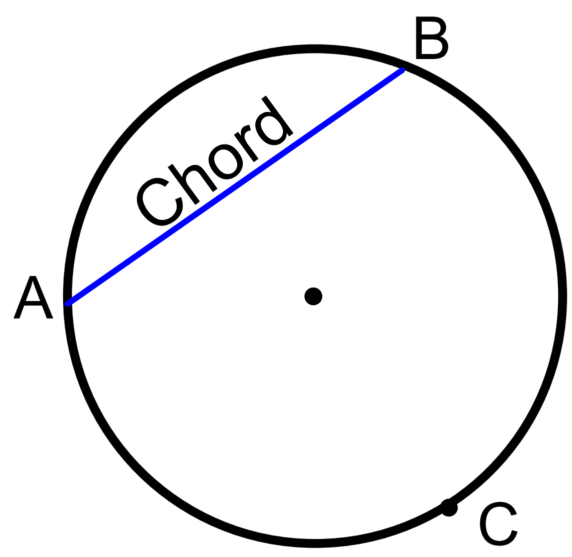
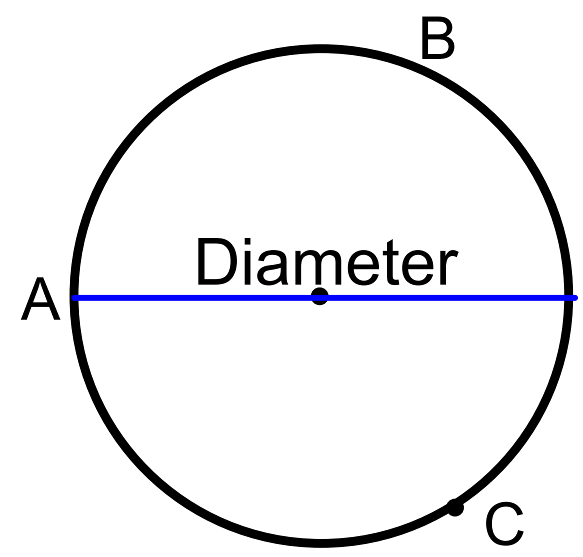
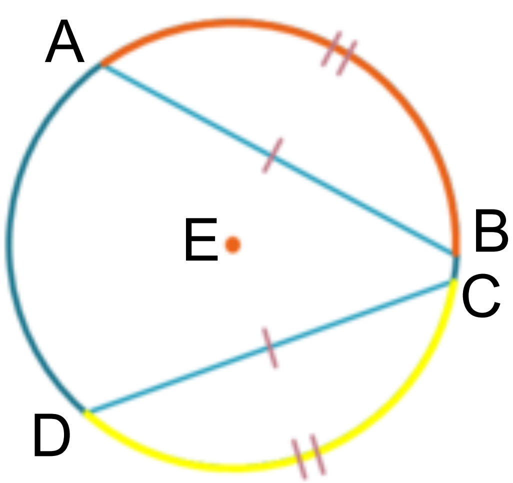
Apply Properties of Chords

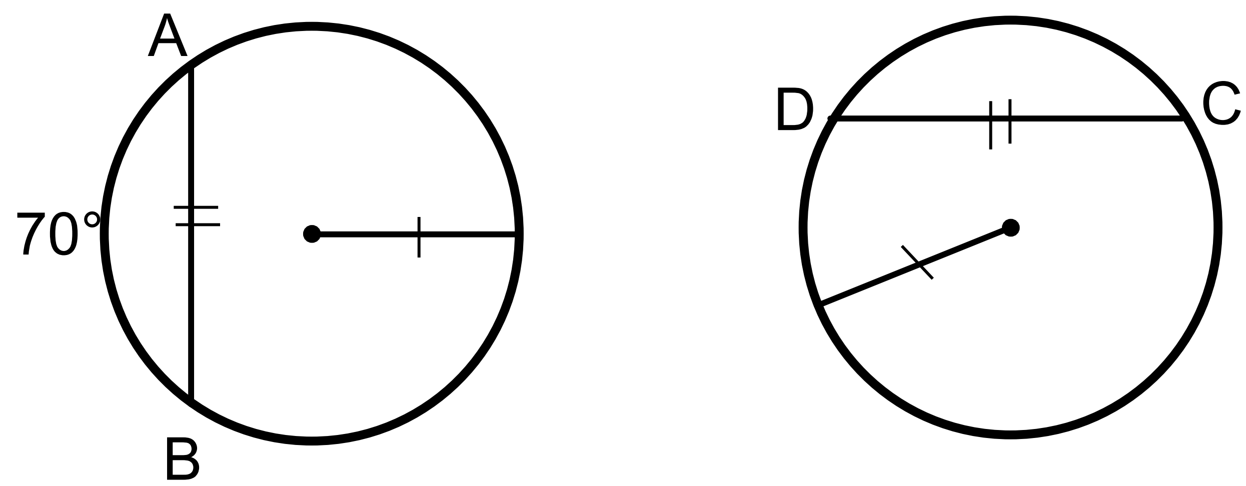

B
Chord
A
C

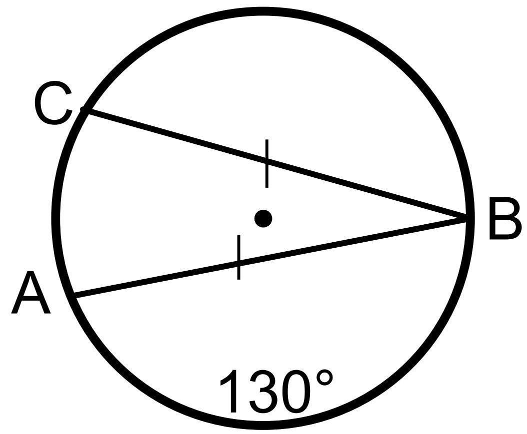

B
Diameter
A
C

Theorem: In the same circles, or in congruent circles, two minor arcs are congruent *if and only if* their corresponding chords are congruent



Are $\overset{\frown}{AB}$ and $\overset{\frown}{CD}$ congruent? What is the $m\overset{\frown}{DC}$?



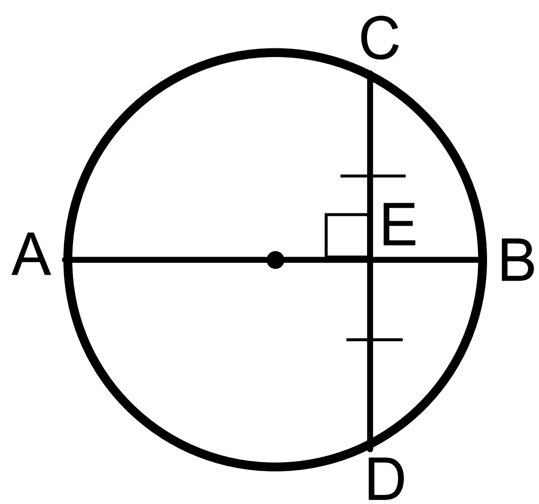


Find:

$m\overset{\frown}{CB} =$

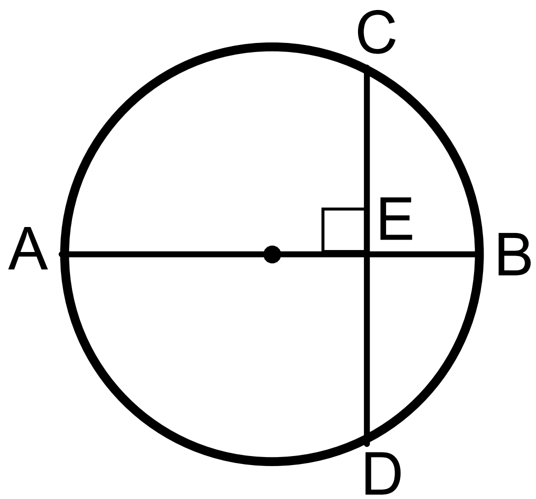
$m\overset{\frown}{AC} =$

Theorem: If one chord a perpendicular bisector of another chord, than the first chord is a diameter.

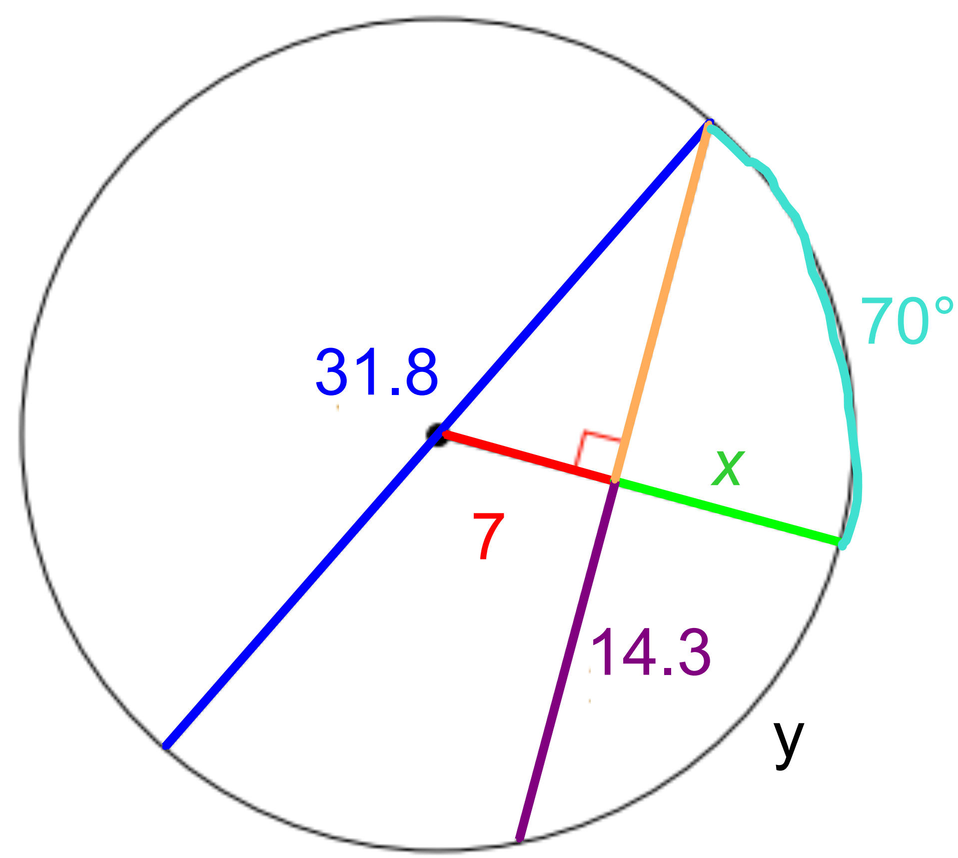


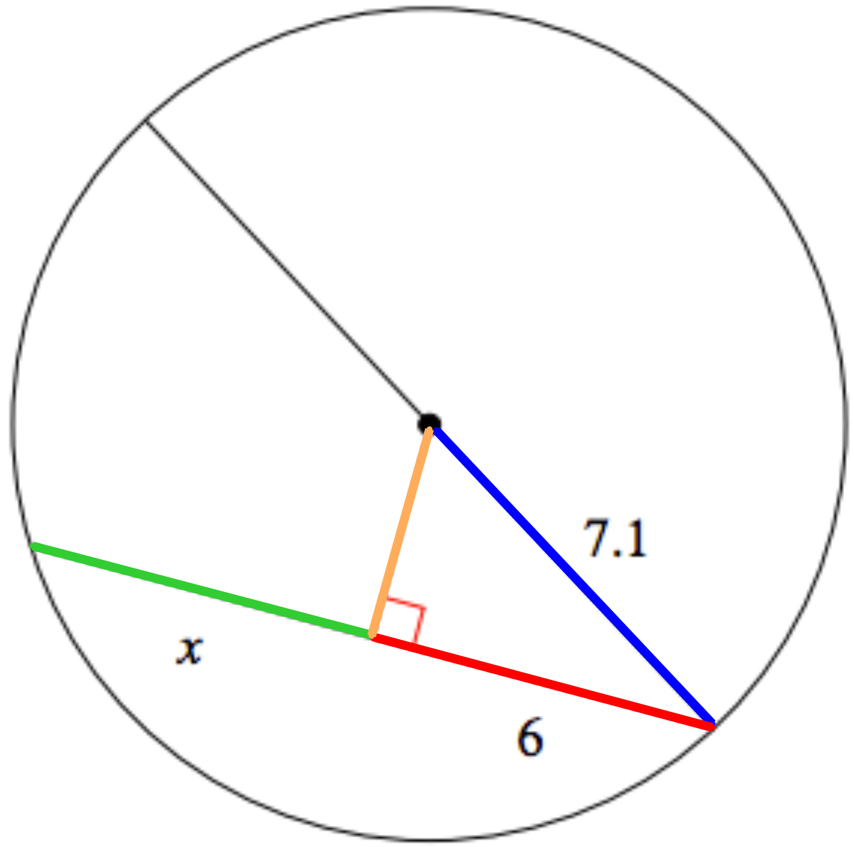
If $\overline{AB}$ is a perpendicular bisector of $\overline{CD}$, then $\overline{AB}$ is a diameter of the circle.

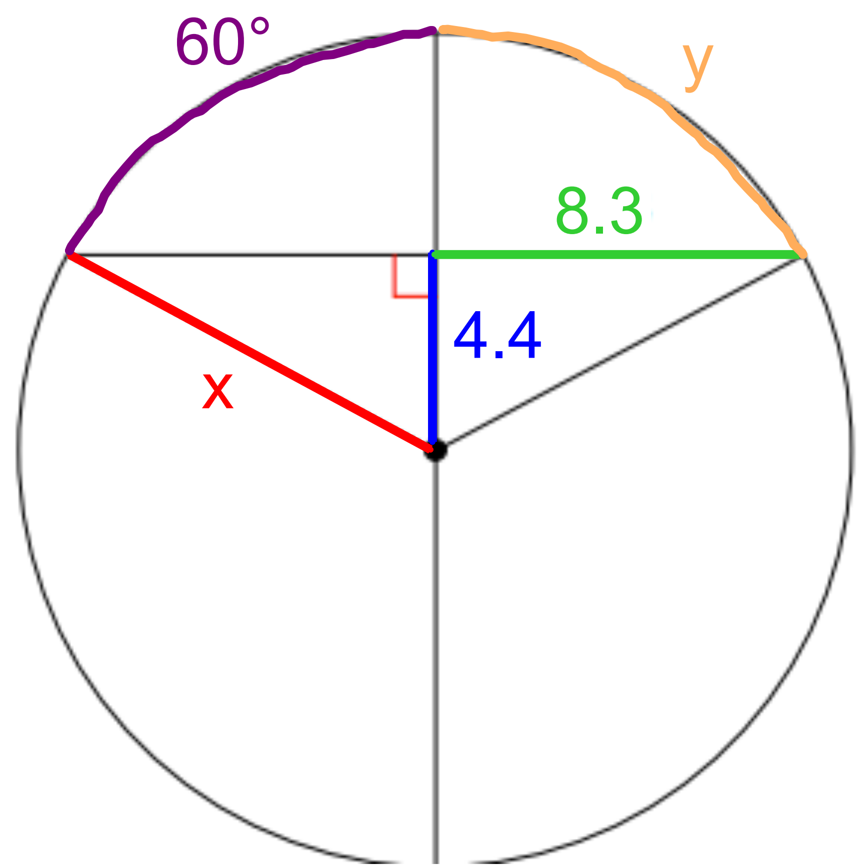
Theorem: If a diameter of a circle is perpendicular to a chord, then the diameter bisects the cord and its arc.

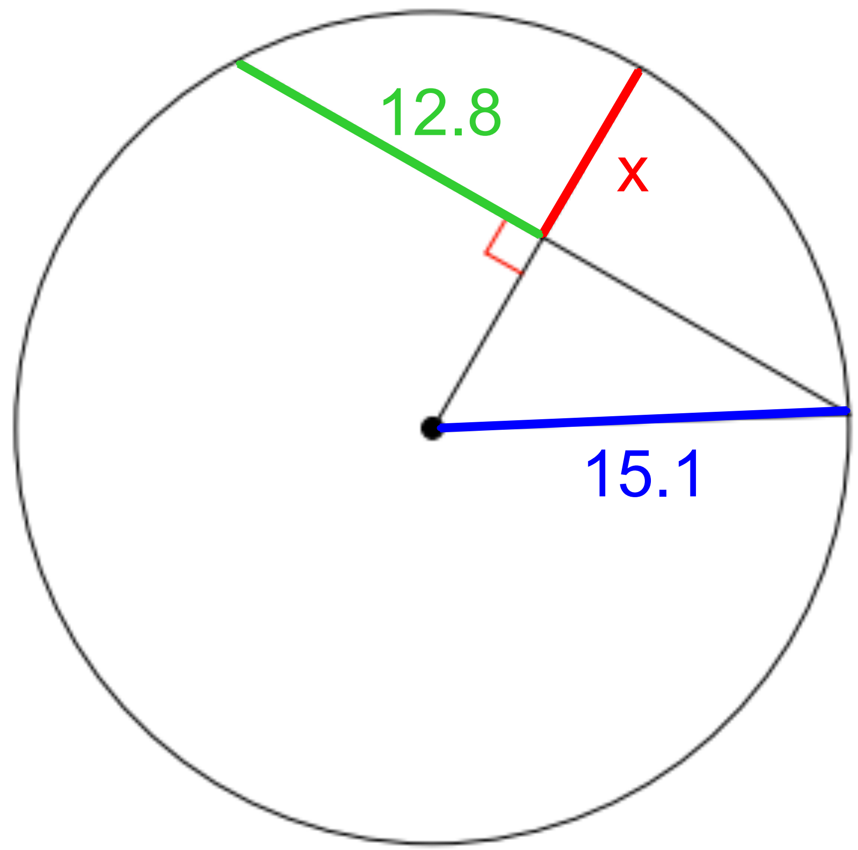


If $\overline{AB}$ is a diameter and $\overline{AB} \perp \overline{CD}$ then,
$\overline{ED} \cong \overline{EC}$ and $\overset{\frown}{CB} \cong \overset{\frown}{DB}$


31.8
70°
x
7
14.3
y

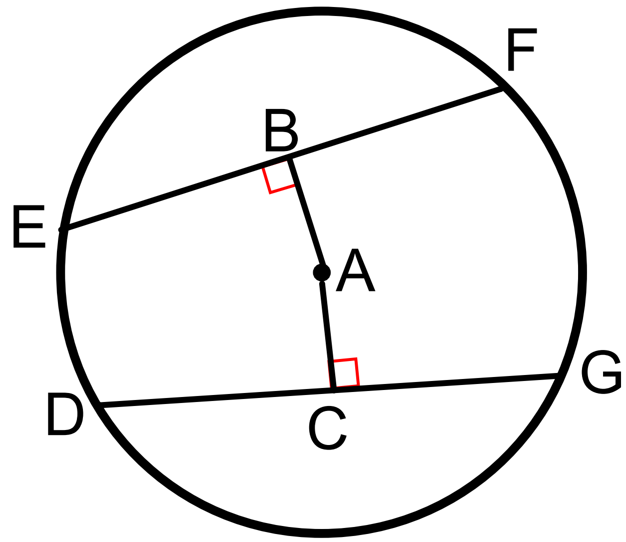

7.1
x
6


60°
y
8.3
4.4
x

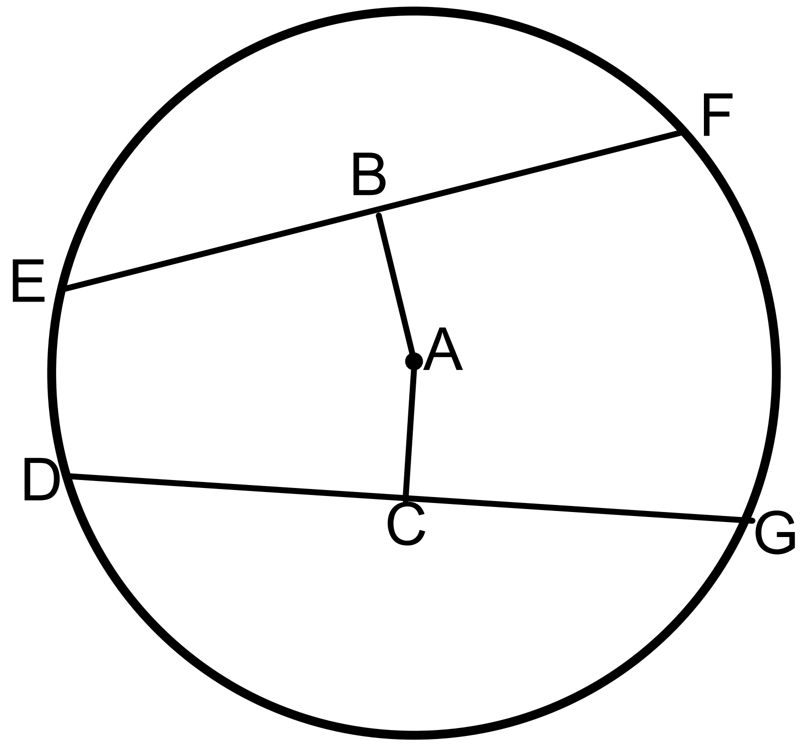

12.8
x
15.1

Congruent Chords

In the same circle, or congruent circles, two chords are congruent *if and only if* they are equidistant from the center



$\overline{EF} \cong \overline{DG}$ *if and only if* BA = CA

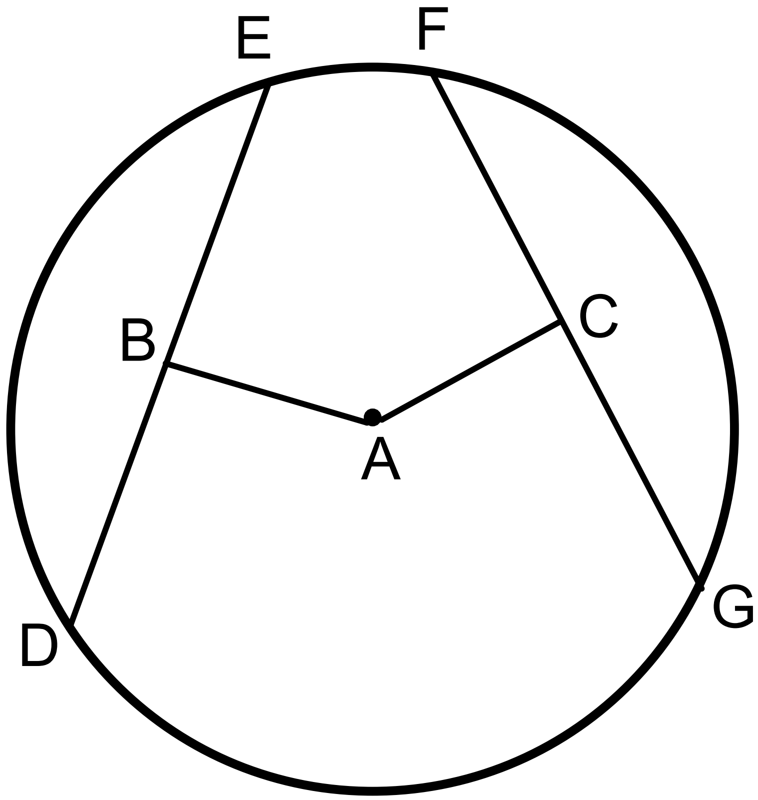


EF = 16

DG = 16

BA = 2x

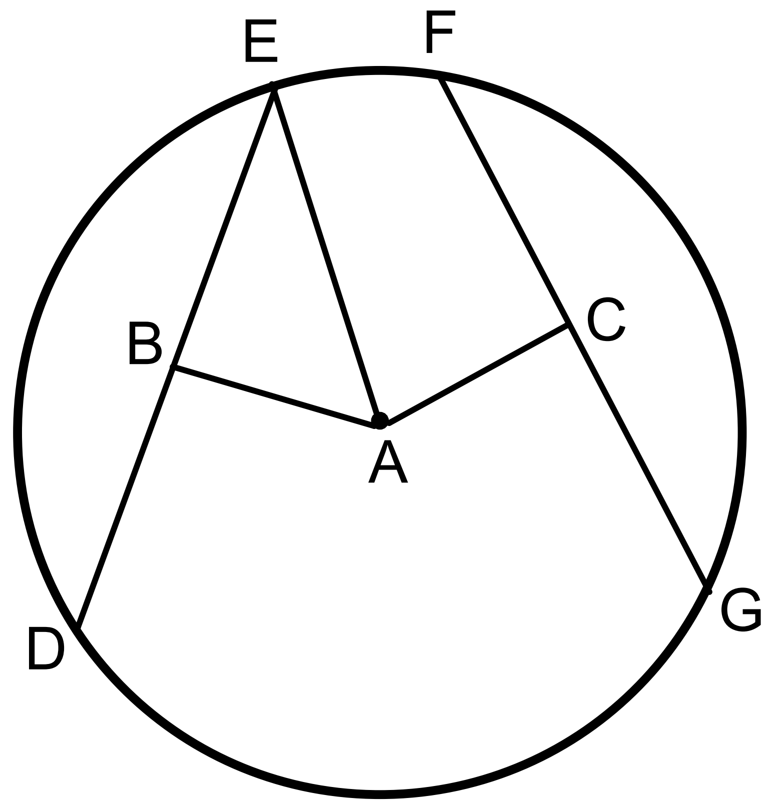
CA = 5x - 9



ED ≅ FG

BA = 4x

CA = 3x + 7



ED = 16

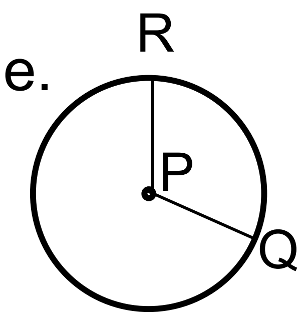
BA = CA = 12

FG =

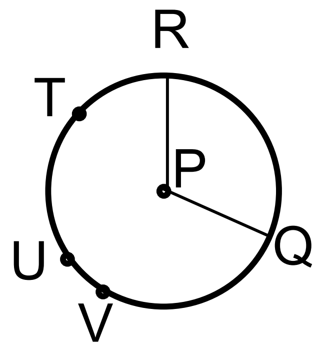
AE =

Inscribed Angles:

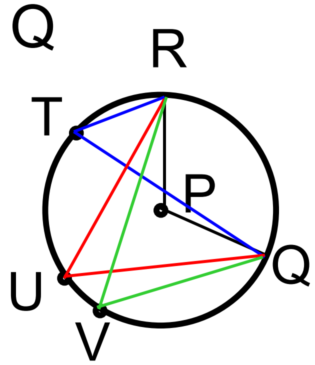
1. Draw a circle and a central angle of that circle.



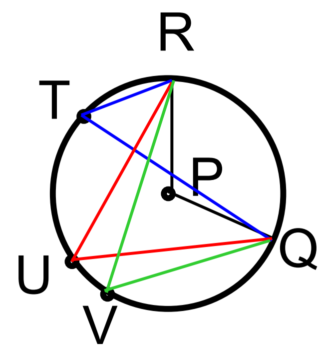
2. Draw 3 points on the circle on the exterior of angle RPQ.



3. Measure the angles created by these points and points R and Q



4. Fill in the chart:

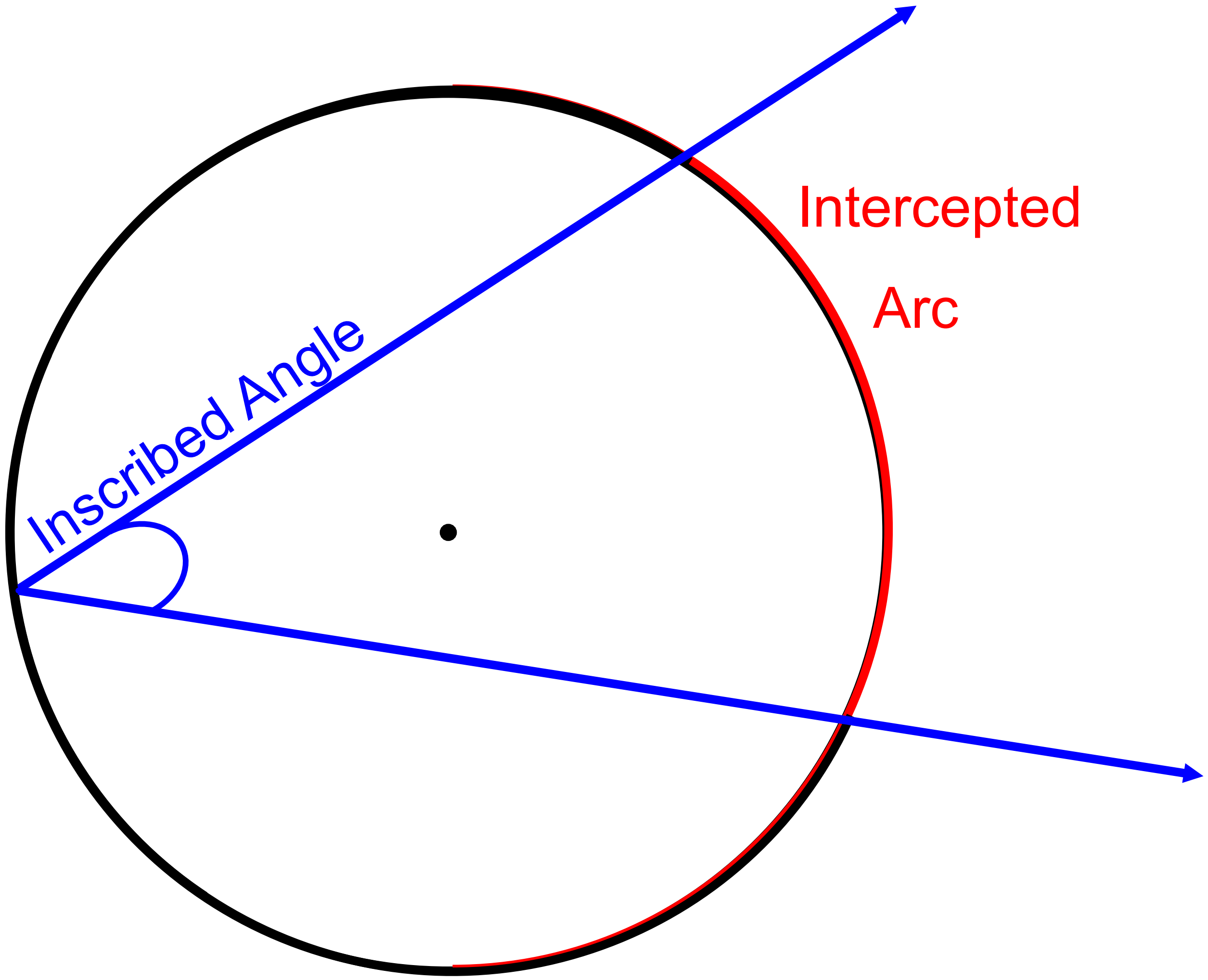


	Central Angle	Inscribed angle 1	Inscribed angle 2	Inscribed angle 3
Name	∠RPQ	∠RTQ	∠RUQ	∠RVQ
Measure	??	??	??	??

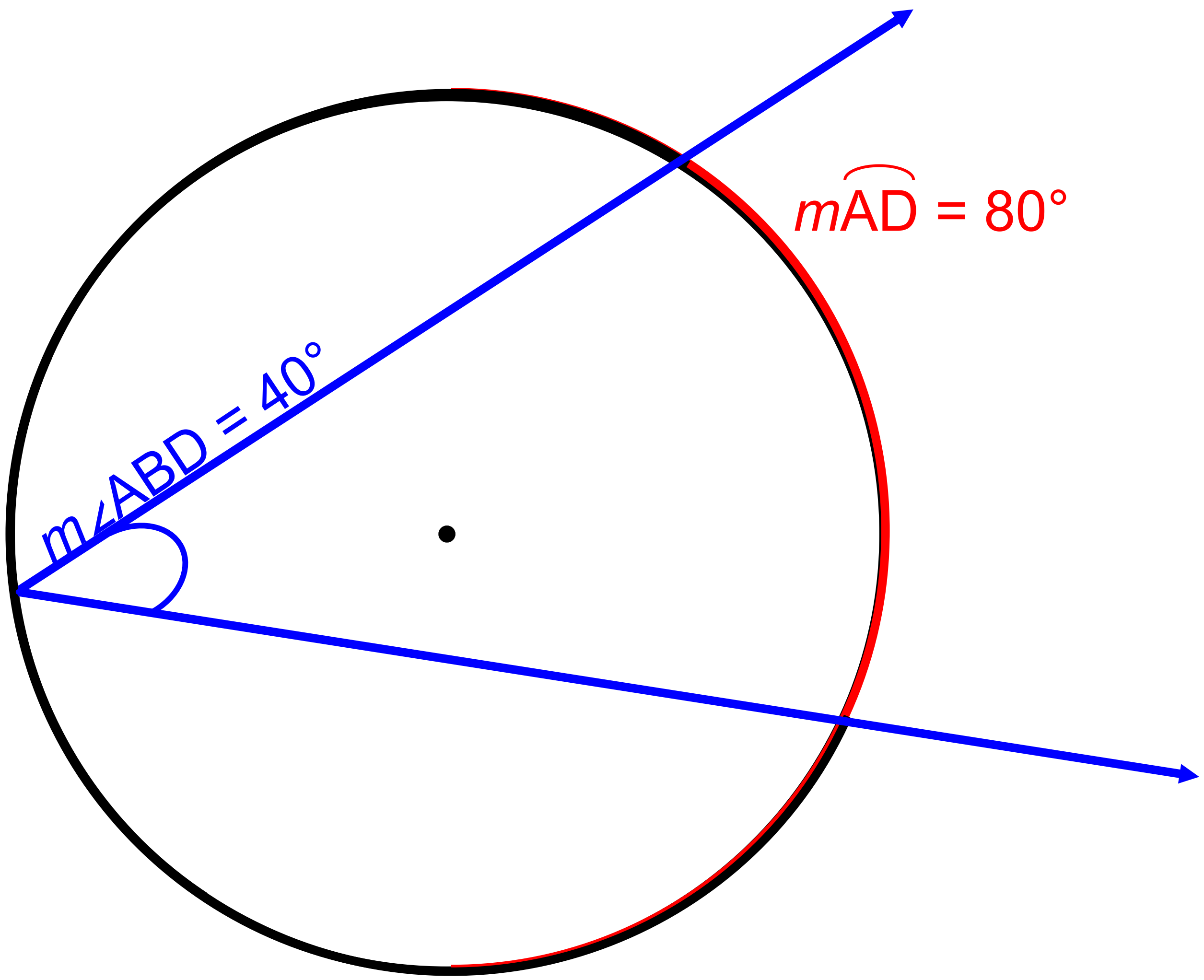
5. Repeat steps 1-4 with 2-3 other central angles.

6. Make a conjecture about the relationship between the inscribed angles and it's corresponding central angle.

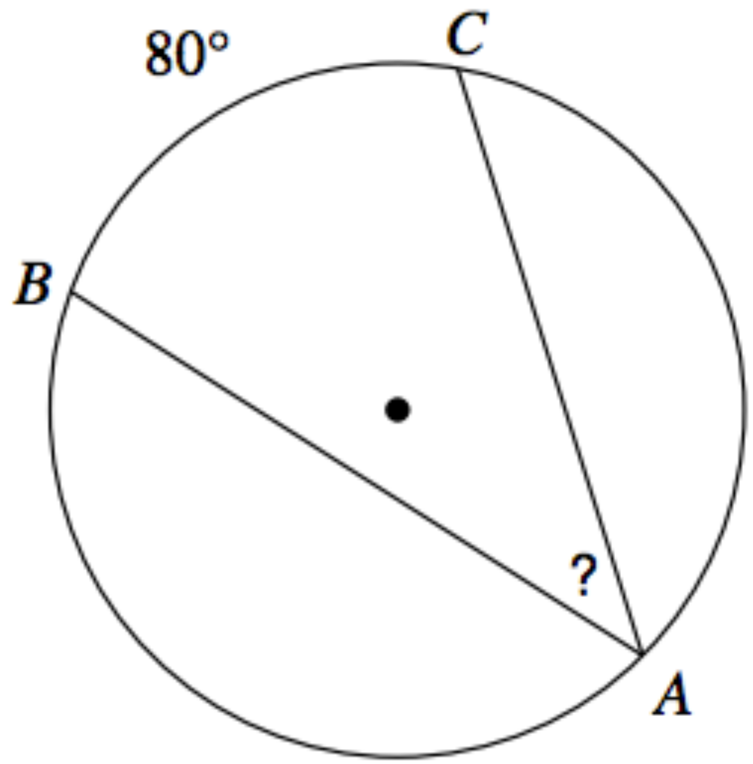
Inscribed angles and Polygons



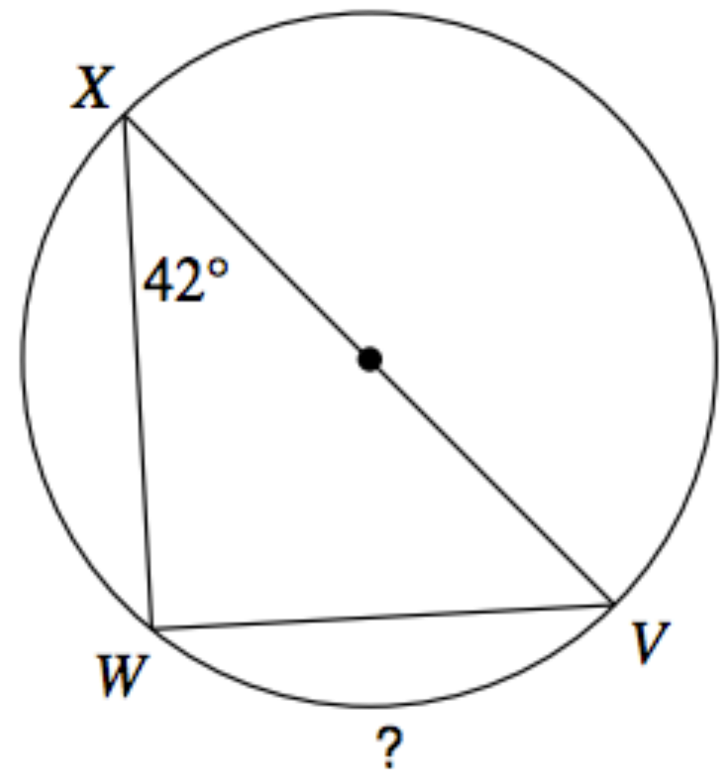
Theorem: The measure of an inscribed angle is 1/2 the measure of it's inscribed arc

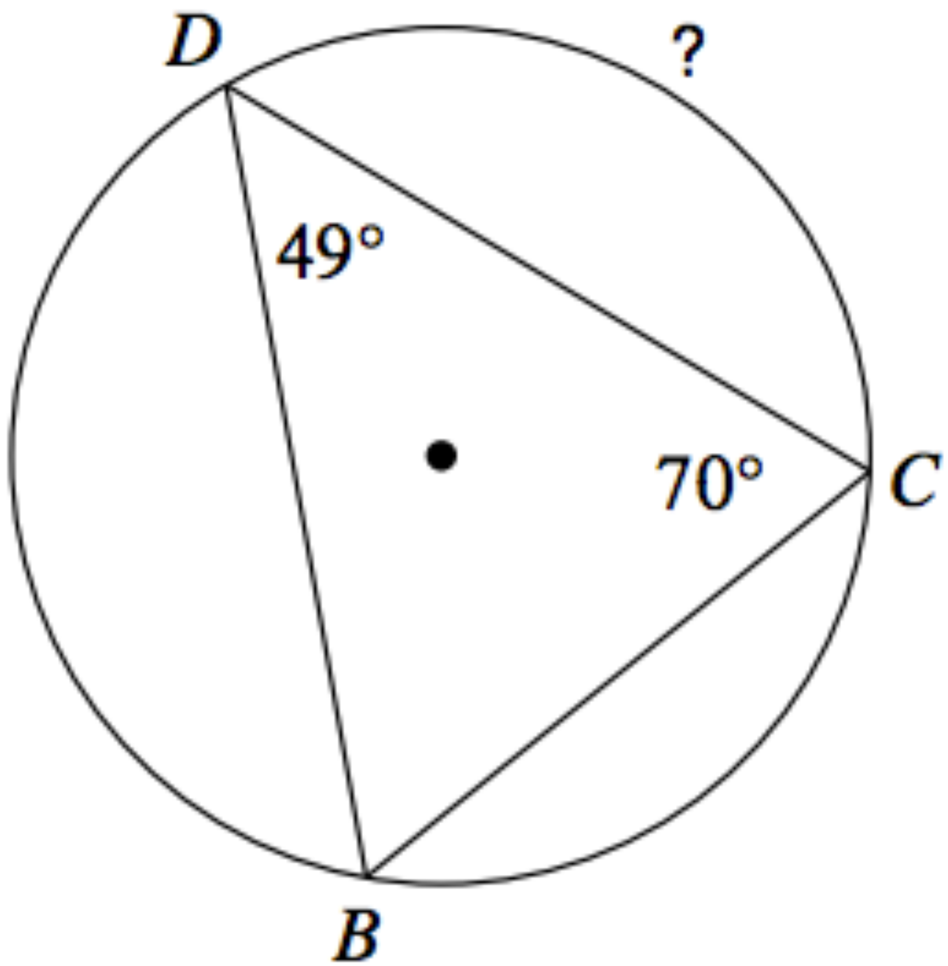


Find $m\angle BAC$



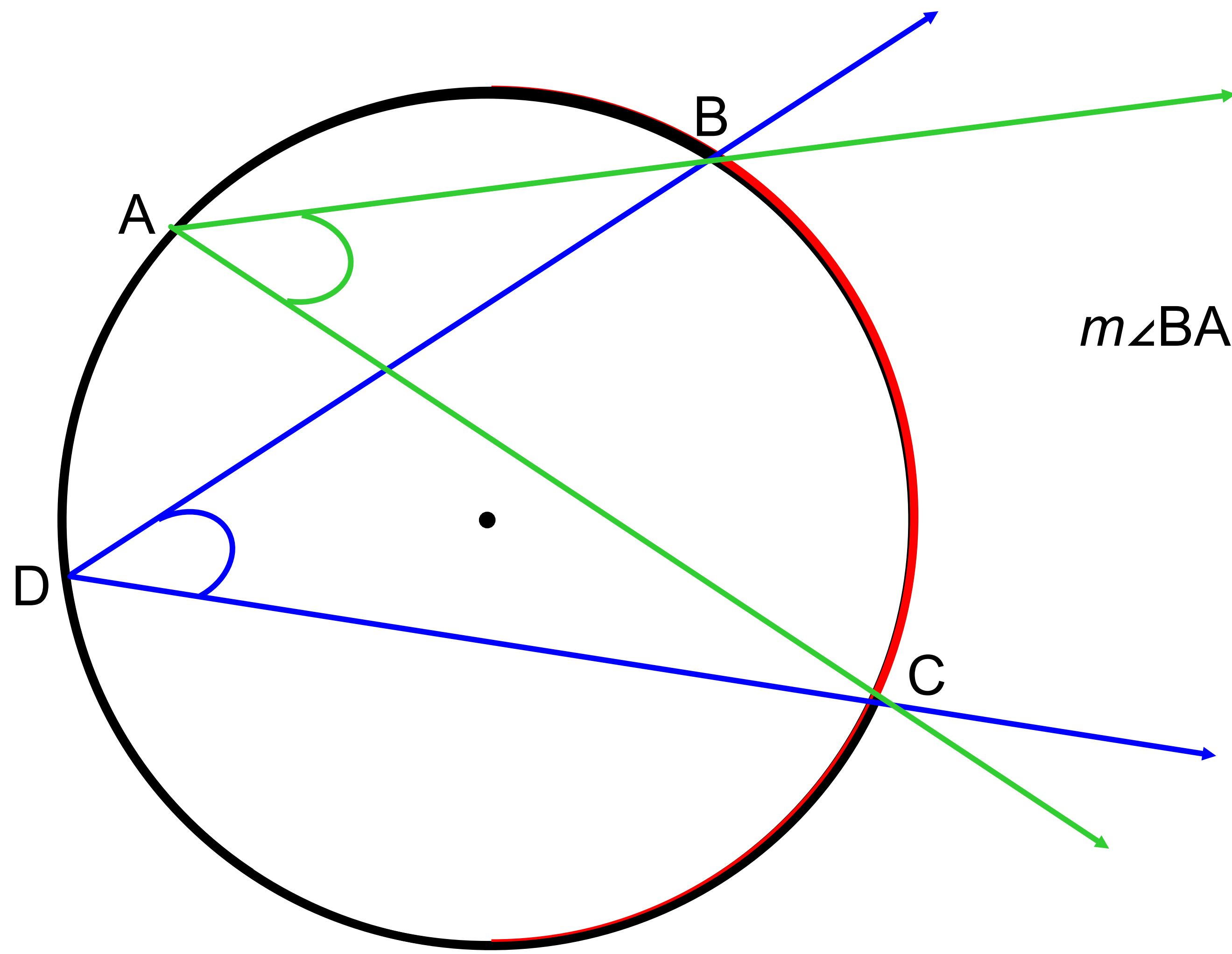
Find $m\overset{\frown}{WV}$



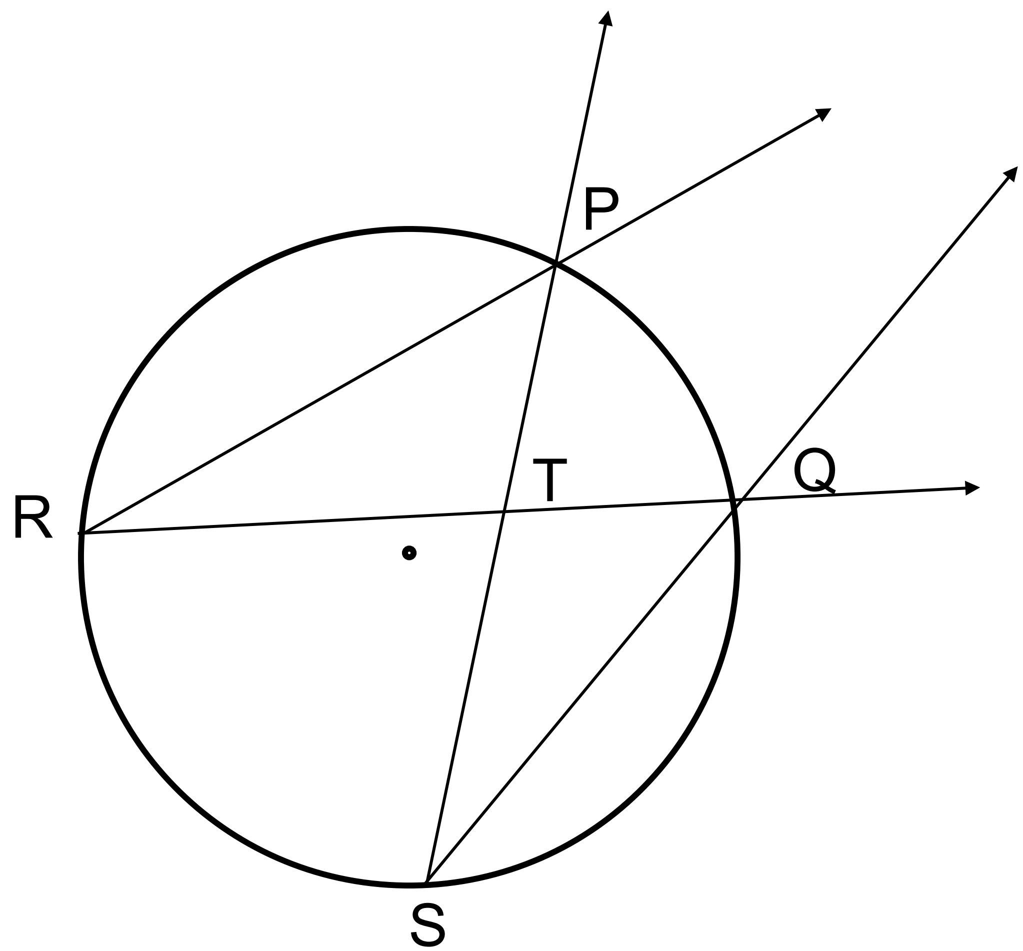


Find $m\overset{\frown}{DC}$

Theorem: If who inscribed angles of a circle intercept the same arc, then the angles are congruent



$m\angle BAC \cong m\angle BdC$



Find the missing values:

$m\angle RPS = 47.5$

$m\angle RQS =$

$m\overset{\frown}{RS} =$

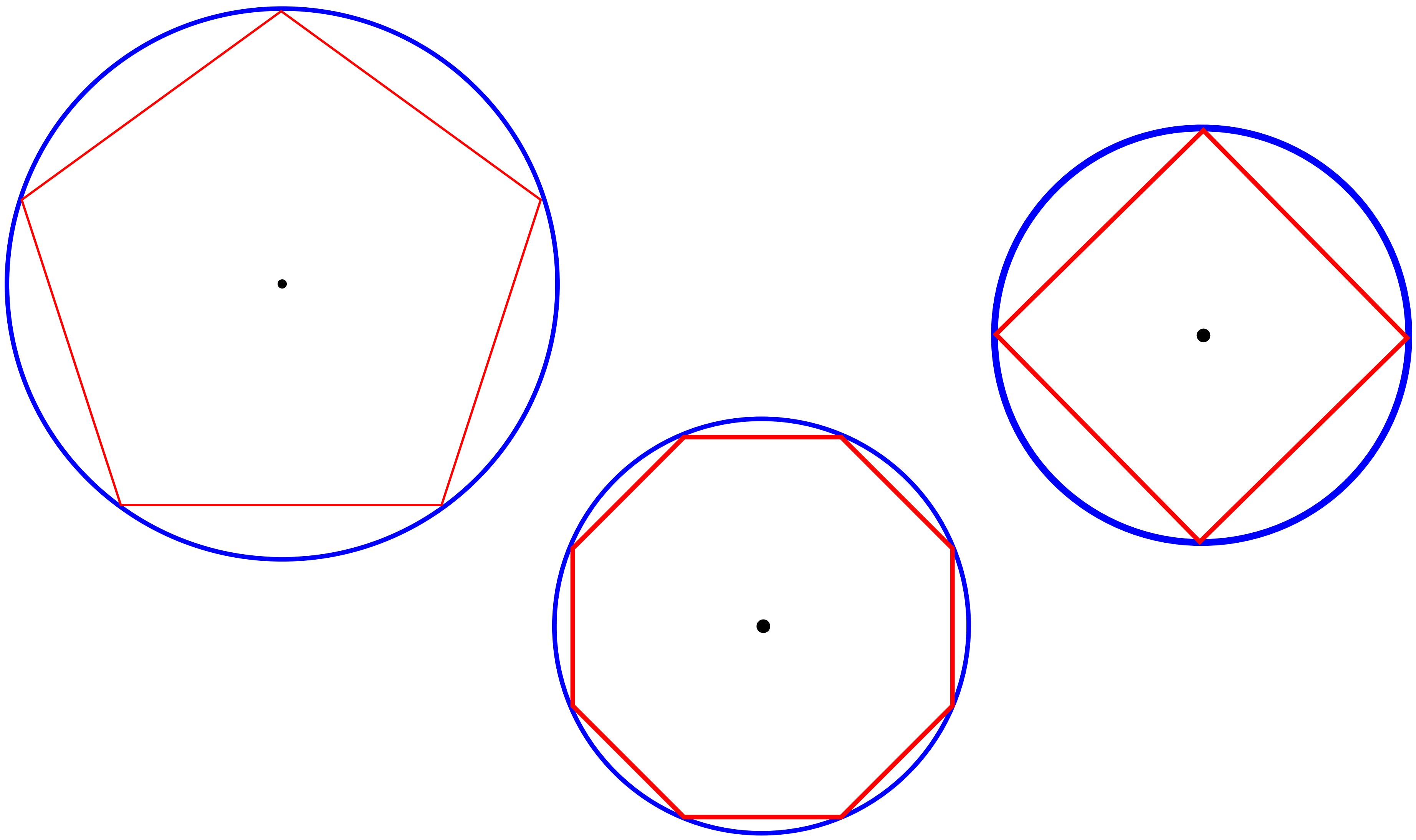
$m\angle RTS =$

$m\angle PRQ =$

$m\angle PSQ =$

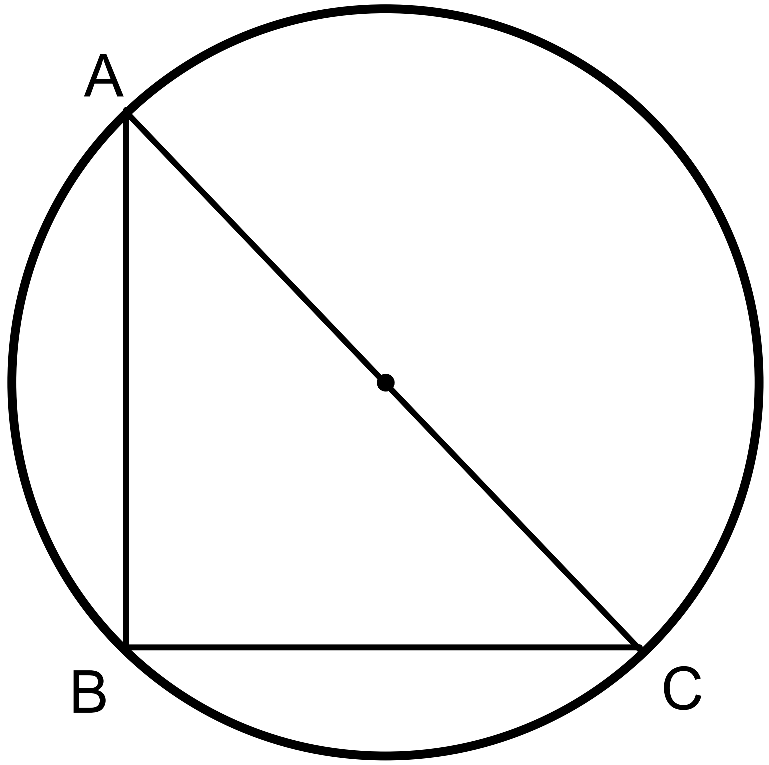
Inscribed Polygons

Circumscribed Circles

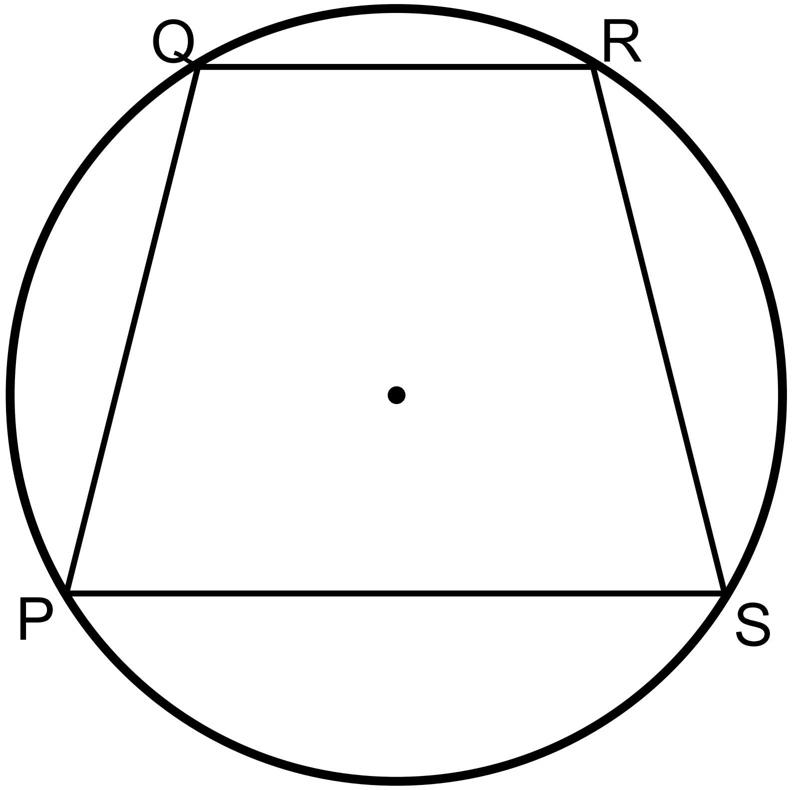


Theorem: If a right triangle is inscribed in a circle, than the hypotenuse is a diameter.

Also, if one side of an inscribed triangle is a diameter, than the angle opposite the diameter is 90°.



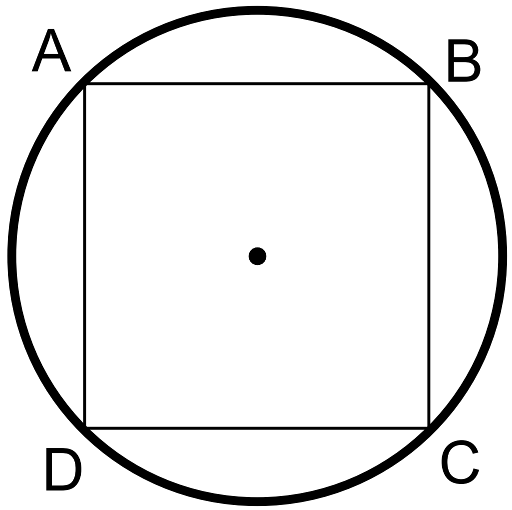
Theorem: A quadrilateral can be inscribed in a circle *if and only if* its opposite angles are supplementary



P, Q, R, S lie on the circle *if and only if:*

$m\angle Q + m\angle S = 180°$ and $m\angle P + m\angle R = 180°$

Prove that if a quadrilateral is inscribed in a circle then its opposite angles are supplementary.

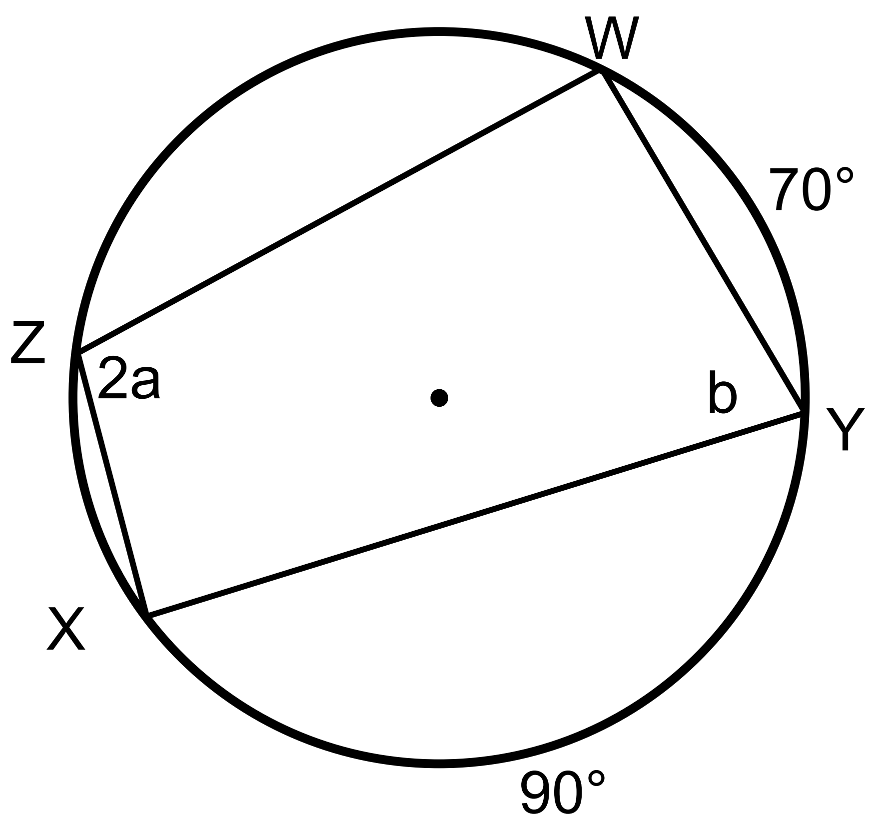


Given: ABCD is inscribed in circle P

Prove: $m\angle A$ and $m\angle C$ are supplementary

$m\angle B$ and $m\angle D$ are supplementary

*Not drawn to scale.



$m\angle Z = 2a$

$m\overset{\frown}{WY} = 70°$

$m\overset{\frown}{YX} = 90°$

a =

b =