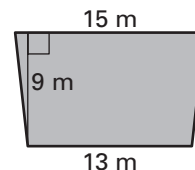NAME_____ DATE _____

Reteaching with Practice

For use with pages 446–450

GOAL **Find the area of trapezoids.**

VOCABULARY

The shortest distance between the bases of a trapezoid is the **height of the trapezoid.**

Area of a Trapezoid: Area $= \frac{1}{2}$(height)(sum of bases)
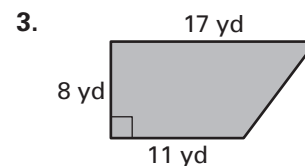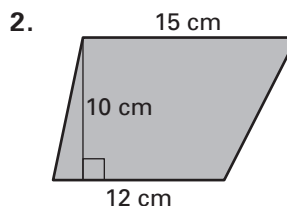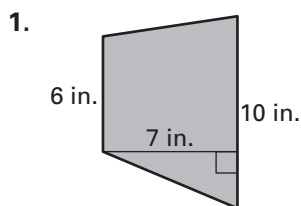

EXAMPLE 1 *Find the Area of a Trapezoid*

Find the area of the trapezoid.

SOLUTION

$$A = \frac{1}{2}h(b_1 + b_2)$$ Formula for the area of a trapezoid

$$= \frac{1}{2}(9)(15 + 13)$$ Substitute 9 for h, 15 for b_1, and 13 for b_2.

$$= \frac{1}{2}(9)(28)$$ Simplify within parentheses.

$$= 126 \text{ m}^2$$ Multiply.

Exercises for Example 1

Find the area of the trapezoid.

1.

6 in.

7 in.

10 in.

2.

15 cm

10 cm

12 cm

3.

17 yd

8 yd

11 yd

Geometry, Concepts and Skills
Practice Workbook with Examples
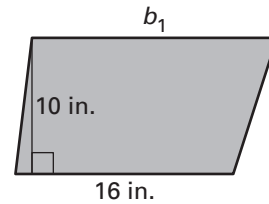
NAME_____ DATE _____

Reteaching with Practice

For use with pages 446–450

EXAMPLE 2 *Use the Area of a Trapezoid*

Given that the area of the trapezoid
is 170 square inches, find b_1.

b_1

10 in.

16 in.

SOLUTION

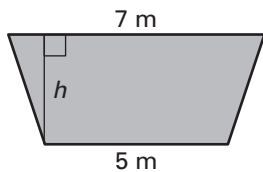|	
$A = \frac{1}{2}h(b_1 + b_2)$	Formula for the area of a trapezoid
$170 = \frac{1}{2}(10)(b_1 + 16)$	Substitute 170 for A, 10 for h, and 16 for b_2.
$170 = 5(b_1 + 16)$	Simplify $\frac{1}{2}(10)$.
$34 = b_1 + 16$	Divide each side by 5.
$18 = b_1$	Subtract 16 from each side.

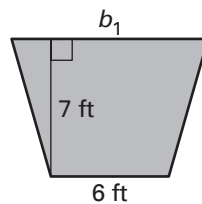*Answer:* The value of b_1 is 18 inches.

Exercises for Example 2

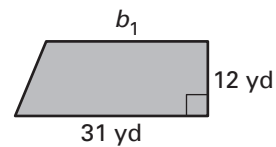**A gives the area of the trapezoid. Find the missing measure.**

4. $A = 18 \text{ m}^2$

7 m

h

5 m

5. $A = 56 \text{ ft}^2$

b_1

7 ft

6 ft

6. $A = 342 \text{ yd}^2$

b_1

12 yd
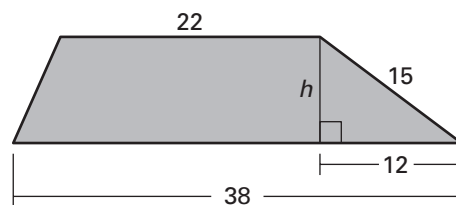
31 yd

NAME_____ DATE _____

Reteaching with Practice

For use with pages 446–450
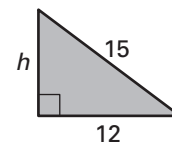
EXAMPLE 3 *Use the Pythagorean Theorem*

Find the height using the Pythagorean Theorem.
Then find the area of the trapezoid.

SOLUTION

Find the height of the trapezoid by using the
Pythagorean Theorem on the right triangle.

$$a^2 + b^2 = c^2 \qquad \text{Pythagorean Theorem}$$
$$h^2 + 12^2 = 15^2 \qquad \text{Substitute 12 for } b, \text{ 15 for } c, \text{ and } h \text{ for } a.$$
$$h^2 + 144 = 225 \qquad \text{Simplify.}$$
$$h^2 = 81 \qquad \text{Subtract 144 from each side.}$$
$$h = 9 \qquad \text{Take the positive square root of each side.}$$

So, the height of the trapezoid is 9 units. Now use the formula for the
area of the trapezoid.

$$A = \frac{1}{2}h(b_1 + b_2) = \frac{1}{2}(9)(22 + 38) = \frac{1}{2}(9)(60) = 270$$

Answer: The area of the trapezoid is 270 square units.

Exercises for Example 3

**Find the height of the trapezoid using the Pythagorean Theorem.
Then find the area of the trapezoid.**

7.

8.