

LESSON
13-3**Solving Area Equations****Reteach**

You can use area formulas to find missing dimensions in figures.

The formula for area of a parallelogram is $A = bh$.

The formula for area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$.

The formula for area of a rhombus is $A = \frac{1}{2}d_1d_2$.

The formula for area of a triangle is $A = \frac{1}{2}bh$.

Suppose you know the area of a triangle is 28 square feet. You also know the length of the base of the triangle is 7 feet. What is the height of the triangle?

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

Substitute known values. $28 = \frac{1}{2}(7)h$

Multiply both sides by 2. $56 = 7h$

Divide both sides by 7. $8 = h$

The height of the triangle is 8 feet.

Solve.

1. The area of a parallelogram is 150 square meters. The height of the parallelogram is 15 meters. What is the length of the parallelogram?

2. The length of one diagonal of a rhombus is 8 cm. The area of the rhombus is 72 square centimeters. What is the length of the other diagonal of the rhombus?

3. The area of a triangle is 32 square inches. The height of the triangle is 8 inches. What is the length of the base of the triangle?

4. The area of a rectangle is 34 square yards. The length of the rectangle is 17 yards. What is the width of the rectangle?

5. The area of a trapezoid is 39 square millimeters. The height of the trapezoid is 6 millimeters. One of the base lengths of the trapezoid is 5 millimeters. What is the length of the other base of the trapezoid?

5. You could change all the areas to one unit, say square inches, by multiplying square yards by 36×36 and square feet by 12×12 . Then you could add the areas.

6. 18.7 cm^2

7. $\frac{9}{10} \text{ in}^2$

8. 23.25 cm^2

9. 8.4 in .

Practice and Problem Solving: D

1. 1.5 cm^2

2. 14 in^2

3. 16 m^2

4. 35 ft^2

5. 36 cm^2

6. 48 in^2

7. 28 ft^2

8. 84 ft^2

9. 600 yd^2

Reteach

1. 12 cm^2

2. 6 ft^2

3. 15 m^2

4. 9 mm^2

5. 14 yd^2

6. 20 in^2

Reading Strategies

1. Use the formula $A = \frac{1}{2}bh$.

2. Substitute 10 for b ; Substitute 4 for h .

3. 20 in^2

4. 54 m^2

5. 4.5 ft^2

6. Use the same formula but substitute for area and base in the second and third steps. Then solve for the height.

Success for English Learners

1. No, as long as both sides (base and height) meet at a right angle.

2. because of the Associative Property of Multiplication

3. 16 ft^2

LESSON 13-3

Practice and Problem Solving: A/B

1. $600 = \frac{1}{2}b(20)$; The base is 60 ft.

2. $1,224 = \frac{1}{2}h\left(70\frac{1}{2} + 65\frac{1}{2}\right)$; The height of the countertop is 18 in.

3. The width of the tabletop 3 ft.

4. The base is 30 cm.

5. The width of the door is 9 ft.

Practice and Problem Solving: C

1. 56 front frames

2. \$77.97

3. 20 cm and 5 cm

4. 225 yd

5. 120 triangular pieces

Practice and Problem Solving: D

1. 5 in.

2. $525 = \frac{1}{2}h(30 + 40)$; 15 ft

3. 14 in.

4. 20 in.

5. 5 cm

6. 3 ft

Reteach

1. 10 m

2. 18 cm

3. 8 in.

4. 2 yd

5. 8 mm

Reading Strategies

1. 5 in.

2. 6 cm

Success for English Learners

1. Write the formula for the area of the figure.

2. Substitute in known variables and solve for the missing variable.