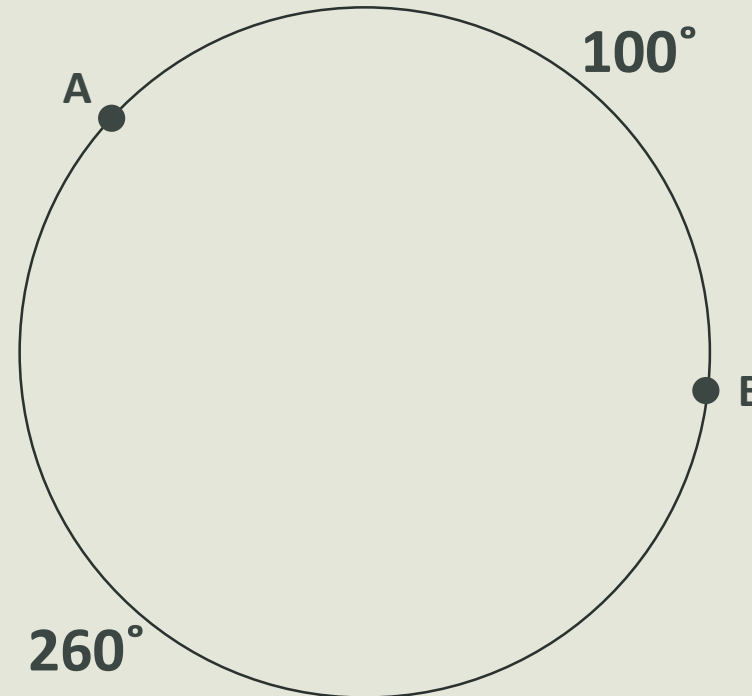# Lesson 15.2

Quadrilaterals Inscribed in Circles

Quadrilaterals Inscribed in Circles – These have a special relationship. Begin by examining two points on a circle, A and B.

If the measure of the minor Arc AB is 100° what is the measure of the major Arc AB?

$360° - 100° = 260°$

Notice that any two arcs created by the same two points on a circle must have measures that sum to 360°!

100°

A
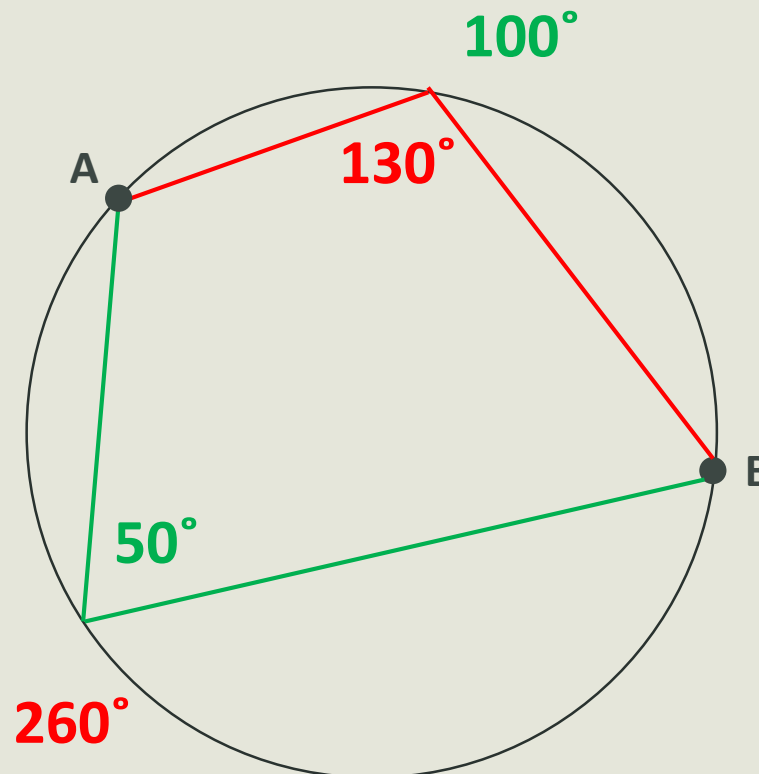
● B

260°

Quadrilaterals Inscribed in Circles

What would the measure of each arc's inscribed angles have to be?

If the measure of the minor Arc AB is 100° any inscribed angle that intercepts that arc must be ½ of the arc measure or **50°**

If the measure of the major Arc AB is 260° any inscribed angle that intercepts that arc must be ½ of the arc measure or **130°**
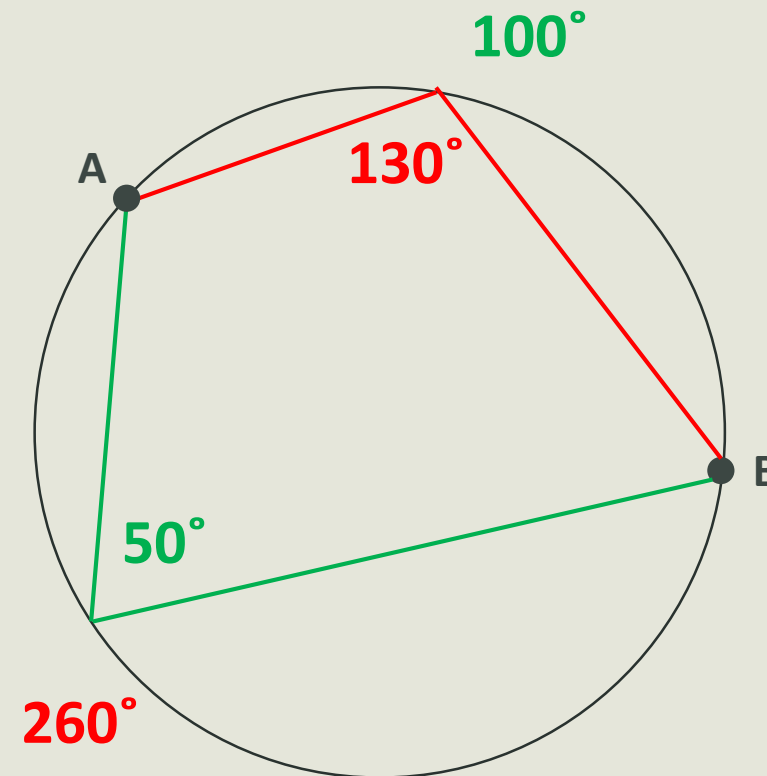
130°+ 50° = 180° → the angles are supplementary!

Quadrilaterals Inscribed in Circles

Since the total angle measure of a quadrilateral must be 360˚, the remaining two angle (at point A and point B) must also be supplementary!
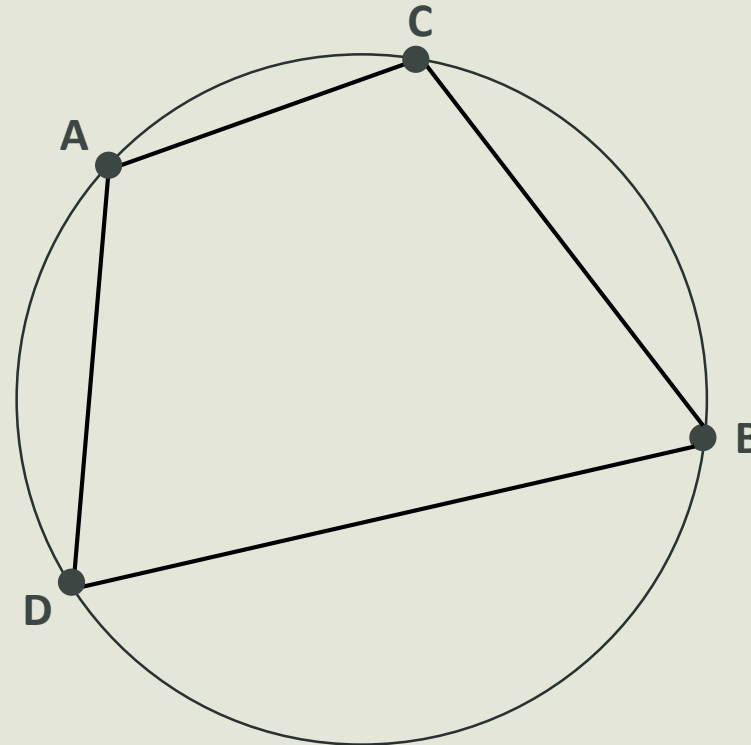
m∠A + m∠B = 180˚

Quadrilaterals Inscribed in Circles

This can be stated generally as follows:
When a quadrilateral is inscribed in a circle, each pair of opposite angles MUST be supplementary.
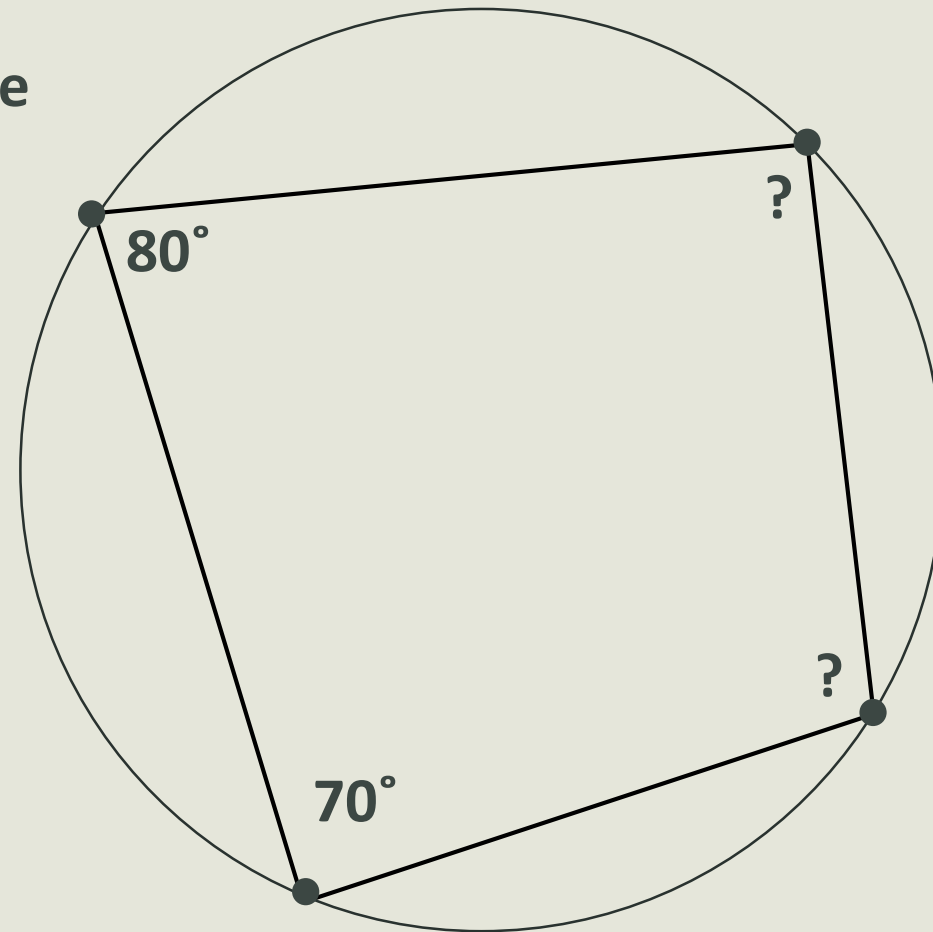
m∠A + m∠B = 180°
m∠C + m∠D = 180°

Checkpoint – putting it all together: Inscribed Angles and Quadrilaterals.

Find the measure of all of the *?'s* on the diagram. Don't click ahead until you have them all!

Checkpoint – putting it all together: Inscribed Angles and Quadrilaterals.

Find the measure of all of the *?'s* on the diagram. Don't click ahead until you have them all!
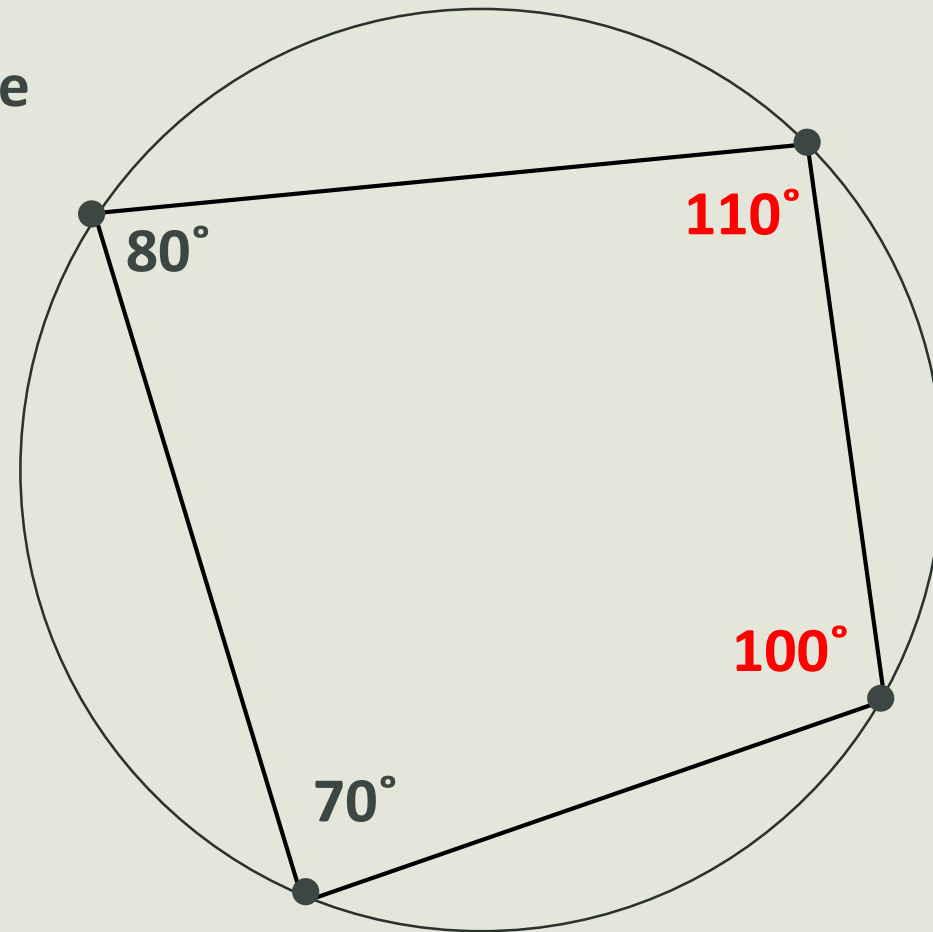
$180° - 80° = 100°$

$180° - 70° = 110°$

Open your book to page 800 and do problems 5 and 6 .

Use the figure for Exercices 5–6. Find each measure using the appropriate theorems and postulates.
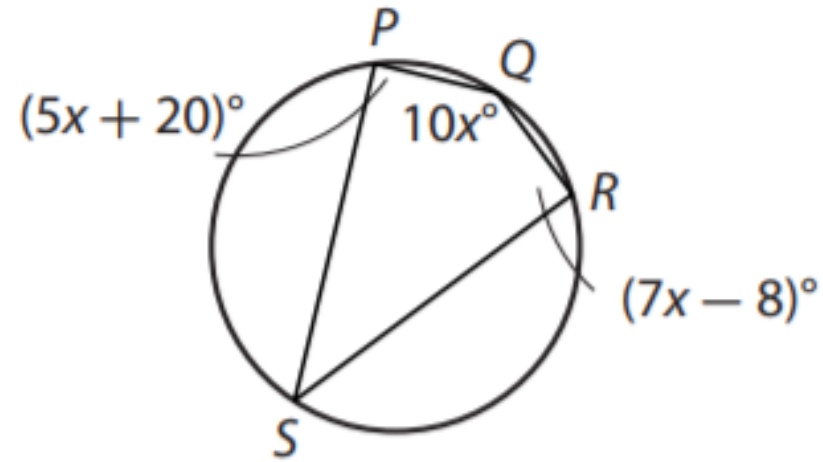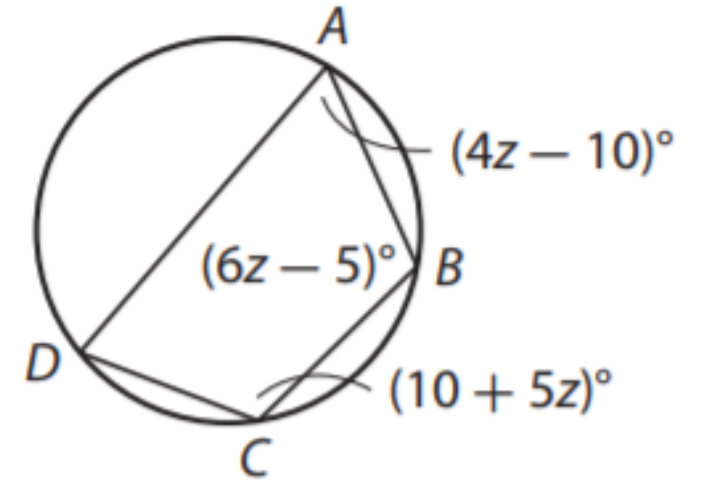
5. m∠B

6. m$\overarc{DAB}$

Page 801, #'s 10-13

10.

$(5x + 20)°$

$10x°$

$(7x - 8)°$

P, *Q*, *R*, *S*

11.

A

$(4z - 10)°$

$(6z - 5)°$ *B*

D

$(10 + 5z)°$

C

Page 801, #'s 10-13

12.

B

E

$(z-59)°$

$\left[\dfrac{z}{2}\right]°$

D

$\left[\dfrac{z}{4}+30\right]°$

C

13.

V $(15y-4)°$

W

U $(6x-14)°$

$(14+4x)°$

$(12y-5)°$

T