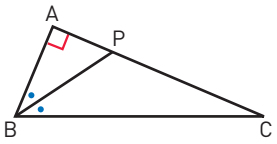
YOU & MATHS **The ratio in a triangle** In a right triangle ABC, with the right angle $\widehat{A}$, $BC = 65$ cm and $AC = 60$ cm. The angle bisector of the angle $\widehat{B}$ crosses AC at P. Find the ratio of the lengths of AP and PC.

Let us draw the right triangle and the bisector of the angle $\widehat{B}$.



By the angle bisector theorem, we get:

$$\frac{\overline{AP}}{\overline{PC}} = \frac{\overline{AB}}{\overline{BC}}.$$

By the Pythagorean theorem we get:

$$\overline{AB} = \sqrt{\overline{BC}^2 - \overline{AC}^2} = 25.$$

Therefore:

$$\frac{\overline{AP}}{\overline{PC}} = \frac{\overline{AB}}{\overline{BC}} = \frac{25}{65} = \frac{5}{13}.$$