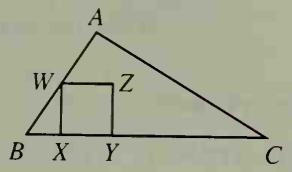
3. $D_{O,2}$ maps $\triangle RST$ to $\triangle R'S'T'$. How are $\overrightarrow{RS}$ and $\overrightarrow{R'S'}$ related?

4. $D_{O,-3}$ maps $\triangle JKL$ to $\triangle J'K'L'$. How are $\overrightarrow{JK}$ and $\overrightarrow{J'K'}$ related?

5. A dilation maps square I to square II, and another dilation maps square II to square III. If the areas of these three squares are 25, 100, and 900, respectively, find the scale factor of each dilation.

6. The square $WXYZ$ has three vertices on the sides of $\triangle ABC$. How can you find a square with all four vertices on $\triangle ABC$? (*Hint:* Consider a dilation.)

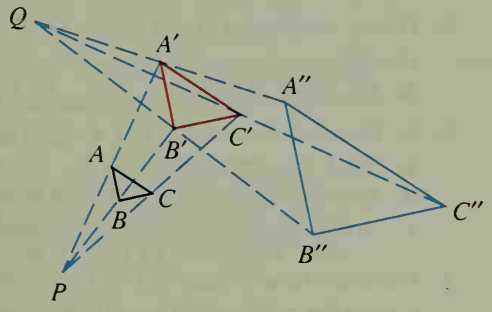


7. O is the origin and the dilation $D_{O,3}$ maps line l to line l'. If the equation of l is $y = 2x + 1$, what is the equation of l'?

8. **a.** Draw a figure like the one shown, in which the dilation $D_{P,2}$ maps $\triangle ABC$ to $\triangle A'B'C'$ and the dilation $D_{Q,2}$ maps $\triangle A'B'C'$ to $\triangle A''B''C''$.

   b. There is a single dilation that will map $\triangle ABC$ directly to $\triangle A''B''C''$. What is its scale factor?

   c. Draw lines $\overleftrightarrow{AA''}$, $\overleftrightarrow{BB''}$, and $\overleftrightarrow{CC''}$ to locate the center of the single dilation. How is this point related to points P and Q?



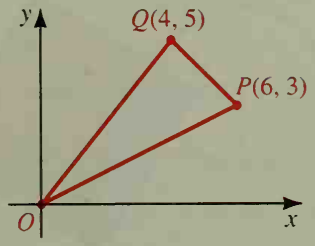
9–10. Work Exercise 29 on page 527 and Classroom Exercise 8 on page 532.

Right Triangles (Chapter 8)

Objective: Explore the properties of right triangles and other special triangles by using coordinate, vector, and transformational approaches. (Requires understanding of Lessons 13-1 through 13-7 and 14-1 through 14-5.)

The example below shows how to use coordinates, the distance formula, and Theorems 8-3, 8-4, and 8-5 to tell whether a triangle is acute, right, or obtuse.

Example Is $\triangle OPQ$ acute, right, or obtuse?



Solution First find the lengths of the sides of the triangle by using the distance formula.

$OP = \sqrt{6^2 + 3^2} = \sqrt{45}$

$OQ = \sqrt{4^2 + 5^2} = \sqrt{41}$

$PQ = \sqrt{(6 - 4)^2 + (3 - 5)^2} = \sqrt{8}$

(Solution continued on next page.)