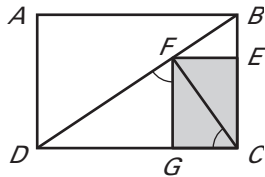
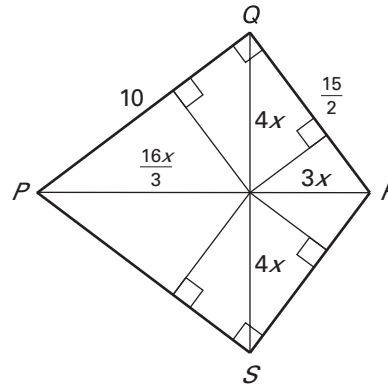


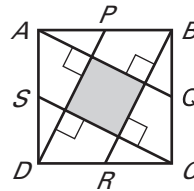
LESSON
7.3
Challenge Practice
For use with pages 448–456

- In polygon $PQRS$ at the right, $PQ = PS$ and $QR = SR$. Find PR and QS .
- Use Theorem 7.7 to prove that the altitude h to the base of an isosceles triangle divides the triangle into two congruent triangles.
- Prove that the shaded rectangle in the diagram below is similar to rectangle $ABCD$.



In Exercises 4–9, the vertices of $\triangle ABC$ are given. Use the point-slope formula to find the coordinates of point D such that \overline{CD} is the altitude to the hypotenuse. Then use a geometric mean theorem to show that your answer is correct.

- $A(0, 4), B(3, 0), C(0, 0)$
 - $A(-4, 2), B(0, -4), C(-4, -4)$
 - $A(-5, 4), B(2, 1), C(-5, 1)$
 - $A(-1, 1), B(1, -1), C(1, 1)$
 - $A(2, 0), B(-2, 8), C(2, 8)$
 - $A(5, 5), B(0, -5), C(5, -5)$
10. Square $ABCD$ in the diagram at the right has side lengths of 1, and the midpoints of its sides are labeled $P, Q, R,$ and S . Find the length of a side of the shaded square.



In Exercises 11 and 12, use the following information.

You live on the corner of Clay Avenue and Main Street. You drive from your apartment due south 9.9 miles on Main Street, then due west 13.2 miles on State Street to the corner of Clay Avenue and Route 35. You turn left, head for a store at the intersection of Route 35 and Main Street, then take Main Street home from the store. Clay Avenue and Route 35 are straight and perpendicular to each other.

- What is the total distance you travel?
- Oakland Street is parallel to State Street and passes through the intersection where you live. Your friend lives at the intersection of Oakland and Route 35. How far apart do you and your friend live?
- Write expressions for x and y in the diagram in terms of $a, b,$ and c . Then use these expressions to prove the Pythagorean Theorem.

