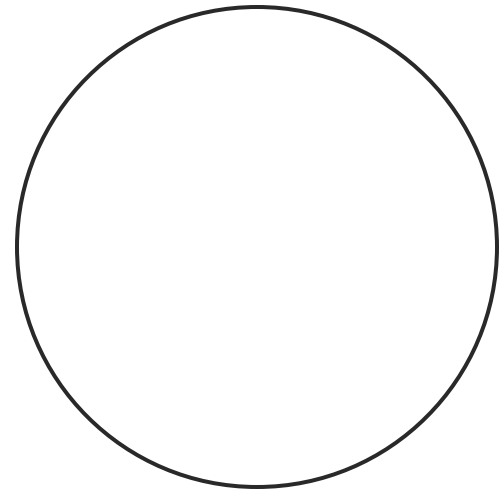# §9-4 Inscribed Angles

- Definition: Inscribed Angle

  - An angle with a _____ on the circle.
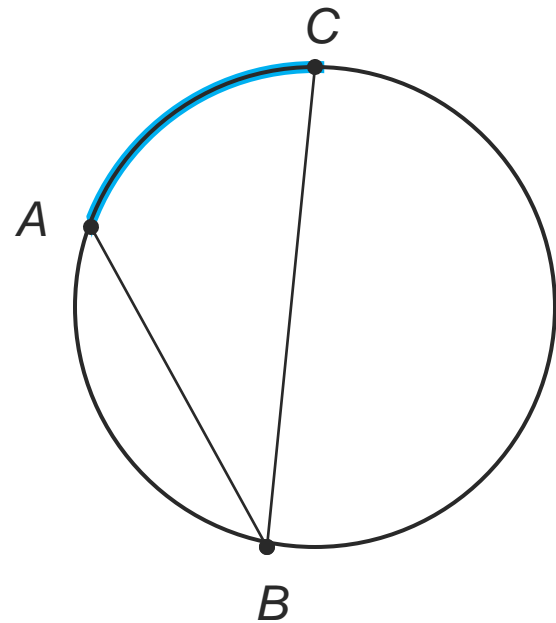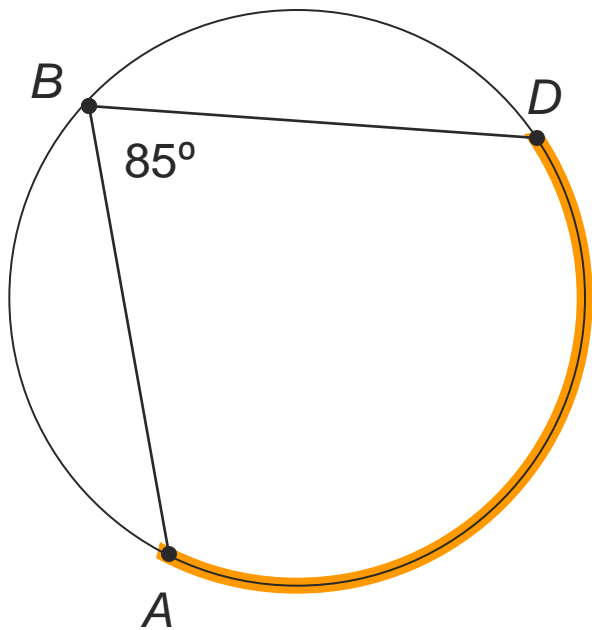
  $\angle ABC$ is an inscribed angle

§9-4 Inscribed Angles
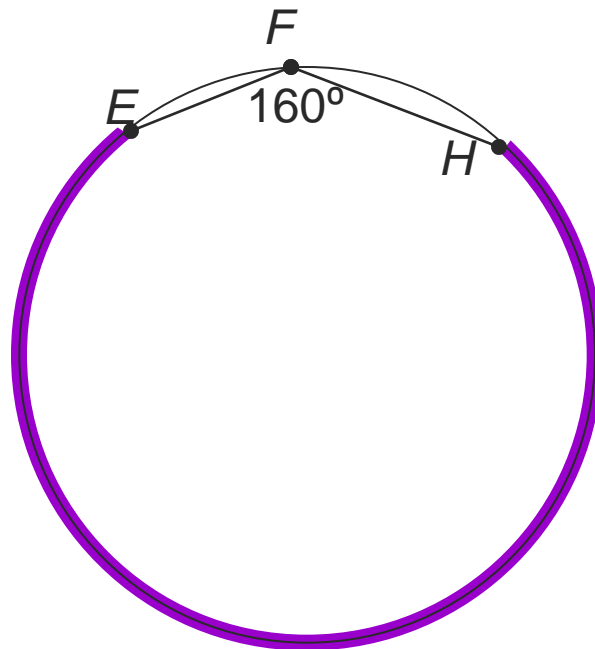
- Theorem:
  Measure of an Inscribed Angle

  - If an angle is inscribed in a circle, then the measure of the angle equals _____ the measure of its intercepted arc.
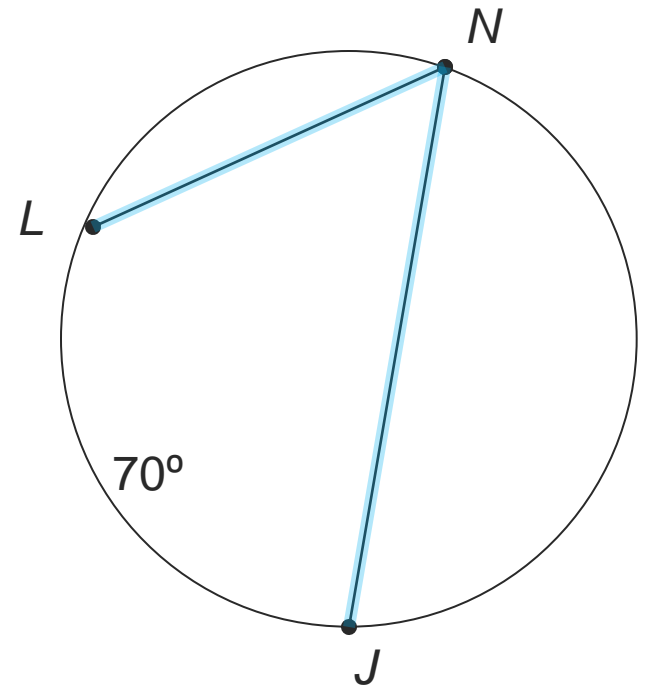
Practice: Find the measure of the indicated arc or angle.

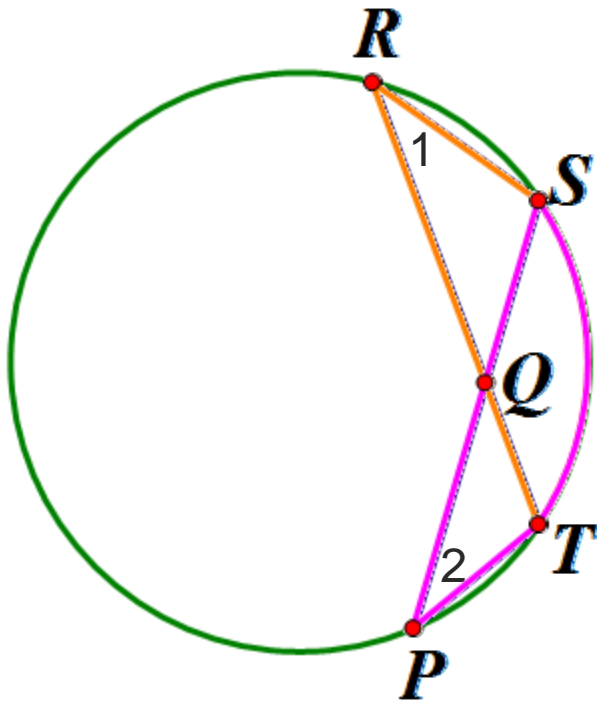Practice: Find the measure of the indicated arc or angle.

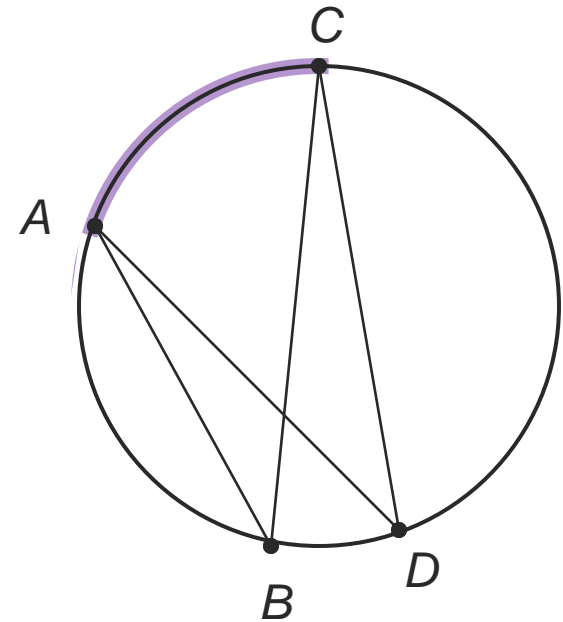Practice: Find the measure of the indicated arc or angle.

Example

- In the circle shown, $mST = 68°$. Find $m\angle 1$ and $m\angle 2$.

Theorem

- Theorem:
  If two inscribed angles of a circle (or of congruent circles) intercept the _____ arc (or congruent arcs), then the angles are _____.
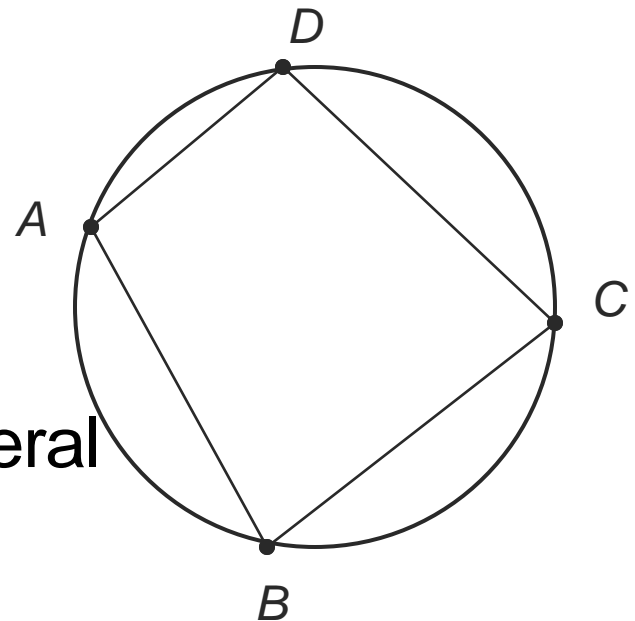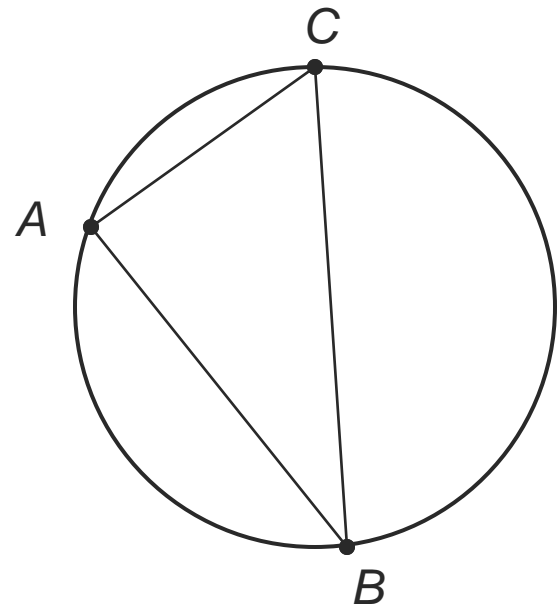
Inscribed Polygons

- Definition:
  - If all the vertices of a polygon are located on a circle, then it is **inscribed** in the circle.
  - The circle is then **circumscribed** about the polygon.
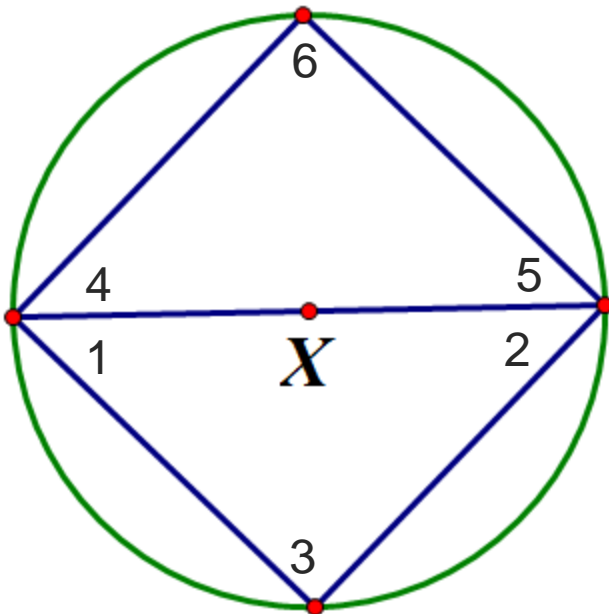
ABCD is an inscribed quadrilateral

Inscribed Polygons

- Theorem:
  A right triangle is inscribed in a circle if and only if its

  _____ is the _____ of the circle.

Example

- In $\odot X$, $m\angle 4 = 7x + 3, m\angle 5 = 7x + 3,$ and $m\angle 1 = 5x.$ Find $m\angle 1, m\angle 2, m\angle 4,$ and $m\angle 5.$

_____

(If a side of a triangle is the diameter of the circle, then it's a right triangle. Def. rt. ∠)

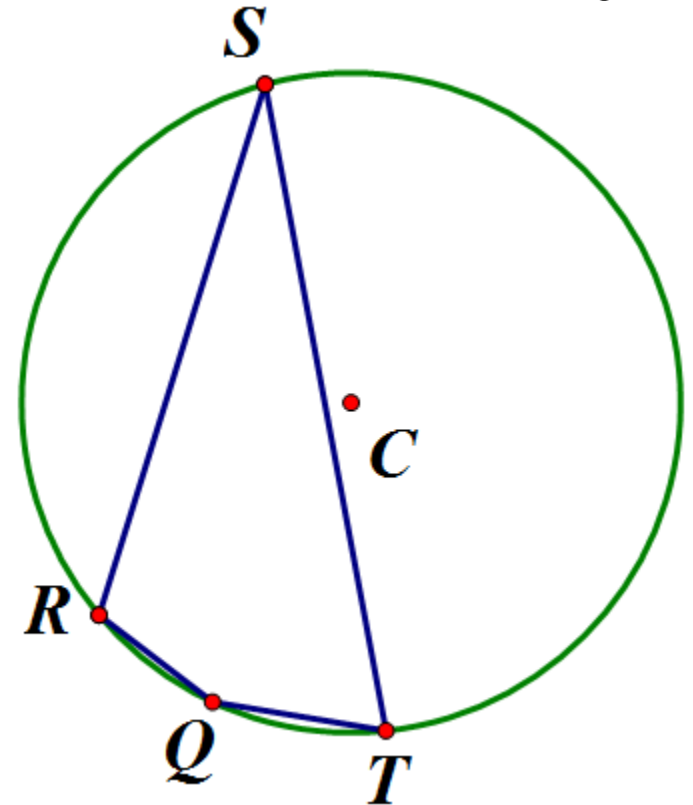_____(same measure)

_____

(corollary to Δ Sum Th. & substitution)

_____ (Substitution)

_____ (Substitution)
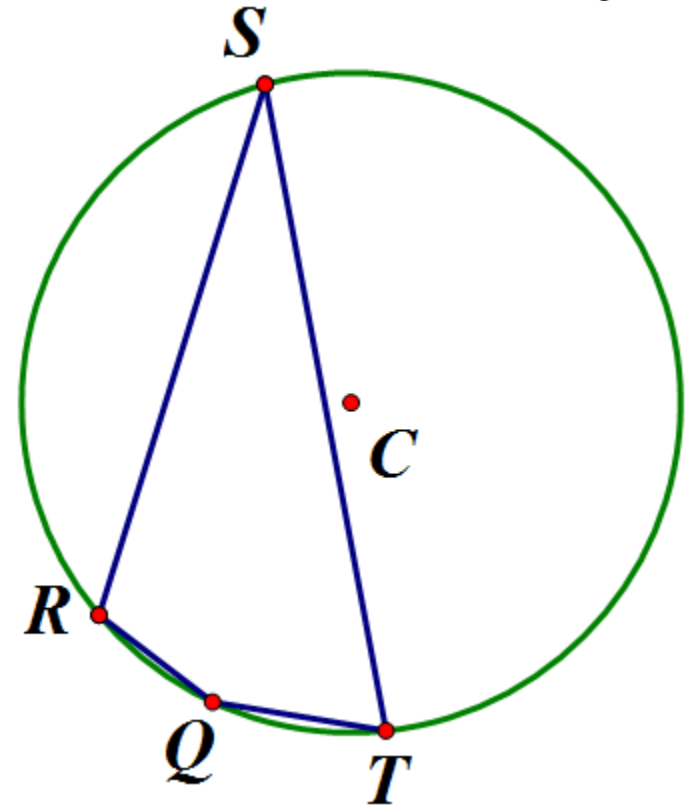
_____ (Δ Sum Th. & Substitution)

Example

- Quadrilateral *QRST* is inscribed in $\odot C$. If $m\angle S = 28$ and $m\angle R = 110$, find $m\angle Q$ and $m\angle T$.
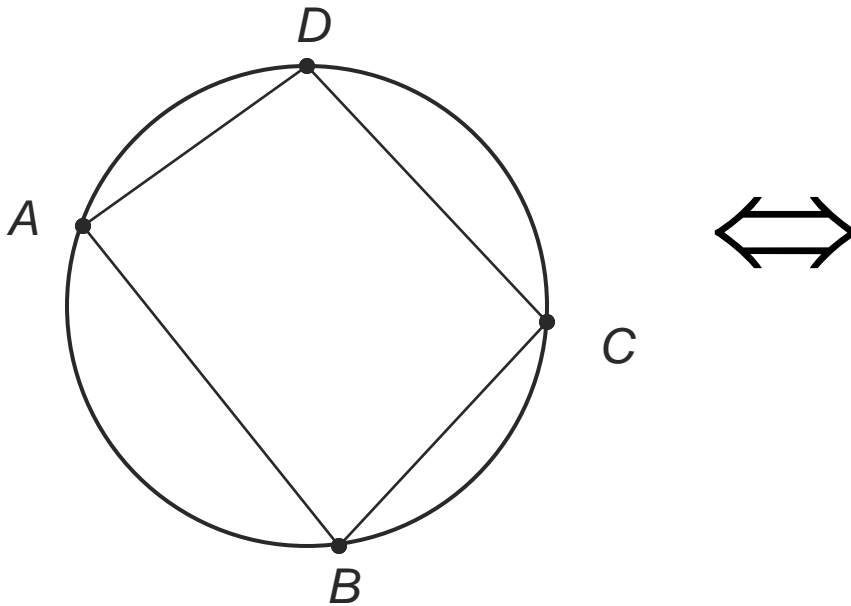
Example

- Quadrilateral *QRST* is inscribed in $\odot C$. If $m\angle S = 28$ and $m\angle R = 110$, find $m\angle Q$ and $m\angle T$.

Theorem

- A quadrilateral can be inscribed in a circle if and only if its _____ are _____.

⇔

Practice. Find the value of each variable.