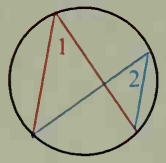
Proofs of the following three corollaries of Theorem 9-7 will be considered in Classroom Exercises 1–3.

Corollary 1

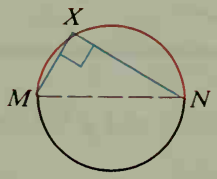
If two inscribed angles intercept the same arc, then the angles are congruent.



$\angle 1 \cong \angle 2$

Corollary 2

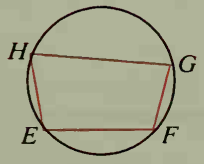
An angle inscribed in a semicircle is a right angle.



If $\overset{\frown}{MXN}$ is a semicircle, then $\angle X$ is a right angle.

Corollary 3

If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary.



$\angle E$ is supp. to $\angle G$.
$\angle F$ is supp. to $\angle H$.

Example 2 Find the values of x, y, and z.

Solution $\angle ADB$ and $\angle ACB$ intercept the same arc, so $x = 40$. (Corollary 1)

$\angle ABC$ is inscribed in a semicircle, so $\angle ABC$ is a right angle and $y = 90$. (Corollary 2)

$ABCD$ is an inscribed quadrilateral, so $\angle BAD$ and $\angle BCD$ are supplementary. (Corollary 3)

Therefore, $z = 180 - (x + 30)$

$z = 180 - (40 + 30) = 110$.