EXERCISES

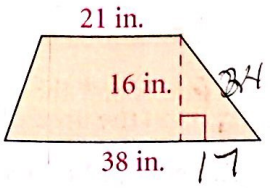
For more practice, see Extra Practice.

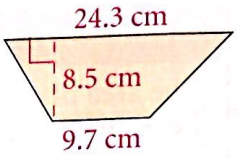
Practice and Problem Solving

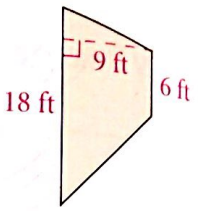
A Practice by Example

Example 1 (page 374)

Find the area of each trapezoid.

1. 

2. 

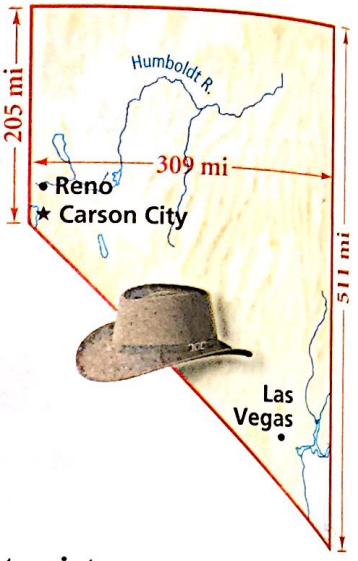
3. 

4. **Geography** Approximate the area of Nevada by finding the area of the trapezoid shown.

5. Find the area of a trapezoid with bases 12 cm and 18 cm and height 10 cm.

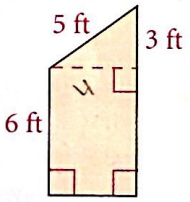
6. Find the area of a trapezoid with bases 2 ft and 3 ft and height $\frac{1}{3}$ ft.

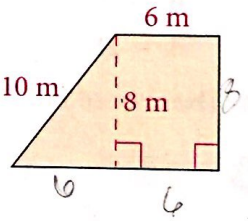
7. **Geography** The border of Tennessee resembles a trapezoid with bases 342 mi and 438 mi, and height 111 mi. Approximate the area of Tennessee by finding the area of this trapezoid.

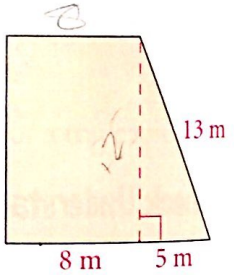


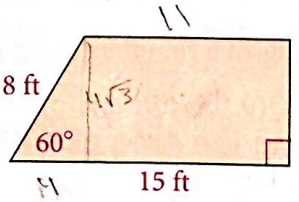
Example 2 (page 374)

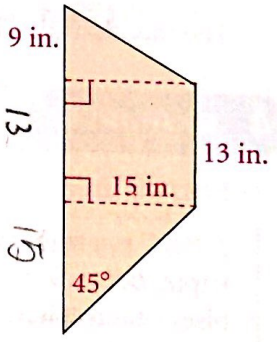
Find the area of each trapezoid. If your answer is not an integer, leave it in simplest radical form.

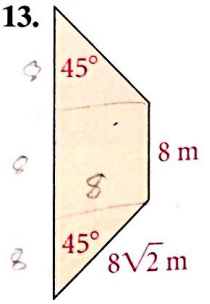
8. 

9. 

10. 

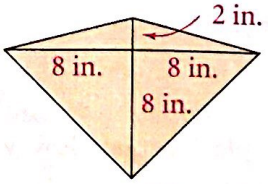
11. 

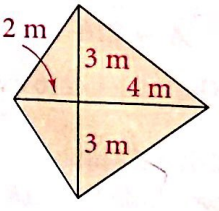
12. 

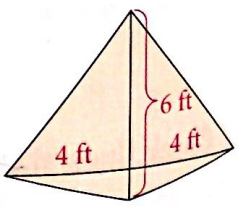
13. 

Example 3 (page 375)

Find the area of each kite.

14. 

15. 

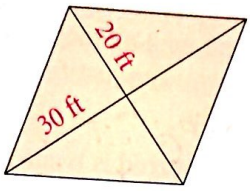
16. 

17. A kite has diagonals 7 ft and 16 ft. What is the area of the kite?

Example 4 (page 375)

Find the area of each rhombus.

18.



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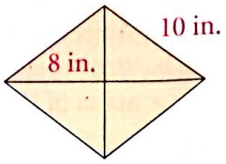

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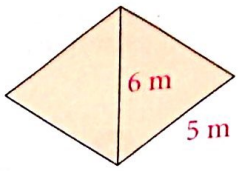
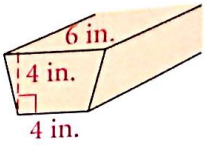


B Apply Your Skills

21. The end of the rain gutter has the shape of a trapezoid with the measurements shown. Find the area of this end.



22. A trapezoid has two right angles, 12-m and 18-m bases, and 8-m height.

a. Sketch the trapezoid. **b.** Find the perimeter. **c.** Find the area.

23. Open-Ended Draw a kite. Measure the lengths of its diagonals. Find its area.

Real-World Connection

On each gold bar the four trapezoidal faces tip inwards. This simplifies the molding process.

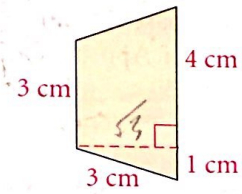
Gold Bars **Find the area of each trapezoidal face of the gold bars.**

24. End face: bases 4 cm and 2 cm, height 3 cm.

25. Side face: bases 8 cm and 5 cm, height 3 cm.

Find the area of each trapezoid to the nearest tenth.

26.



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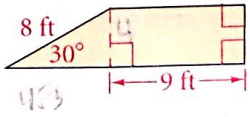

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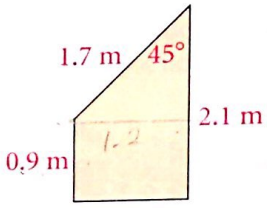
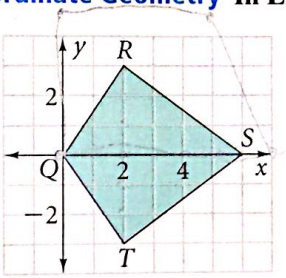


Coordinate Geometry **In Exercises 29–32, find the area of quadrilateral *QRST*.**

29.



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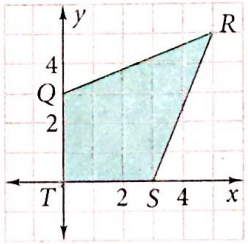

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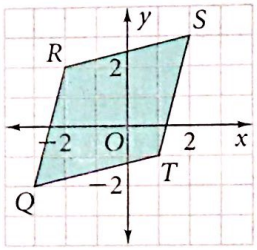
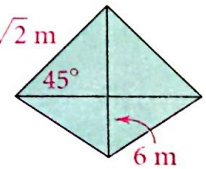


32. *QRST* has vertices $Q(0, 0)$, $R(0, 5)$, $S(5, 5)$, and $T(7, 0)$.

33. Find the area of the kite at the right.



34. a. Coordinate Geometry Graph the lines $x = 0, x = 6, y = 0$, and $y = x + 4$.

b. What type of quadrilateral do the lines form?

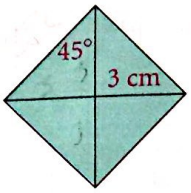
c. Find the area of the quadrilateral.

Need Help?

In Exercises 35–37, recall what is true about the diagonals of a rhombus.

Find the area of each rhombus. Leave your answer in simplest radical form.

35.



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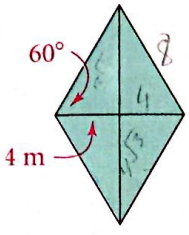

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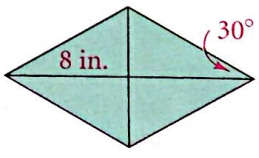


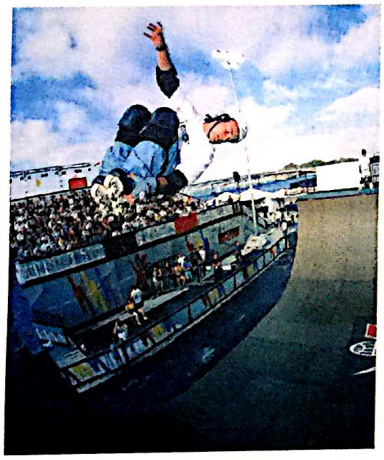
38. Draw a trapezoid. Label its bases and height b_1, b_2, and h, respectively. Then draw a diagonal of the trapezoid.

a. Write equations for the area of each of the two triangles formed.

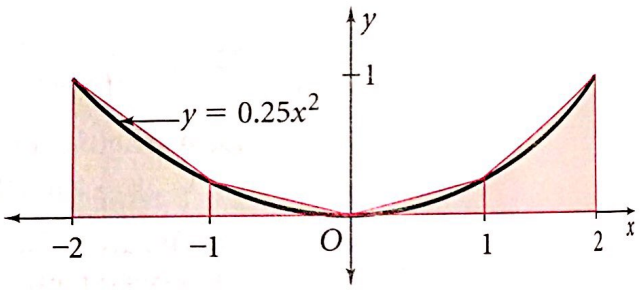
b. Writing Explain how you can justify the trapezoid area formula using the areas of the two triangles.

Challenge

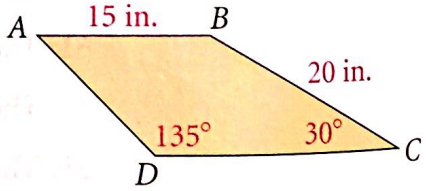
39. Algebra One base of a trapezoid is twice the other. The height is the average of the two bases. The area is 324 cm^2. Find the height and the bases. (*Hint:* Let the smaller base be $2x$.)



40. Gravity Sports Ty wants to paint one end of his homemade skateboarding ramp. The ramp is 4 m wide. Its surface is modeled by the equation $y = 0.25x^2$. Use the trapezoids and triangles shown to estimate the area to be painted.



41. In trapezoid $ABCD$, $\overline{AB} \parallel \overline{DC}$. Find the area of $ABCD$.



Real-World Connection

The curve of a half pipe is two quarter circles joined by a horizontal segment.

Standardized Test Prep