Inscribed Angles

Geometry

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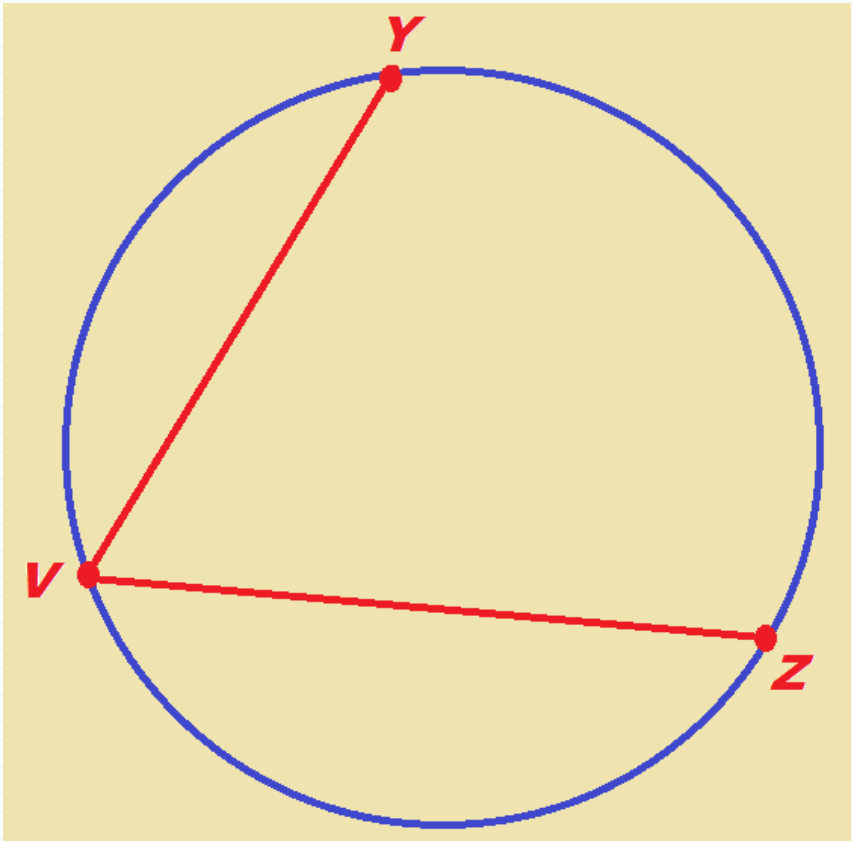
What is an inscribed ∠ ?

- Vertex →ON the circle
  - V is a vertex
- Sides → CHORDS of circle
  - $\overline{VZ}$ and $\overline{VY}$ are chords



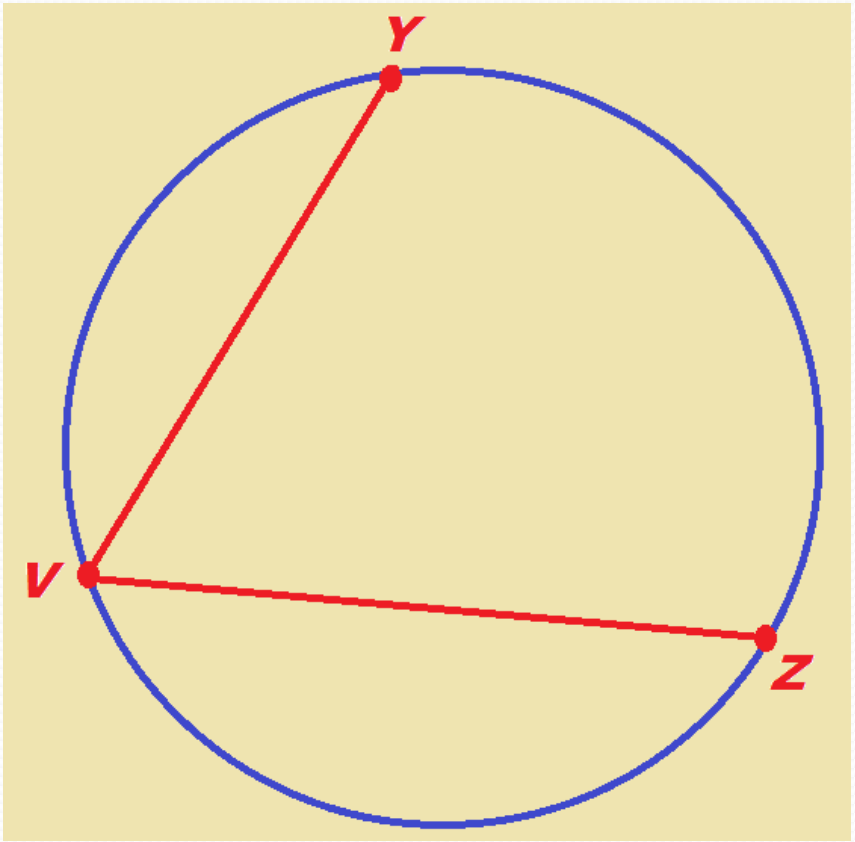
What is the size of an inscribed ∠ ?

- The measure of an inscribed ∠ equals one-half of the arc it intercepts

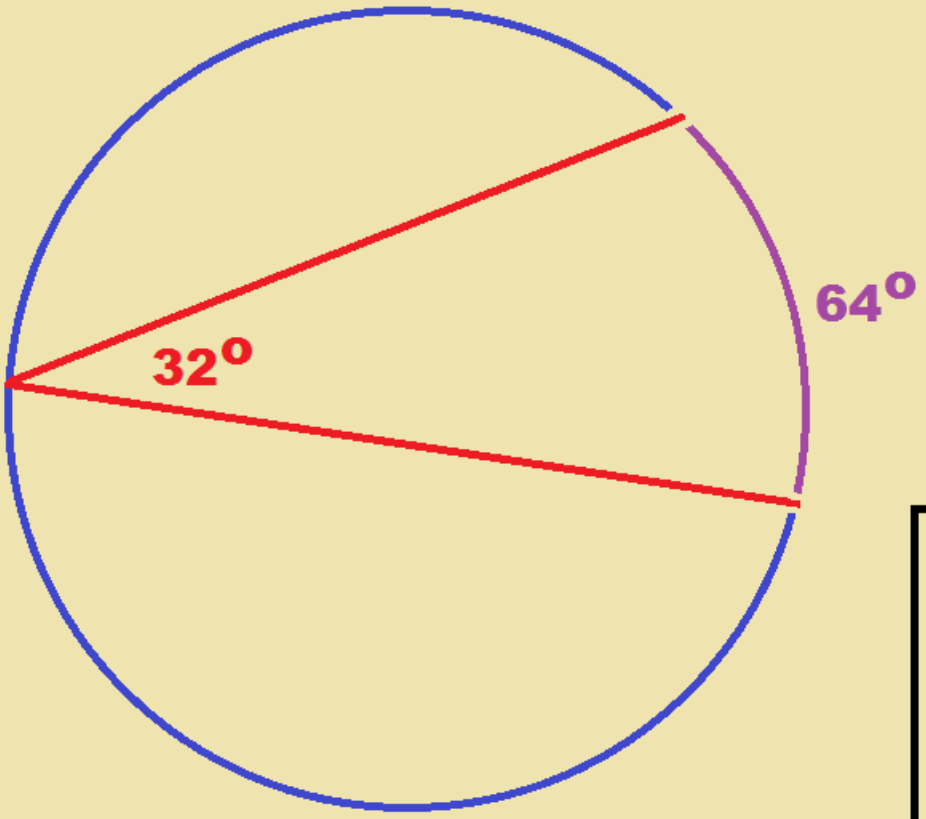
- $m\angle YVZ = \frac{1}{2}\,(m\overset{\frown}{YZ})$

or

- $2\,(m\angle YVZ) = m\overset{\frown}{YZ}$



What is the size of an inscribed ∠ ?



An inscribed ∠ is 1/2 the measure of the arc it intercepts

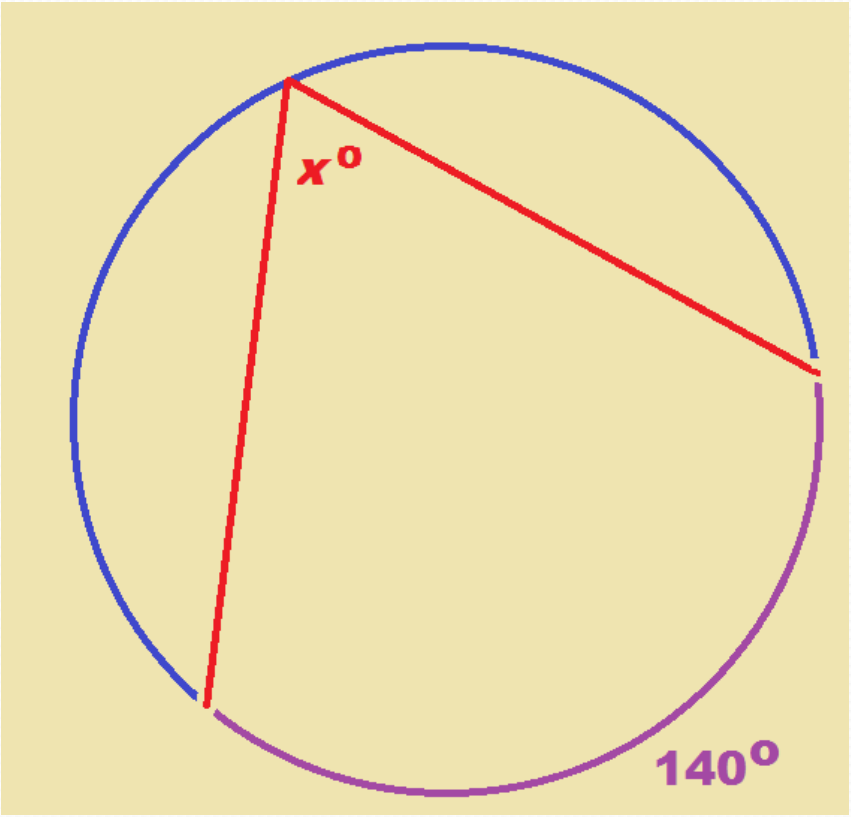
$$32^\circ = \frac{1}{2} \bullet 64^\circ$$

or

$$2 \bullet 32^\circ = 64^\circ$$

Example 1

- What is x?



Example 1

- What is x?

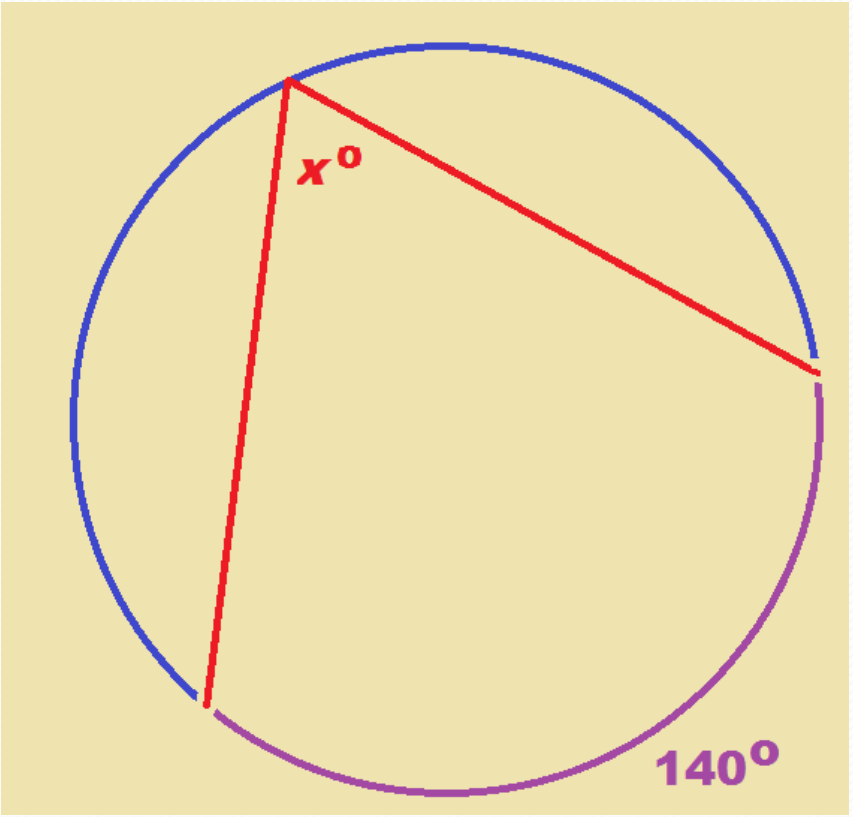
$$x = \frac{1}{2}(140)$$

$$\boxed{x = 70}$$

Or

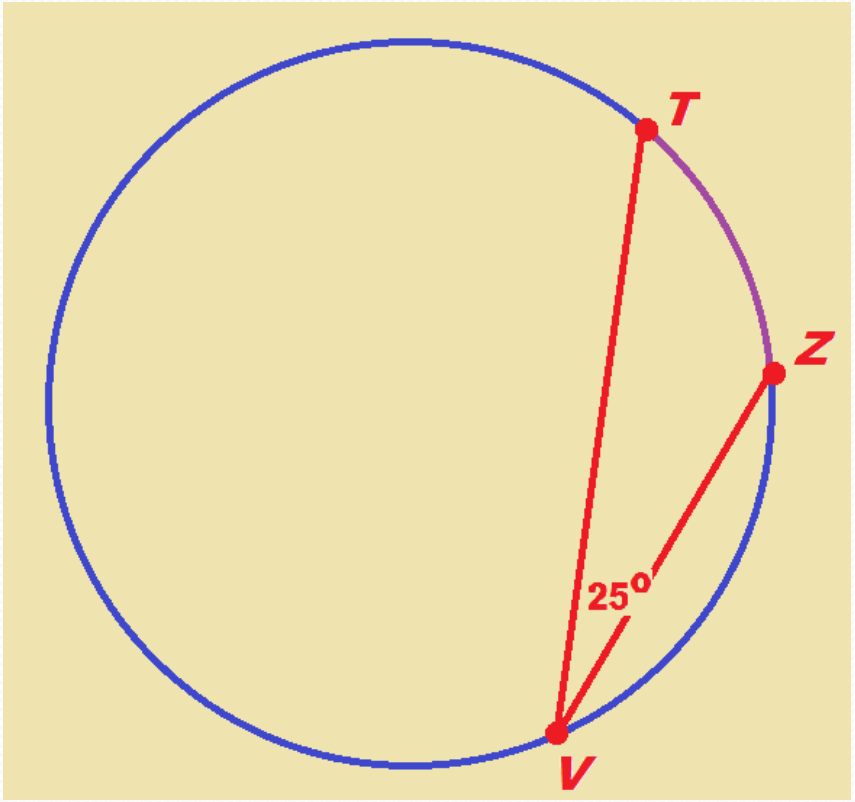
$$2x = 140$$

$$\boxed{x = 70}$$



Example 2

- What is $m\overset{\frown}{TZ}$?

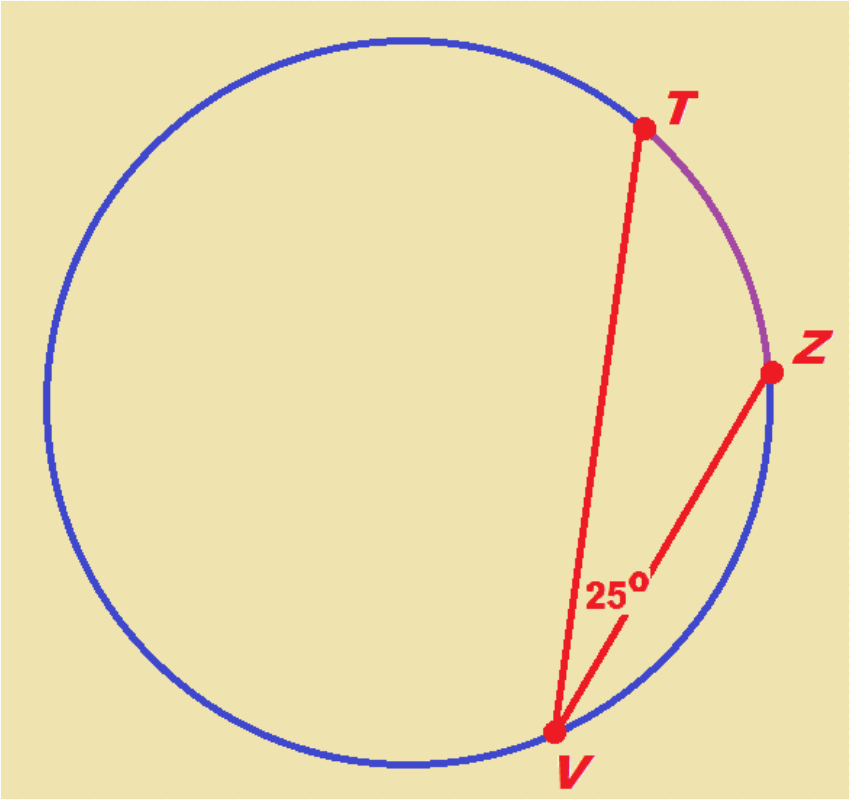


Example 2

- What is $m\overset{\frown}{TZ}$?

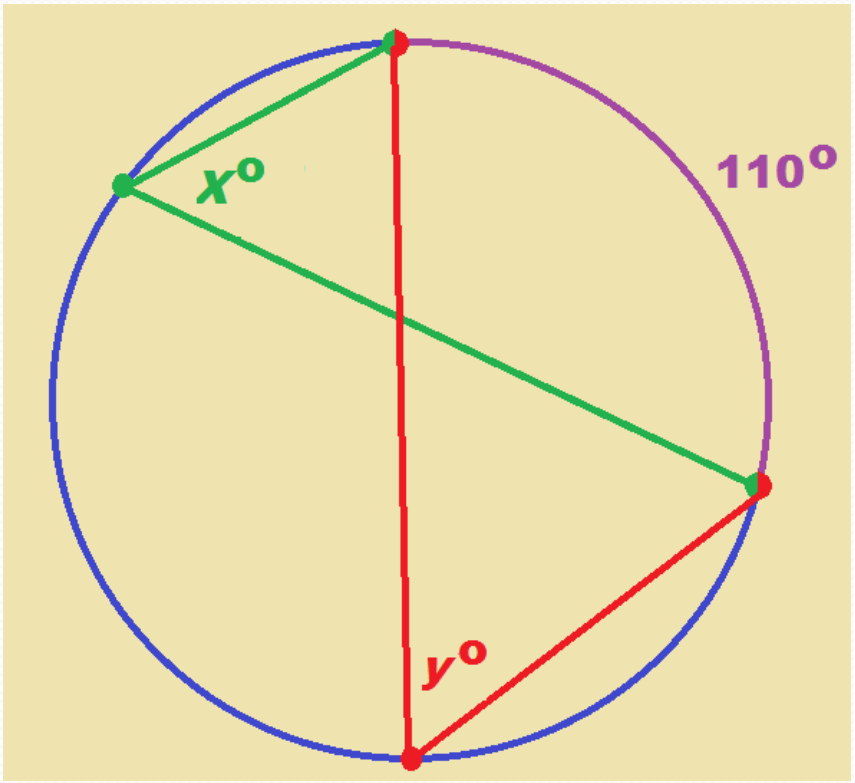
$$2 \bullet 25 = m\overset{\frown}{TZ}$$

$$\mathbf{50° = m\overset{\frown}{TZ}}$$



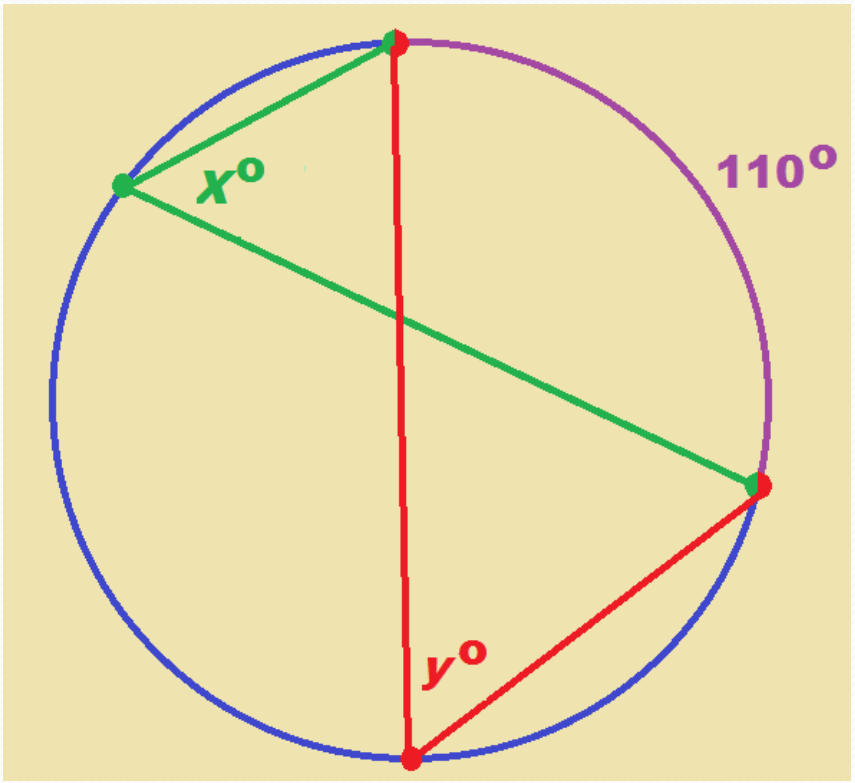
Two inscribed ∠s intercept same arc

- What is x ?
- What is y?
- In your own words, what do you notice about two inscribed ∠s that intercept the same arc?



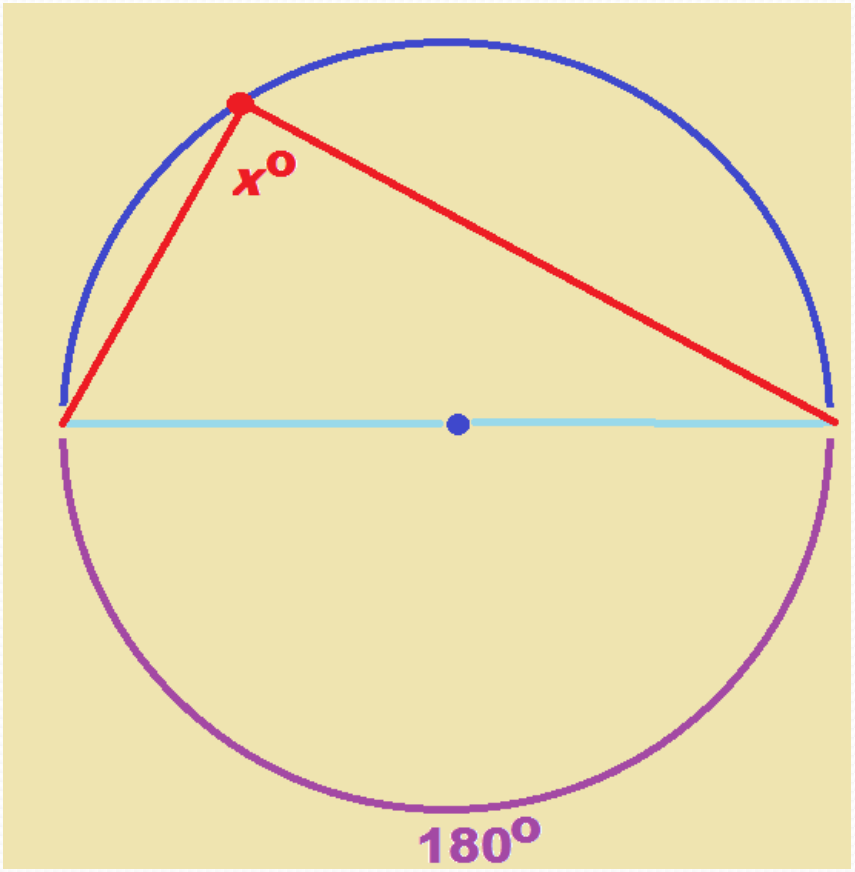
Two inscribed ∠s intercept same arc

- What is x ?
  - $x = 55$
- What is y?
  - $y = 55$
- In your own words, what do you notice about two inscribed ∠s that intercept the same arc?
  - The two ∠s are the same size (=)



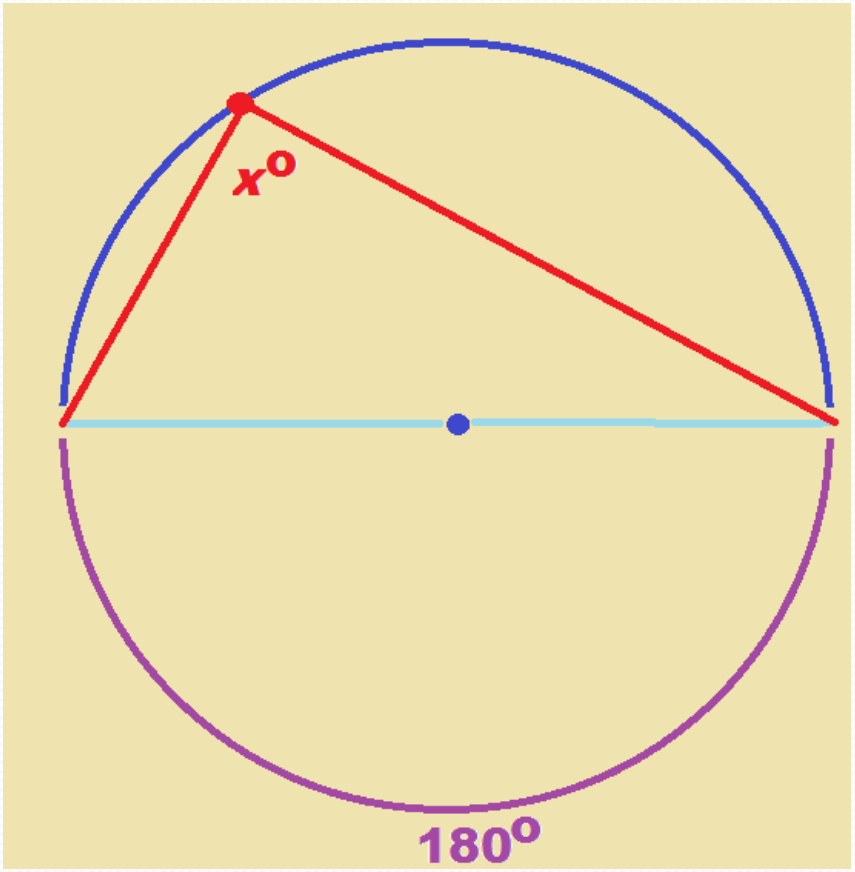
When an inscribed ∠ is inside a semicircle

- What is x ?



When an inscribed ∠ is inside a semicircle

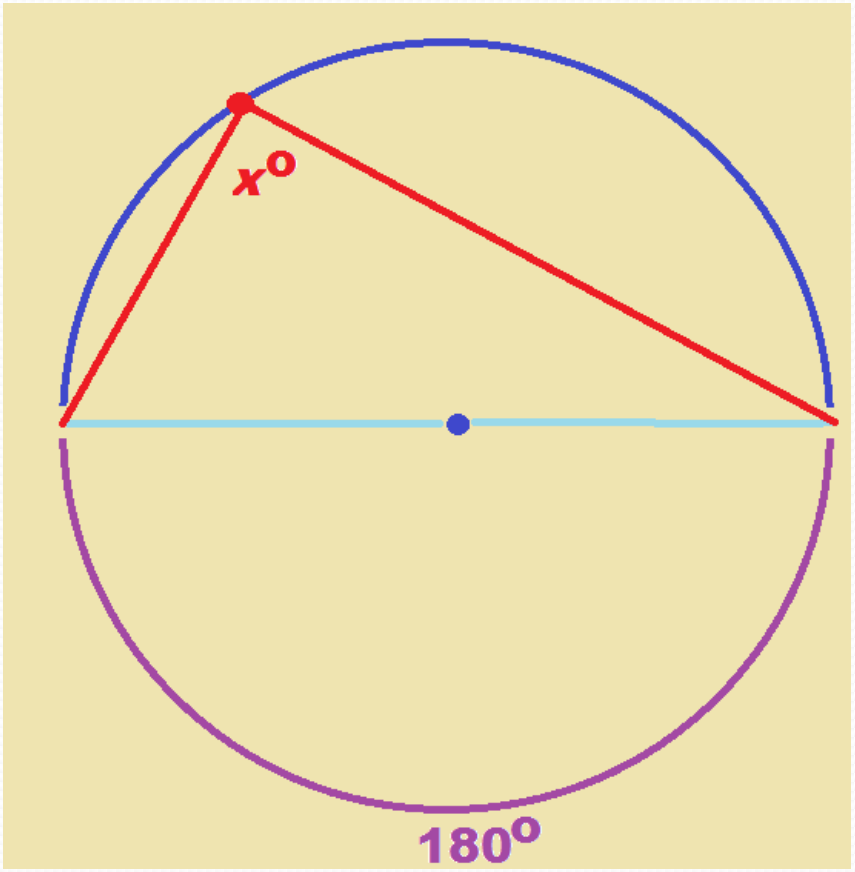
- What is x ?
  - $x = 90$



When an inscribed ∠ is inside a semicircle

- What is x ?
  - $x = 90$

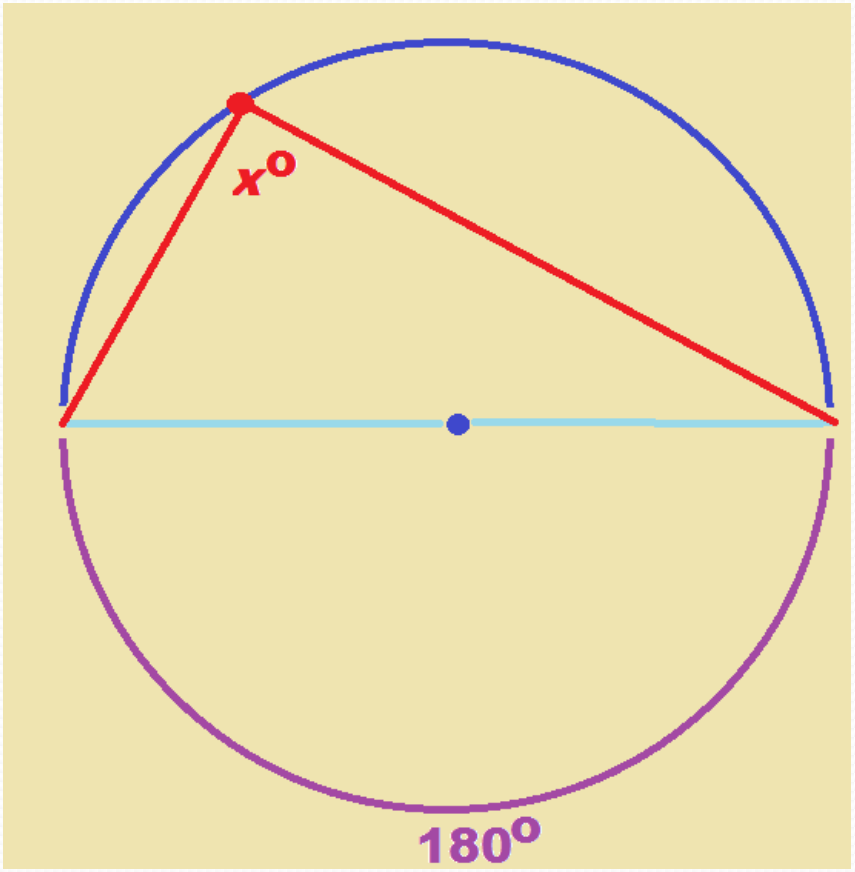
- An angle inscribed inside a semicircle is always a _____ angle.



When an inscribed ∠ is inside a semicircle

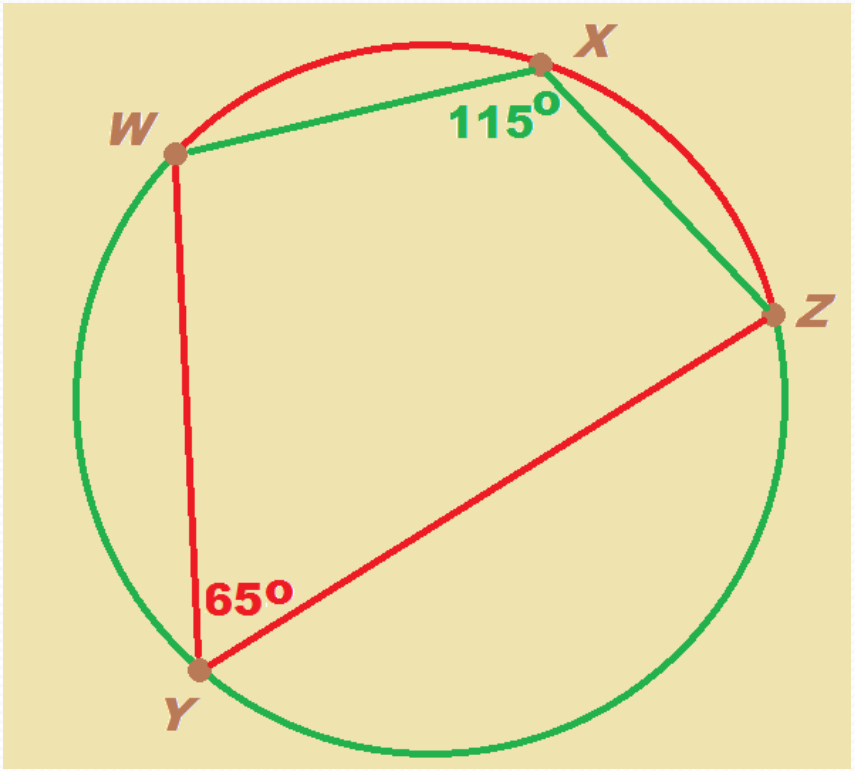
- What is x ?
  - $x = 90$

- An angle inscribed inside a semicircle is always a **RIGHT** angle.



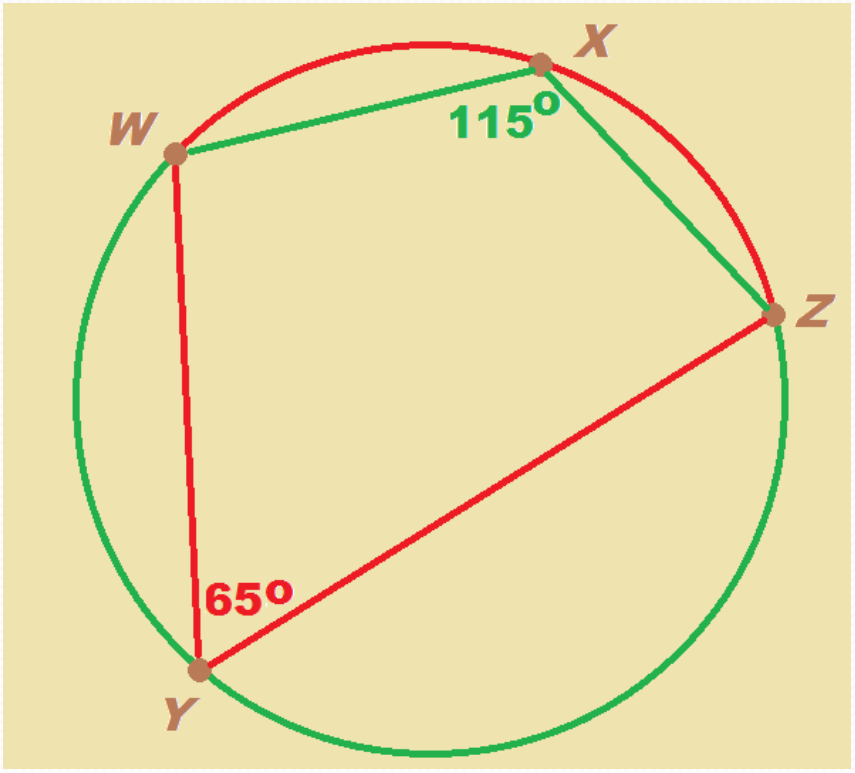
Quadrilateral inscribed inside a circle

- What is $m\overset{\frown}{WXZ}$?
- What is $m\overset{\frown}{WYZ}$?



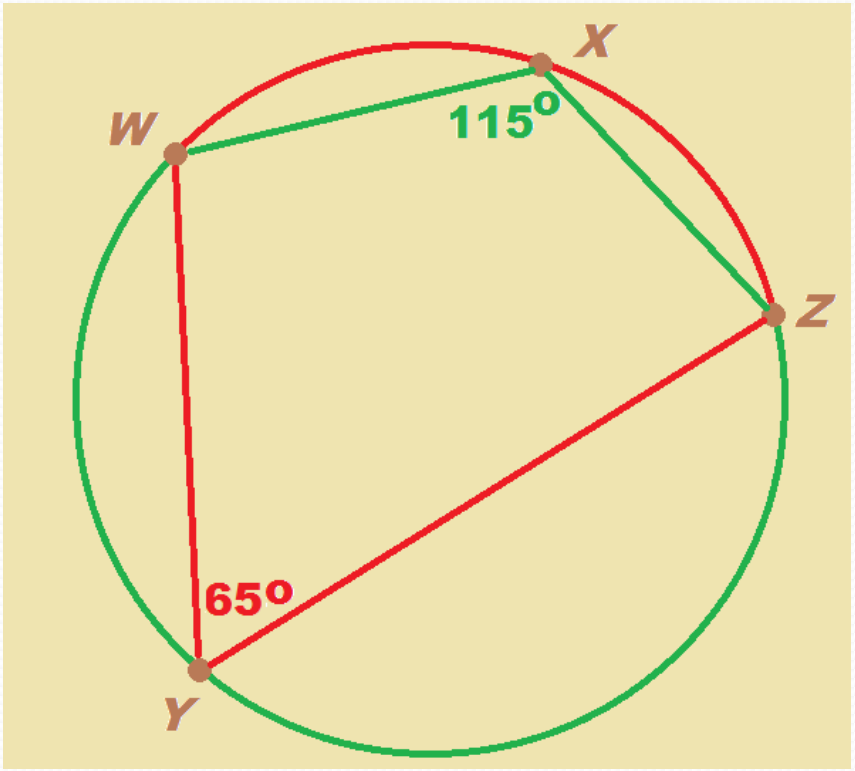
Quadrilateral inscribed inside a circle

- What is $m\overset{\frown}{WXZ}$?
  - 130°
- What is $m\overset{\frown}{WYZ}$?
  - 230°
- When you add these answers, you get _____, and $\frac{1}{2}$ of that is _____ .



Quadrilateral inscribed inside a circle

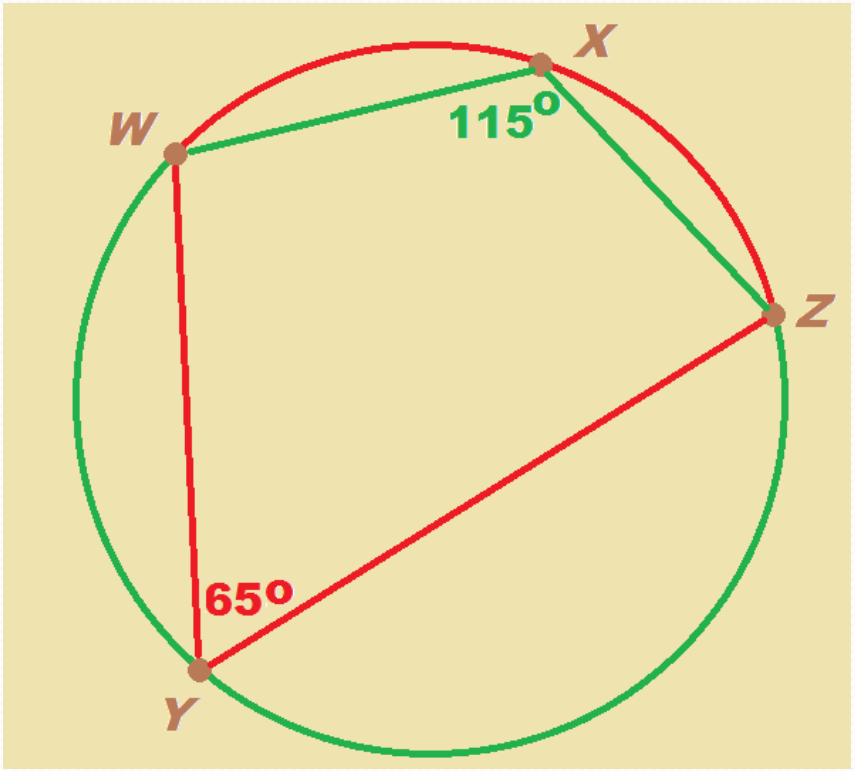
- What is $m\overset{\frown}{WXZ}$?
  - 130°
- What is $m\overset{\frown}{WYZ}$?
  - 230°
- When you add these answers, you get 360°, and $\frac{1}{2}$ of that is **180°** !



Quadrilateral inscribed inside a circle

- If a quadrilateral is inscribed inside a circle, its opposite ∠s are supplementary ∠s.

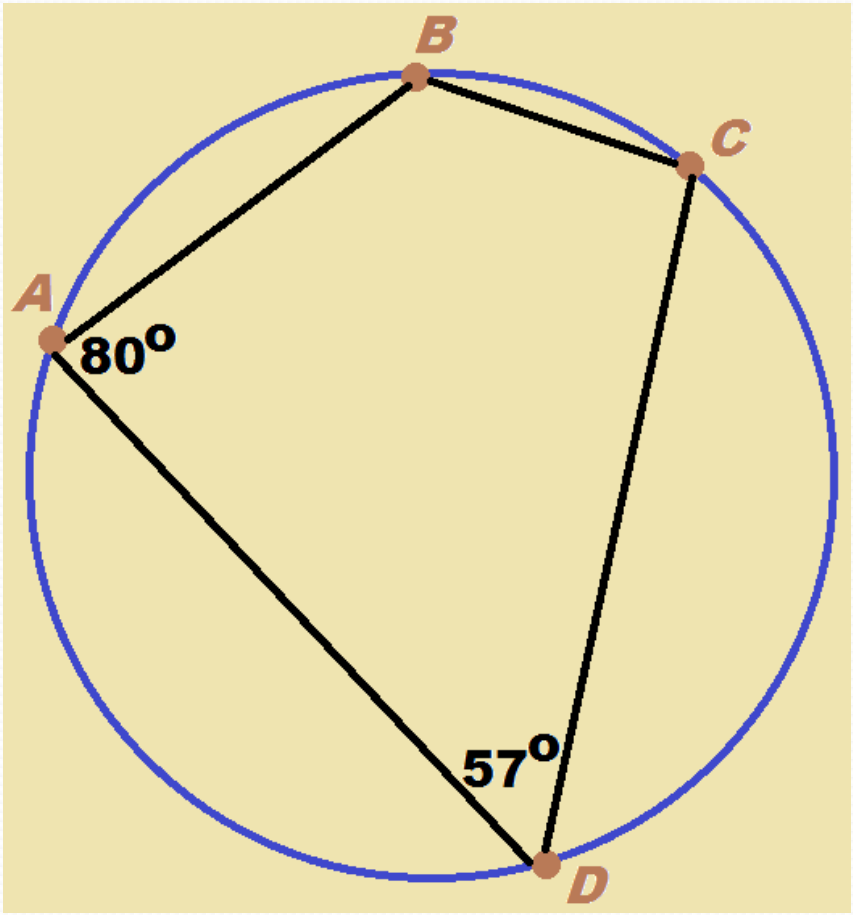
$$m\angle W + m\angle Z = 180$$



Example 5

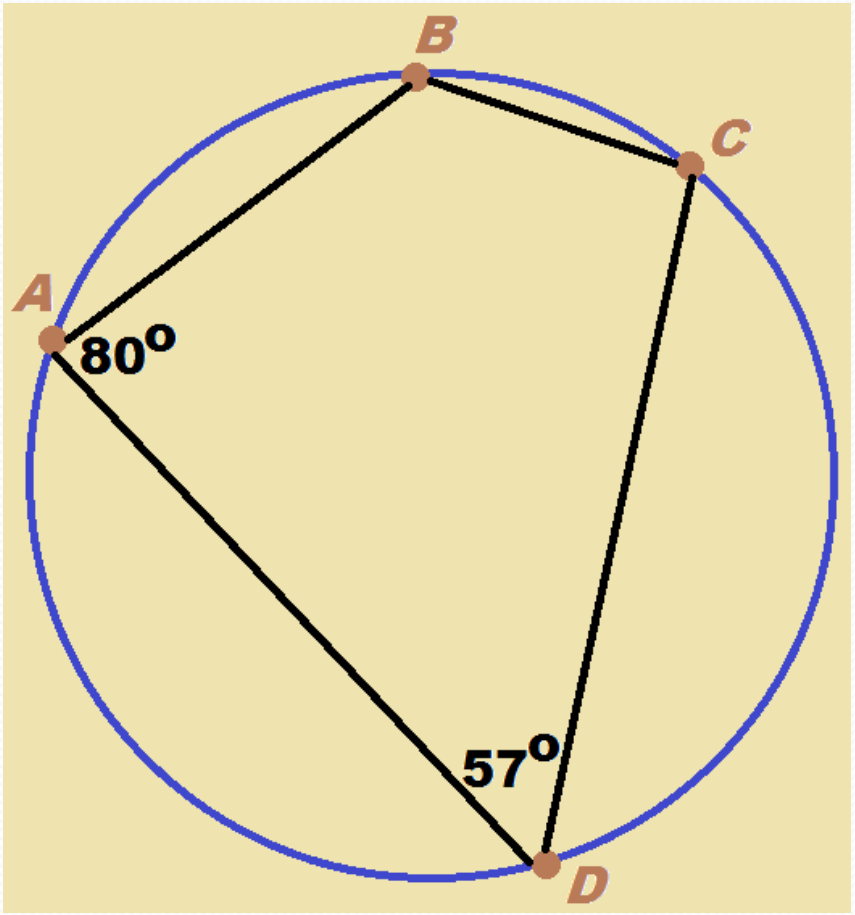
- What is $m\angle B$?

- What is $m\angle C$?



Example 5

- What is $m\angle B$?
  - $123°$
- What is $m\angle C$?
  - $100°$



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