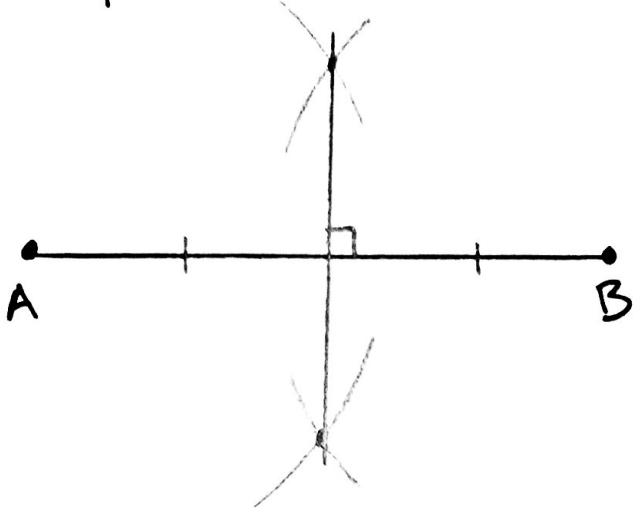
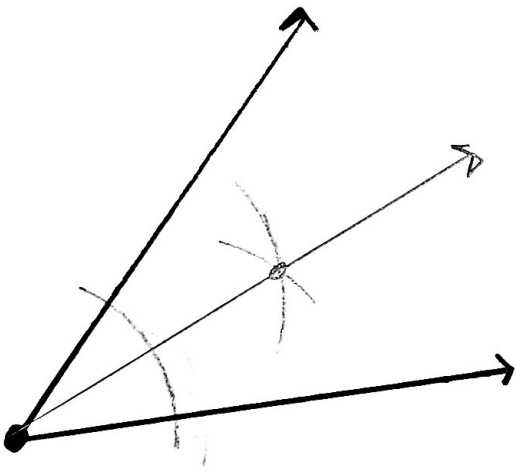


Perpendicular Bisector



- 1) Put end of compass on endpoint and measure a width that is more than half of segment.
- 2) Draw arc above & below.
- 3) Without changing width, do same on other side.
- 4) Connect line between intersection points of both sets of arcs.

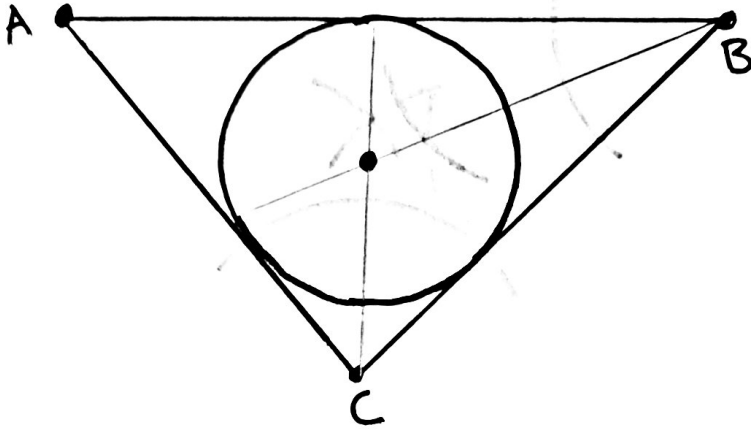
Angle Bisector



- 1) Draw arc that intersects both rays of angle (with needle on vertex).
- 2) Place compass on point where the arc you drew intersects ray, and without changing width, draw another arc towards middle of angle.
- 3) Repeat on other side.
- 4) Connect vertex of angle to intersection of two arcs.

8.6 Constructions & Tangents

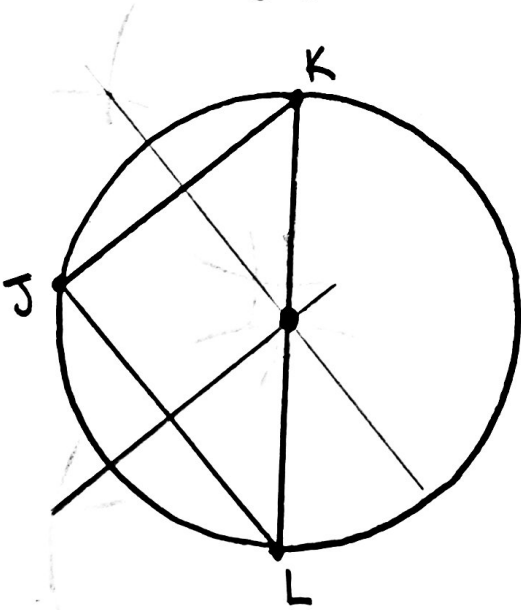
Inscribed Circle - circle inside a polygon, center is called the incenter - point where angle bisectors meet



* The triangle is circumscribed about the circle

- 1) Construct angle bisectors of two angles
- 2) Place needle on incenter and measure to edge of polygon along an angle bisector. This is your radius.
- 3) Draw circle.

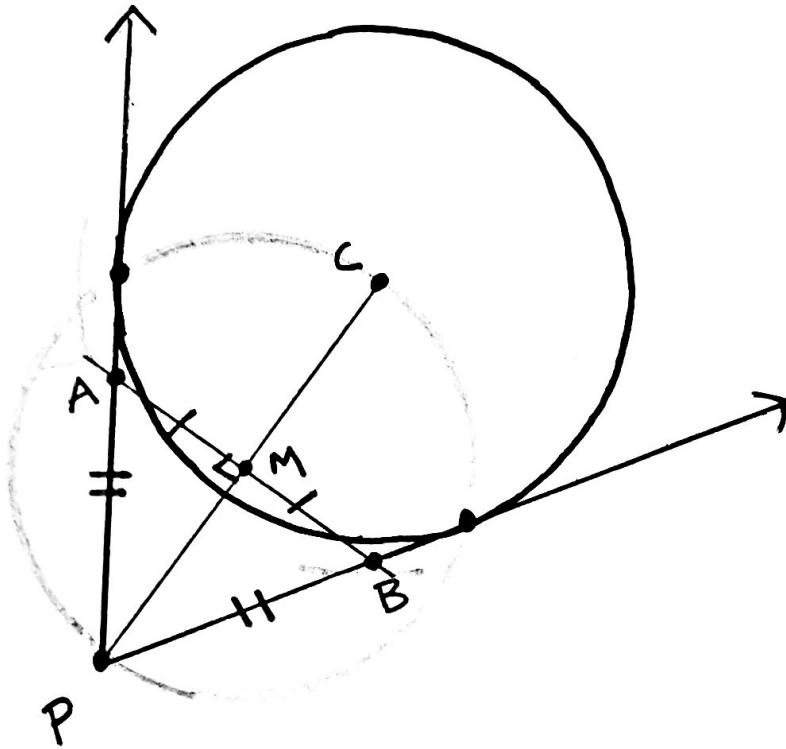
Circumscribed Circle - circle around a polygon, center is called the circumcenter - point where perpendicular bisectors meet



* The triangle is inscribed in the circle

- 1) Construct perpendicular bisectors of two sides
- 2) Place needle on circumcenter and measure to a vertex of the polygon. This is your radius.
- 3) Draw circle.

Tangent Line - line that intersects the circle at one point, point of intersection is called the point of tangency



\overline{CP} is a perpendicular bisector of \overline{AB}

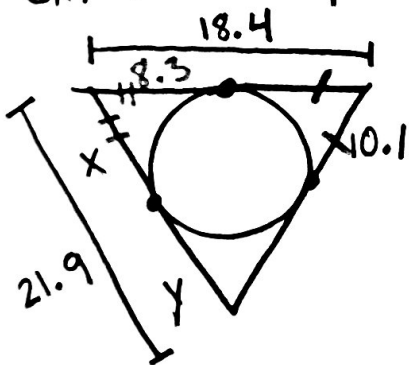
$$\overline{AM} \cong \overline{MB}$$

$$\overline{PM} \cong \overline{PM}$$

$\angle AMP \cong \angle BMP$, so $\triangle AMP \cong \triangle BMP$
and $\overline{PA} \cong \overline{PB}$

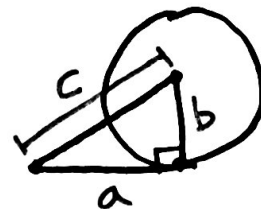
... so two tangent segments from the same external point are congruent.

ex: Find x & y .



$$\begin{aligned} x &= 8.3 \\ y &= 21.9 - 8.3 \\ &= 13.6 \end{aligned}$$

If a line is tangent to a circle, then the radius forms a right angle with the tangent line.



So to determine if a line is tangent, test the dimensions with the Pythagorean Theorem.