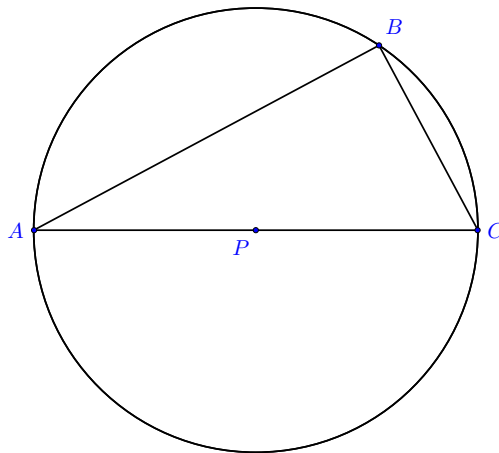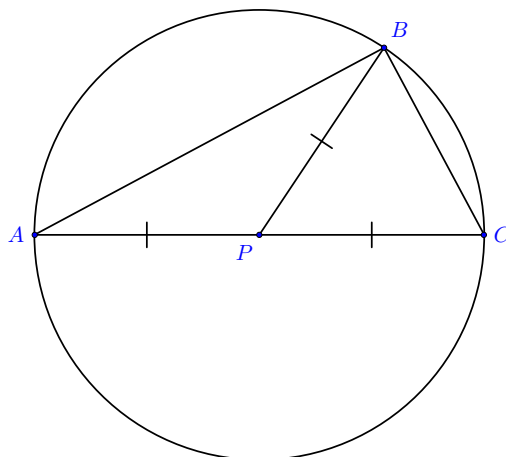# Proofs for Inscribed Angles

Proofs.

In the figure below, $\overline{AB}$ is a diameter of a circle with center P. Natalia is trying to prove that $\angle B$ is a right angle.
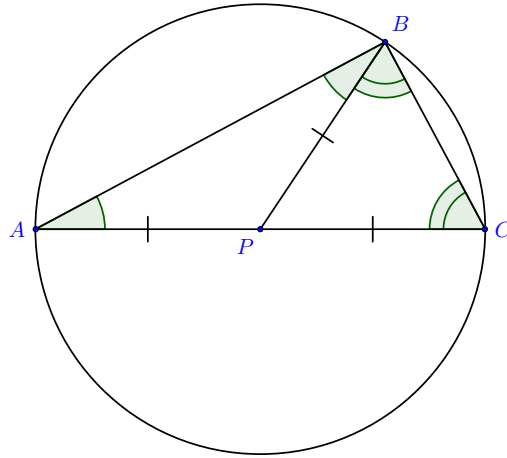

Natalia draws $\overline{PB}$ and marks the diagram to show segments that she knows to be congruent because each one is a $\boxed{radius}$ of the circle.
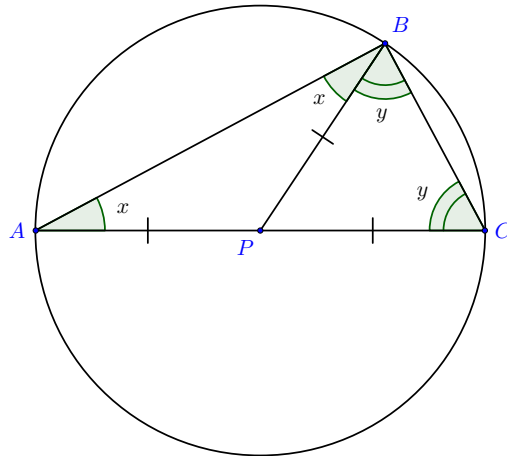

Author(s): Brad Findell

Natalia sees that $\triangle APB$ and $\triangle BPC$ are $\boxed{isosceles}$ triangles, so she marks the figure to show congruent angles.

In order to do some algebra with these congruent angles, Natalia labels their measures x and y, as shown in the following picture:

She writes an equation for the sum of the angles of $\triangle ABC$:

$$\boxed{x + (x + y) + y} = 180°$$

Since $m\angle B = \boxed{x + y}$, she concludes that $m\angle B = 90°$.