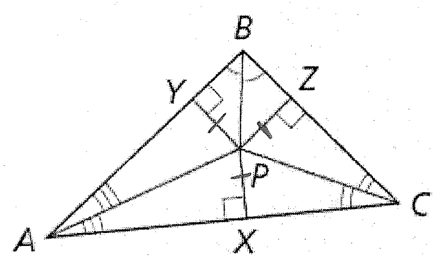
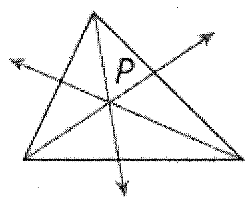
II. **Incenter** of a Triangle

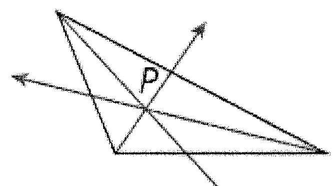
A. **Incenter** – Point where the angle bisectors of a triangle intersect.

Incenter Theorem	Example	What can we conclude?
The incenter of a triangle is equidistant from the side of the triangle. Point P is formed by the intersection of angle bisectors.		$PY = PZ = PX$ $\overline{PY} \cong \overline{PZ} \cong \overline{PX}$

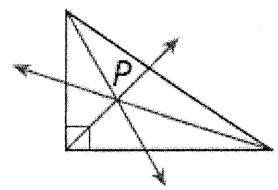
Unlike the circumcenter, the **incenter** is ALWAYS inside the triangle.



acute triangle



obtuse triangle



right triangle

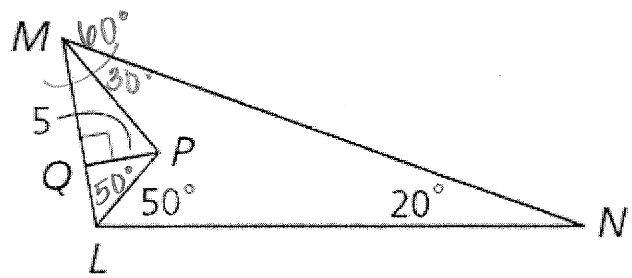
Example #3: Using Properties of Angle Bisectors

A. MP and LP are angle bisectors of ΔLMN. Find each measure.

1. The distance from P to $\overline{MN}$.

5 units

2. $m < PMN = 30°$



B. QX and RX are angle bisectors of ΔPQR. Find each measure.

1. The distance from X to PQ.

19.2 units

2. $m < PQX = 52°$