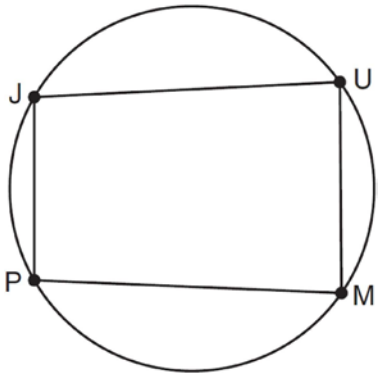
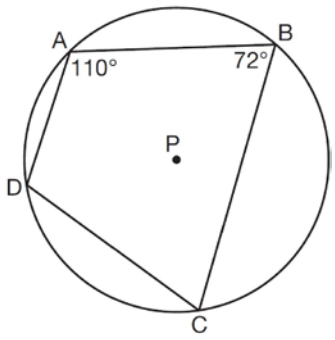
G.C.A.2: Inscribed Quadrilaterals

1 In the diagram below, quadrilateral *JUMP* is inscribed in a circle..



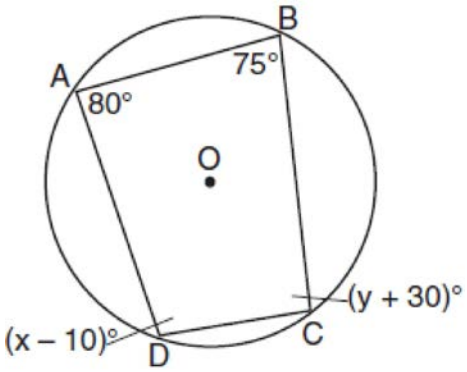
Opposite angles *J* and *M* must be
1) right
2) complementary
3) congruent
4) supplementary

2 In the diagram below, quadrilateral *ABCD* is inscribed in circle *P*.



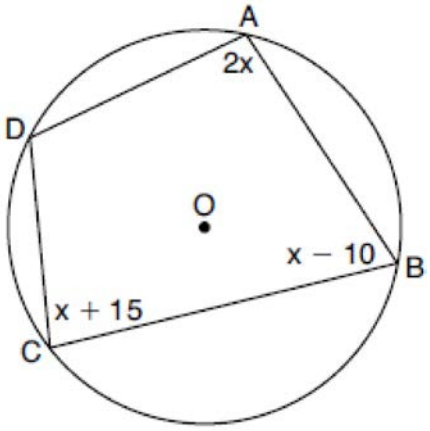
What is m∠*ADC*?
1) 70°
2) 72°
3) 108°
4) 110°

3 Quadrilateral *ABCD* is inscribed in circle *O*, as shown below.



If m∠*A* = 80°, m∠*B* = 75°, m∠*C* = (*y* + 30)°, and m∠*D* = (*x* – 10)°, which statement is true?
1) $x = 85$ and $y = 50$
2) $x = 90$ and $y = 45$
3) $x = 110$ and $y = 75$
4) $x = 115$ and $y = 70$

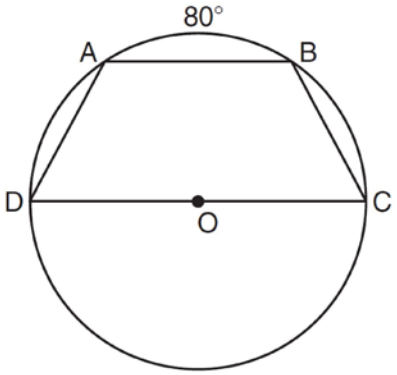
4 In the diagram below, quadrilateral *ABCD* is inscribed in circle *O*, m∠*A* = (2*x*)°, m∠*B* = (*x* – 10)°, and m∠*C* = (*x* + 15)°.



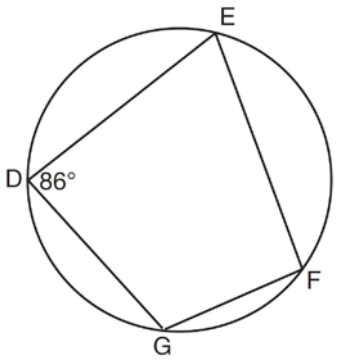
What is m∠*D*?
1) 55°
2) 70°
3) 110°
4) 135°

5 Linda is designing a circular piece of stained glass with a diameter of 7 inches. She is going to sketch a square inside the circular region. To the *nearest tenth of an inch*, the largest possible length of a side of the square is
1) 3.5
2) 4.9
3) 5.0
4) 6.9

6 In the diagram below, trapezoid $ABCD$, with bases $\overline{AB}$ and $\overline{DC}$, is inscribed in circle O, with diameter $\overline{DC}$. If $m\overset{\frown}{AB} = 80$, find $m\overset{\frown}{BC}$.

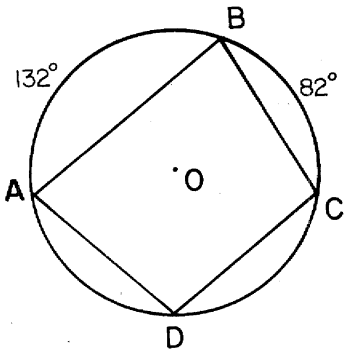


7 As shown in the diagram below, quadrilateral $DEFG$ is inscribed in a circle and $m\angle D = 86$.

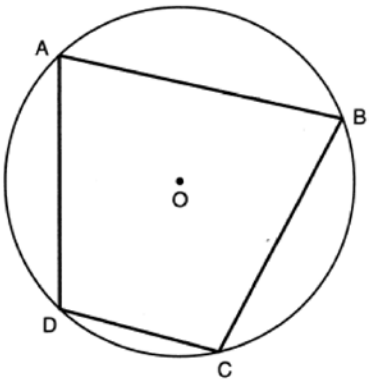


Determine and state $m\overset{\frown}{GFE}$. Determine and state $m\angle F$.

8 In the accompanying diagram, quadrilateral $ABCD$ is inscribed in circle O. If $m\overset{\frown}{AB} = 132$ and $m\overset{\frown}{BC} = 82$, find $m\angle ADC$.



9 In the diagram below, quadrilateral $ABCD$ is inscribed in circle O, and $m\overset{\frown}{CD} : m\overset{\frown}{DA} : m\overset{\frown}{AB} : m\overset{\frown}{BC} = 2:3:5:5$.



Determine and state $m\angle B$.

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Answer Section

1 ANS: 4 REF: 011124ge

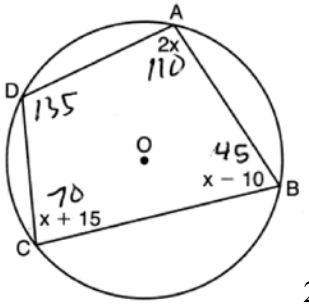
2 ANS: 3 REF: 081515geo

3 ANS: 4

Opposite angles of an inscribed quadrilateral are supplementary.

REF: 011821geo

4 ANS: 4



$2x + x + 15 = 180 \quad 180 - 45 = 135$

$3x = 165$

$x = 55$

REF: 082224geo

5 ANS: 2

$s^2 + s^2 = 7^2$

$2s^2 = 49$

$s^2 = 24.5$

$s \approx 4.9$

REF: 081511geo

6 ANS:

$\frac{180 - 80}{2} = 50$

REF: 081129ge

7 ANS:

$86° \cdot 2 = 172° \quad 180° - 86° = 94°$

REF: 081432ge

8 ANS:

107

REF: 088408siii

9 ANS:

$\frac{2+3}{15} \cdot 360 = 120 \quad \frac{120}{2} = 60$

REF: 062226geo