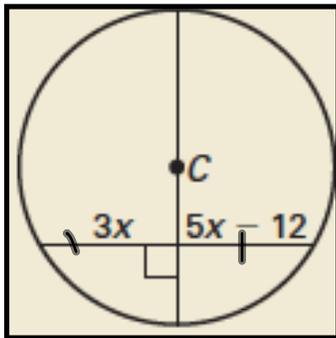


**Bellwork**  
**03/20/2012**

Find the value of  $x$  in circle C.

1.

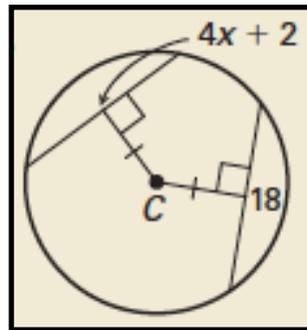


$$3x = 5x - 12$$

$$\frac{-2x}{-2} = \frac{-12}{-2}$$

$$x = 6$$

2.



$$4x + 2 = 18$$

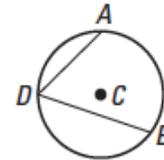
$$4x = 16$$

$$x = 4$$

**Geometry**  
**10.4 Inscribed Angles and Polygons**  
**Standard(s): 3, 6**

**Vocabulary:****THEOREM***For Your Notebook***THEOREM 10.7** Measure of an Inscribed Angle Theorem

The measure of an inscribed angle is one half the measure of its intercepted arc.

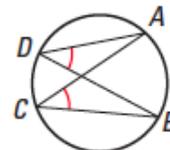


$$m\angle ADB = \frac{1}{2}m\widehat{AB}$$

*Proof:* Exs. 31–33, p. 678

**THEOREM***For Your Notebook***THEOREM 10.8**

If two inscribed angles of a circle intercept the same arc, then the angles are congruent.

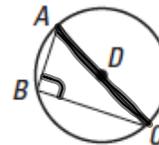


$$\angle ADB \cong \angle ACB$$

*Proof:* Ex. 34, p. 678

**THEOREM***For Your Notebook***THEOREM 10.9**

If a right triangle is inscribed in a circle, then the hypotenuse is a diameter of the circle. Conversely, if one side of an inscribed triangle is a diameter of the circle, then the triangle is a right triangle and the angle opposite the diameter is the right angle.



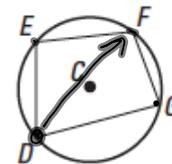
$m\angle ABC = 90^\circ$  if and only if  $\overline{AC}$  is a diameter of the circle.

*Proof:* Ex. 35, p. 678

**THEOREM***For Your Notebook***THEOREM 10.10**

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

$D, E, F,$  and  $G$  lie on  $\odot C$  if and only if  
 $m\angle D + m\angle F = m\angle E + m\angle G = 180^\circ$ .



*Proof:* Ex. 30, p. 678; p. 938

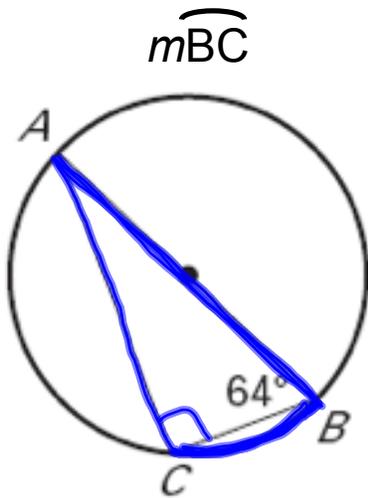
$$m\angle D + m\angle F = 180^\circ$$

$$m\angle E + m\angle G = 180^\circ$$

Inscribed  $\angle$  =

An  $\angle$  whose vertex is on  
a circle & whose sides  
contain chords of the circle.

## Inscribed Angles & Intercepted Arcs

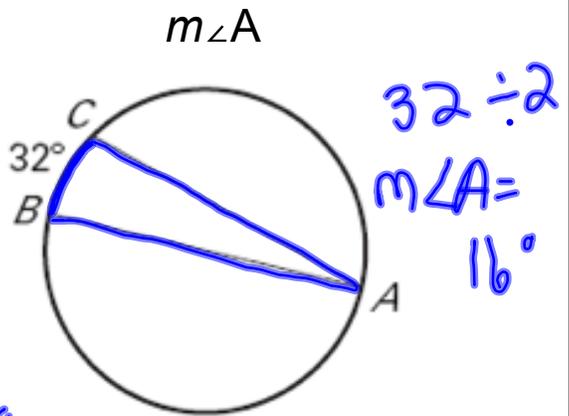


$$90 + 64 = 154$$

$$180 - 154 =$$

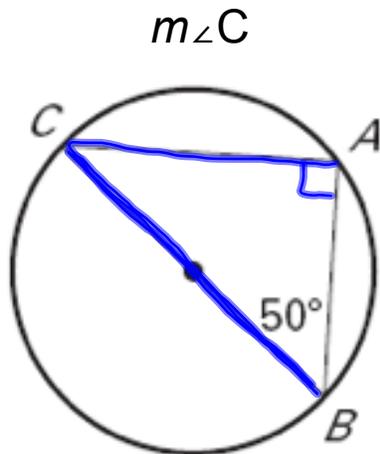
$$m\angle A = 26^\circ$$

$$m\widehat{BC} = 52^\circ$$



$$32 \div 2$$

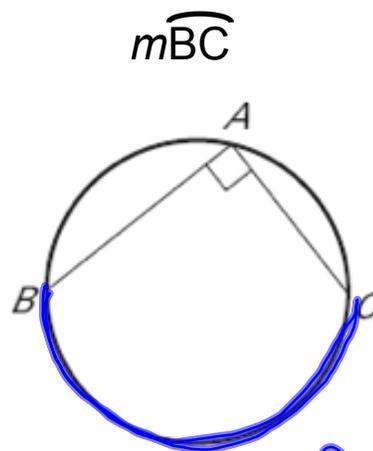
$$m\angle A = 16^\circ$$



$$90 + 50 = 140$$

$$180 - 140$$

$$m\angle C = 40^\circ$$



$$90 \cdot 2$$

$$m\widehat{BC} = 180^\circ$$

## Use Theorem 10.9

Find the indicated measure in circle  $M$ .

$$m\angle PNO = 34^\circ$$

$$m\widehat{PQ} = 62^\circ$$

$$m\angle QNP = 31^\circ$$

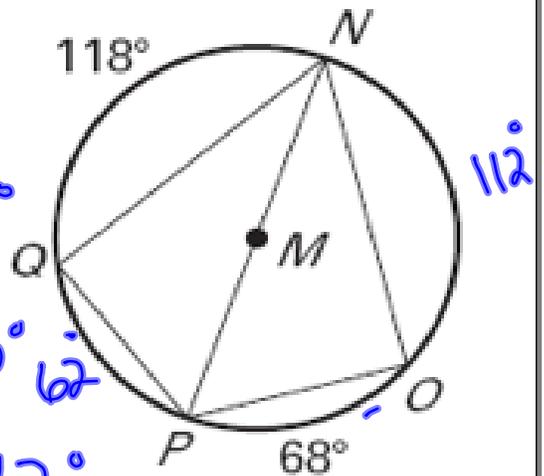
$$m\widehat{QO} = 130^\circ$$

$$m\angle NMO = 112^\circ$$

$$m\widehat{NOP} = 180^\circ$$

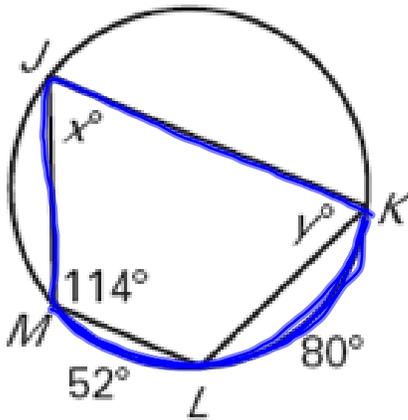
$$m\angle QMP = 62^\circ$$

$$m\widehat{QON} = 242^\circ$$



## Inscribed Polygon

Find the values of the variables.

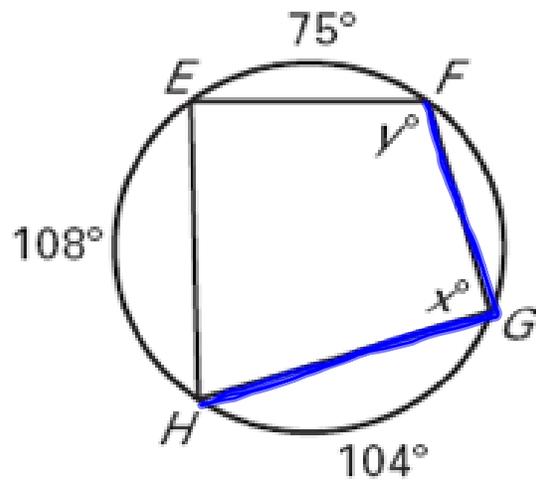


$$y + 114 = 180$$

$$y = 66^\circ$$

$$52 + 80 = 132^\circ$$

$$x = 66^\circ$$



$$108 + 104 = 212$$

$$212 \div 2 =$$

$$y = 106^\circ$$

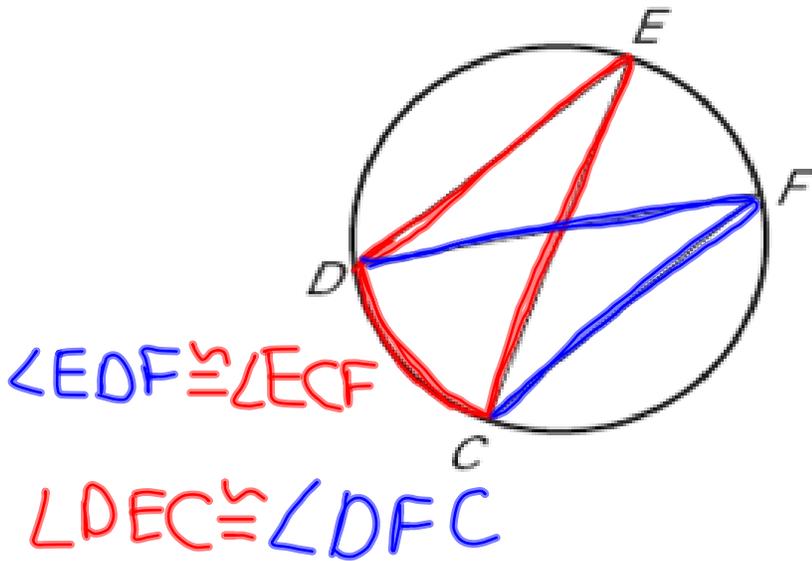
$$108 + 75 = 183$$

$$183 \div 2$$

$$x = 91.5^\circ$$

## Two Inscribed Angles

Name two pairs of congruent angles.



# Homework Assignment

## Worksheet 10.4B

