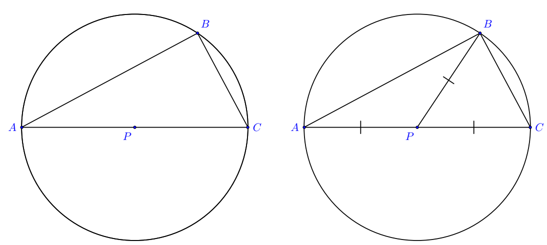
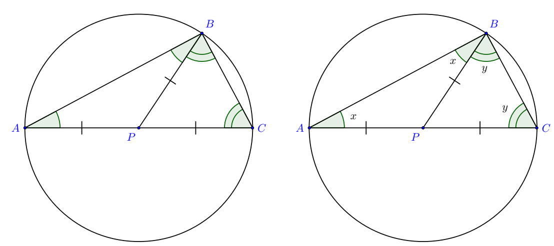
Inscribed Angles

Proofs.

Problem 1 *In the figure below, $\overline{AB}$ 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* $\boxed{\textit{radius}}$ *of the circle.*



(b) *Natalia sees that $\triangle APB$ and $\triangle BPC$ are* $\boxed{\textit{isosceles}}$ *triangles, so she marks the figure to show angles that must congruent. (Note: 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 $\triangle ABC$:*

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

(Note: Need a question about dividing the equation by 2.)

Author(s): Brad Findell

(e) *Since* $m\angle B = \boxed{x + y}$, *she concludes that* $m\angle B = 90^\circ$. *(Note: Should call it* $\angle ABC$ *because of the new segment, or maybe note this earlier.)*

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