NAME_____ DATE _____

Reteaching with Practice

For use with pages 430–438

GOAL **Find the area of triangles.**

VOCABULARY

The **height of a triangle** is the perpendicular segment from a vertex to the line containing the opposite side, called the **base of the triangle**.

Area of a Triangle: Area $= \frac{1}{2}$(base)(height)

Theorem 8.3   Areas of Similar Polygons

If two polygons are similar with a scale factor of $\frac{a}{b}$, then the ratio of their areas is $\frac{a^2}{b^2}$.
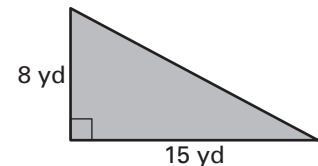
EXAMPLE 1 *Find the Area of a Right Triangle*
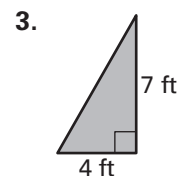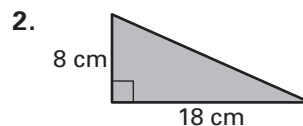
Find the area of the right triangle.

SOLUTION

Use the formula for the area of a triangle and substitute 15 for *b* and 8 for *h*.

8 yd

15 yd

$A = \frac{1}{2}bh$ Formula for the area of a triangle

$\quad = \frac{1}{2}(15)(8)$ Substitute 15 for *b* and 8 for *h*.

$\quad = 60$ Simplify.

Answer: The right triangle has an area of 60 square yards.

Exercises for Example 1

Find the area of the right triangle.

1.

5 in.

12 in.

2.

8 cm

18 cm

3.

7 ft

4 ft

Geometry, Concepts and Skills
Practice Workbook with Examples
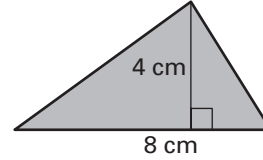
145

NAME_____ DATE _____

Reteaching with Practice

For use with pages 430–438

EXAMPLE 2 *Find the Area of a Triangle*

Find the area of the triangle.

SOLUTION

$A = \frac{1}{2}bh$ Formula for the area of a triangle

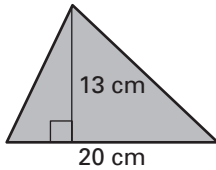$\quad = \frac{1}{2}(8)(4)$ Substitute 8 for *b* and 4 for *h*.
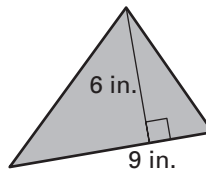
$\quad = 16$ Simplify.

Answer: The triangle has an area of 16 square centimeters.

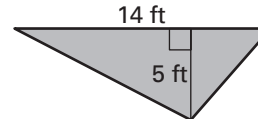*Exercises for Example 2*

Find the area of the triangle.

4.

13 cm

20 cm

5.

6 in.

9 in.

6.   14 ft

5 ft

EXAMPLE 3 *Find the Base of a Triangle*

Find the base of the triangle, given that its area
is 42 square feet.

6 ft

SOLUTION

$A = \frac{1}{2}bh$ Formula for the area of a triangle

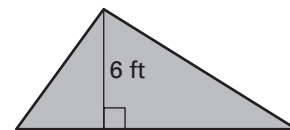$42 = \frac{1}{2}b \cdot 6$ Substitute 42 for *A* and 6 for *h*.

$84 = b \cdot 6$ Multiply each side by 2.

$14 = b$ Divide each side by 6.
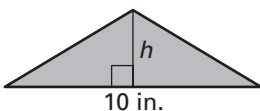
Answer: The triangle has a base of 14 feet.

NAME_____ DATE _____

Reteaching with Practice
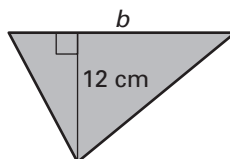
For use with pages 430 – 438

Exercises for Example 3

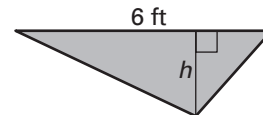**A gives the area of the triangle. Find the missing measure.**

7. $A = 15 \text{ in.}^2$

10 in.

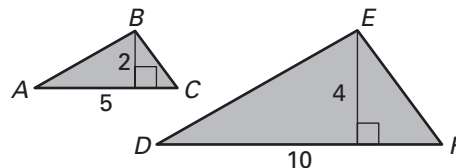**8.** $A = 126 \text{ cm}^2$

b
12 cm

9. $A = 6 \text{ ft}^2$

6 ft
h

EXAMPLE 4 *Areas of Similar Triangles*

$\triangle ABC \sim \triangle DEF$. Find the scale factor of $\triangle DEF$ to $\triangle ABC$. Then find the ratio of their areas.

SOLUTION

The scale factor of $\triangle DEF$ to $\triangle ABC$ is $\frac{4}{2} = \frac{2}{1}$. Then by Theorem 8.3, the ratio of the areas of $\triangle DEF$ to $\triangle ABC$ is $\frac{2^2}{1^2} = \frac{4}{1}$. You can verify this by finding their areas.

Exercise for Example 4

10. $\triangle ABC \sim \triangle DEF$. Find the scale factor of $\triangle DEF$ to $\triangle ABC$. Then find the ratio of their areas.