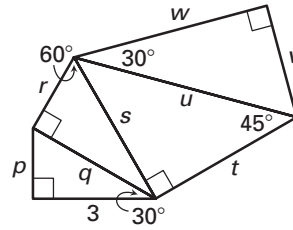


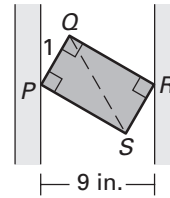
Challenge: Skills and Applications

For use with pages 551–557

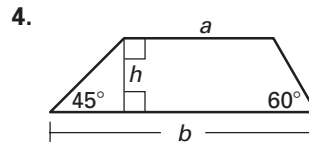
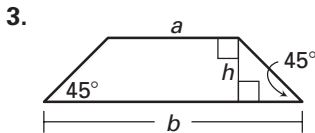
1. Refer to the diagram. Find the exact values of p , q , r , s , t , u , v , and w .



2. A brick is wedged between two parallel wooden planks that are 9 inches apart, as shown. If $m\angle 1 = m\angle RQS = 30^\circ$, what is the length QR of the brick?

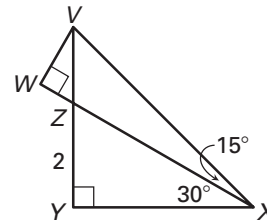


In Exercises 3–4, find the height h of the trapezoid in terms of the base lengths a and b . Rationalize the denominator.



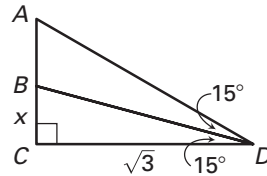
5. Let $YZ = 2$. Complete the following steps to find the side lengths of $\triangle VWX$, a 15° - 75° - 90° triangle.

- Find XY , VY , and VZ .
- What kind of special right triangle is $\triangle VWZ$? Find the lengths of the sides of $\triangle VWZ$.
- Find the lengths of the sides of $\triangle VWX$.



6. Here is another approach to finding the side lengths of a 15° - 75° - 90° triangle. Let $CD = \sqrt{3}$.

- Find AB and AD (in terms of x , where necessary).
- Write and solve a proportion to find the value of x . (*Hint:* Use a theorem in Lesson 8.6.)
- What are the lengths of the sides of $\triangle BCD$?



7. Using the side lengths you found in Exercises 5 and 6, use a calculator to verify numerically that $\triangle BCD \sim \triangle VWX$.