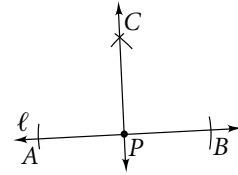# 4-4 • Guided Problem Solving

GPS **Student Page 224, Exercise 13**

Constructions The construction of a line perpendicular to line ℓ through point P on ℓ is shown here.

a. Which lengths or distances are equal by construction?

b. Explain why you can conclude that $\overleftrightarrow{CP}$ is perpendicular to ℓ.

   (*Hint:* Do the construction. Then draw $\overline{CA}$ and $\overline{CB}$.)

Read and Understand

1. What steps were involved in the construction? _____

   _____

2. What are you asked to do? _____

Plan and Solve

3. Draw $\overline{CA}$ and $\overline{CB}$. What two triangles are formed? _____

4. Which lengths or distances are equal by construction? _____

5. What can you conclude about $\triangle APC$ and $\triangle BPC$? _____ Why? _____

6. Why is $\angle APC \cong \angle BPC$? Justify your answer. _____

7. Find $m\angle APC$ and $m\angle BPC$ and explain how you did it. _____

8. Why can you conclude that $\overleftrightarrow{CP}$ is perpendicular to ℓ? _____

Look Back and Check

9. Does it matter what the distance is from P to A and from P to B?
   Why or why not? How about the distance from A to C and from B to C? _____

   _____

Solve Another Problem

10. How could you use construction techniques similar to
    those used in this problem to construct two parallel lines?

    _____

    _____