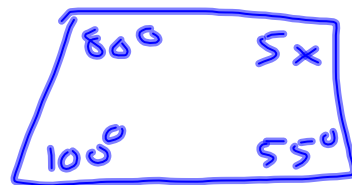# Warm Up

1. The measure of the interior angles of a quadrilateral are $80°$, $100°$, $55°$, and $5x°$. Find the value of x.

$5x = 125$
$x = 25$

2. Solve $\qquad 3x = \frac{1}{2}(4x+12)$
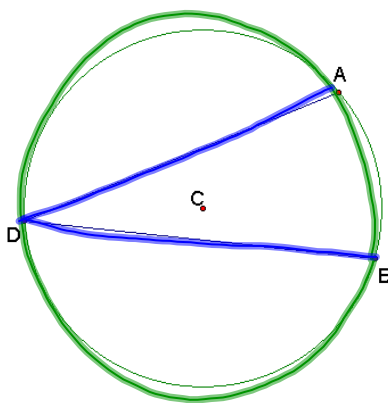
$3x = 2x + 6$
$\boxed{x = 6}$

3. Solve $\qquad 2 \cdot 80 = \frac{1}{2}(360 - 2x) \cdot 2$

$160 = 360 - 2x$
$-200 = -2x$
$x = 100$

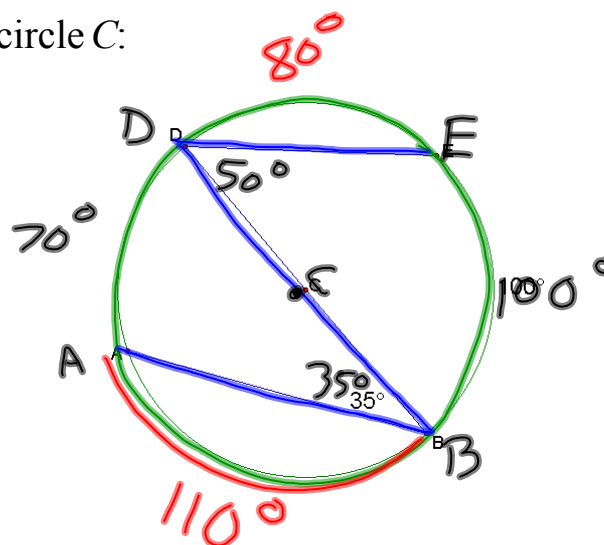## 10-4   INSCRIBED ANGLES

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

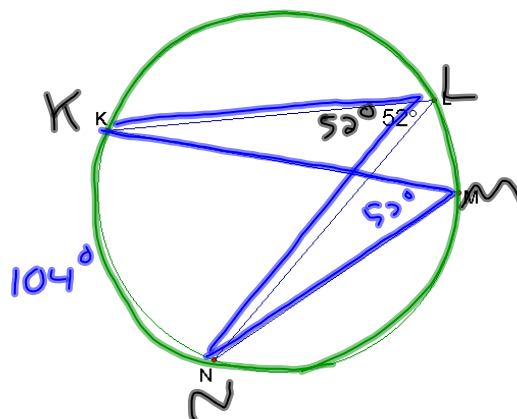Ex 1   Find the following in circle C:

$m\angle D$

50°

$m\overarc{AB}$
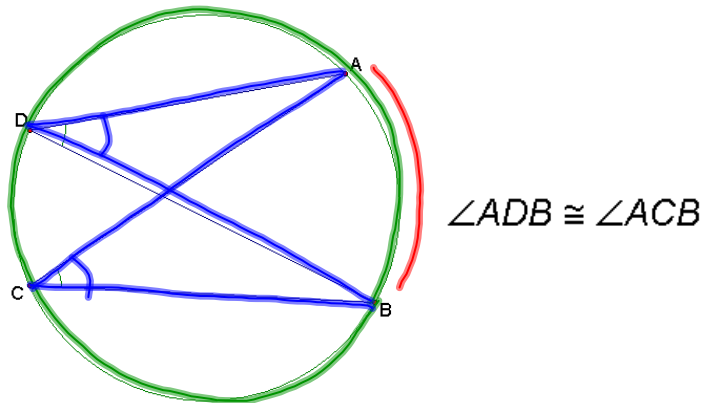
110°

Ex 2   Find the following:

$m\overarc{KN}$

104°

$m\angle KMN$

52°

Theorem 10.8

If 2 inscribed angles of a circle intercept the same arc, then the angles are congruent
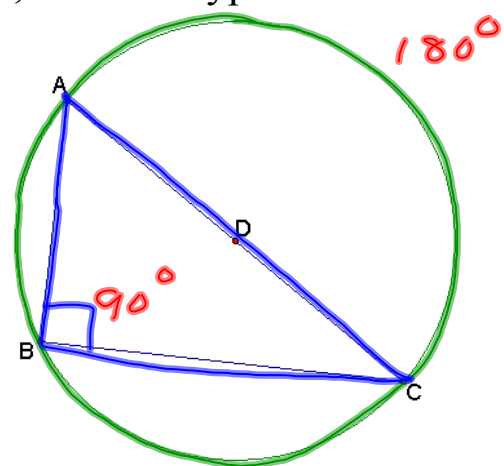
$\angle ADB \cong \angle ACB$

Inscribed polygons

Theorem 10.9

If a right triangle is inscribed in a circle, then the hypotenuse is the diameter.

If one side of an inscribed triangle is a diameter, then the triangle is a right triangle and angle opposite the diameter is the right angle.

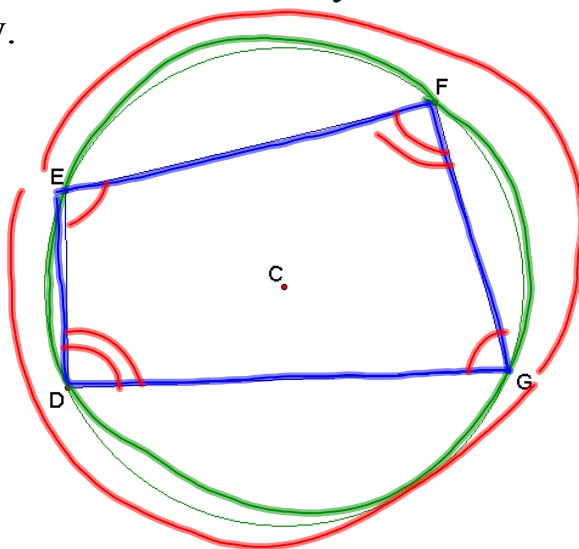$m\angle ABC = 90°$ if and only if $\overline{AC}$ is a diameter of the circle

Theorem 10.10

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

$m\angle D + m\angle F = 180°$
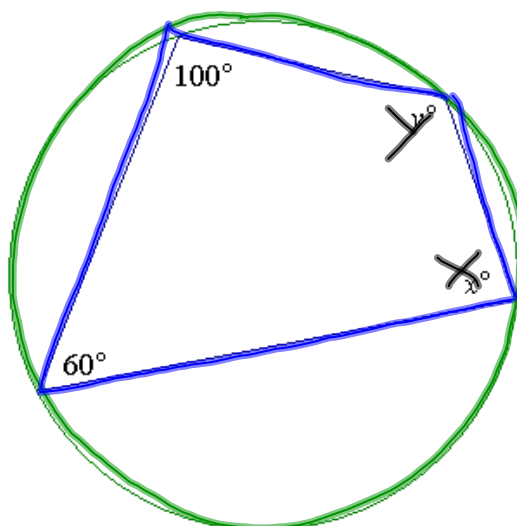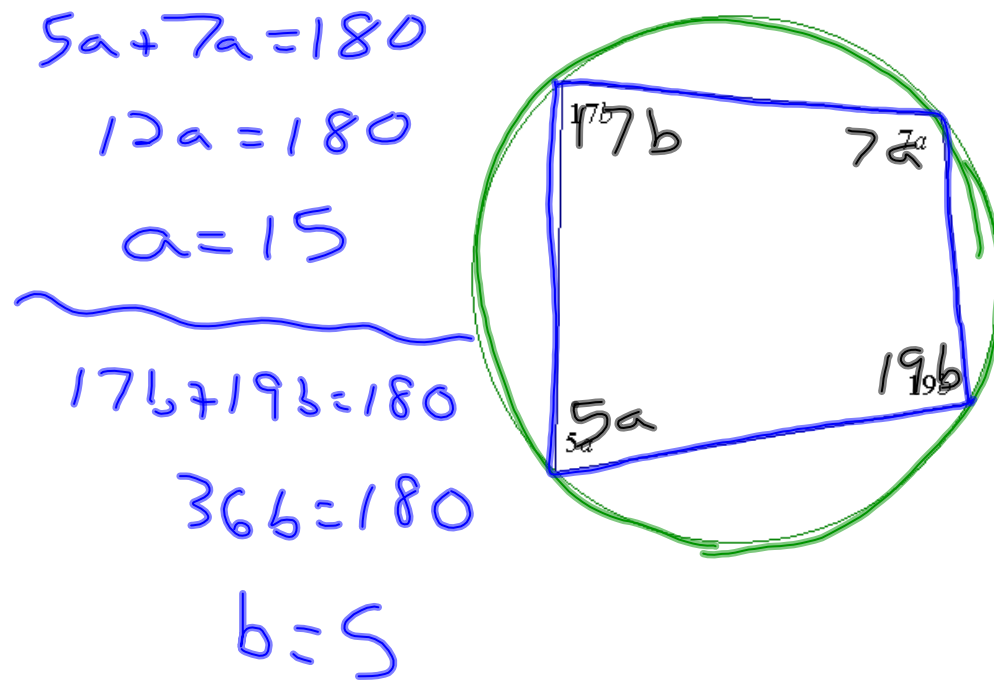$m\angle E + m\angle G = 180°$

Ex 3   Find the value of each variable.

$x = 80°$
$y = 120°$

100°
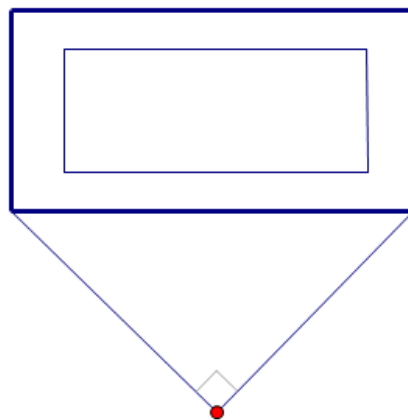
60°

Ex 4   Find the value of each variable.

$5a + 7a = 180$

$12a = 180$

$a = 15$

$17b + 19b = 180$

$36b = 180$

$b = 5$

Ex 5   You are on a Washington DC field trip and want to
take a picture of the Lincoln Memorial. You move to a
spot where the statue is the only thing captured in your
picture. You want to change your position. Where else can
you stand so that the statue is perfectly framed in this way?

Ex 6   In the star below all of the inscribed angles are congruent. Find the measure of an inscribed angle for each star. Then find the sum of all the inscribed angles for the star.

$36°$

$180°$

$72°$ $72°$

$72°$ $72°$

$72°$ $72°$

$72°$

G

H

K

I

J