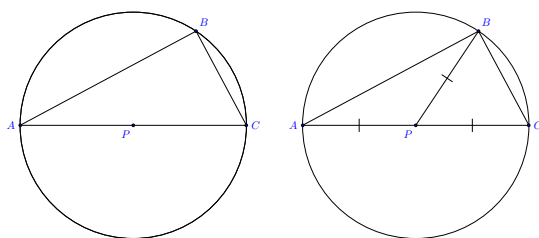


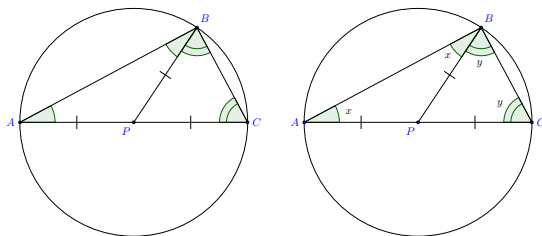
# Inscribed Angles

Proofs updated.

**Problem 1** In the figure below,  $\overline{AC}$  is a diameter of a circle with center  $P$ . Prove that  $\angle B$  is a right angle.



- (a) Beginning with the diagram on the left, Natalia draws  $\overline{PB}$  and marks the diagram to show segments that she knows to be congruent because each one is a radius of the circle.



- (b) Natalia sees that  $\triangle APB$  and  $\triangle BPC$  are isosceles triangles, so she marks the figure to show angles that must be congruent.

*Fixnote: Do we need a statement or citation of the theorem?*

- (c) In order to do some algebra with these congruent angles, Natalia labels their measures  $x$  and  $y$ , as shown in the picture on the right.
- (d) She writes an equation for the sum of the angles of  $\triangle ABC$ :

$$\boxed{x + (x + y) + y} = 180^\circ$$

Learning outcomes:  
Author(s): Brad Findell

*Fixnote: Need a prompt about dividing the equation by 2.*

(e) Since  $m\angle B = x + y$ , she concludes that  $m\angle B = 90^\circ$ .

*Fixnote: Should call it  $\angle ABC$  because of the new segment. Or maybe note this earlier.*

**Problem 2** *Fixnote: New problem about relationship between inscribed angle and central angle.*

