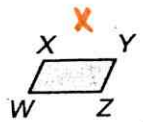
LESSON 11.3 **Practice** *continued*
For use with pages 737–743

Use the given area to find *XY*.

12. $ABCD \sim WXYZ$

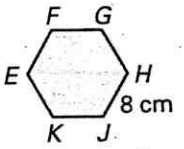


$A = 135$ in.^{2}

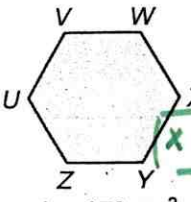


$A = 15$ in.^{2}

13. $EFGHJK \sim UVWXYZ$



$A = 168$ cm^2



$A = 378$ cm^2

14. Regular octagon *ABCDEFGH* has a side length of 10 millimeters and an area of 160 square millimeters. Regular octagon *JKLMNOPQ* has a perimeter of 200 millimeters. Find its area.

15. Kites *RSTU* and *VWXY* are similar. The area of *RSTU* is 162 square feet. The diagonals of *VWXY* are 32 feet long and 18 feet long. Find the area of *VWXY*. Then use the ratio of the areas to find the lengths of the diagonals of *RSTU*.

16. $\triangle ABC$ and $\triangle DEF$ are similar. The height of $\triangle ABC$ is 42 inches. The base of $\triangle DEF$ is 7 inches and the area is 42 square inches. Find the ratio of the area of $\triangle ABC$ to the area of $\triangle DEF$.

17. Rectangles *ABCD* and *EFGH* are similar. The width of *ABCD* is 18 centimeters and the perimeter is 120 centimeters. The length of *EFGH* is 91 centimeters. Find the ratio of the side lengths of *ABCD* to the side lengths of *EFGH*.