

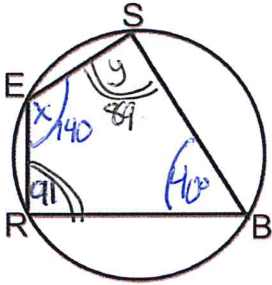
The opposite angles add to 180°

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Geometry

Quadrilaterals Inscribed In a Circle

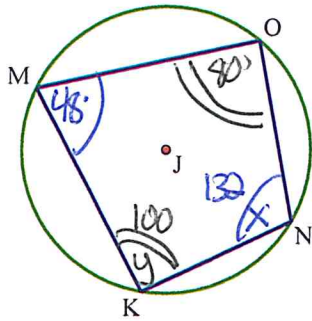
1. In the diagram below, quadrilateral $SBRE$ is inscribed in the circle. If $m\angle BRE = 91^\circ$ and $m\angle SBR = 40^\circ$, find $m\angle BSE$ and $m\angle SER$



$$\begin{array}{r} x + y = 180 \\ -40 \quad -40 \\ \hline x = 140 \end{array}$$

$$\begin{array}{r} x + y = 180 \\ -91 \quad -91 \\ \hline y = 89 \end{array}$$

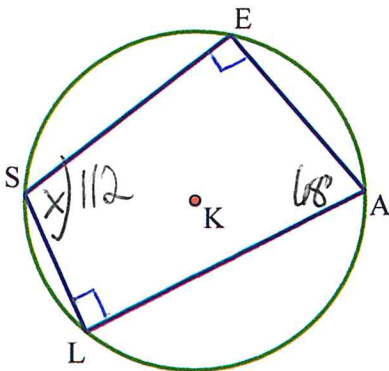
2. In the diagram below, quadrilateral $MONK$ is inscribed in circle J , $m\angle KMO = 48^\circ$ and $m\angle MON = 80^\circ$. Find the measures of $m\angle KNO$ and $m\angle MKN$.



$$\begin{array}{r} x + y = 180 \\ -48 \quad -48 \\ \hline x = 132 \end{array}$$

$$\begin{array}{r} 80 + y = 180 \\ -80 \quad -80 \\ \hline y = 100 \end{array}$$

3. In the diagram below, quadrilateral $SEAL$ is inscribed in circle K , $\overline{SE} \perp \overline{EA}$ and $m\angle EAL = 68^\circ$. Find the measures of $m\angle SLA$ and $m\angle ESL$.



$$\begin{array}{r} x + y = 180 \\ -68 \quad -68 \\ \hline x = 112 \end{array}$$

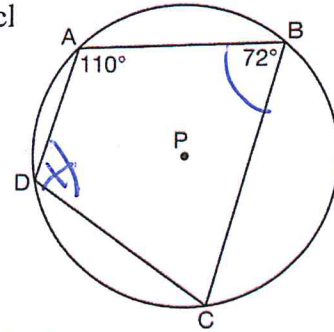
90° 112

4. In the diagram below, quadrilateral $ABCD$ is inscribed in circle P .

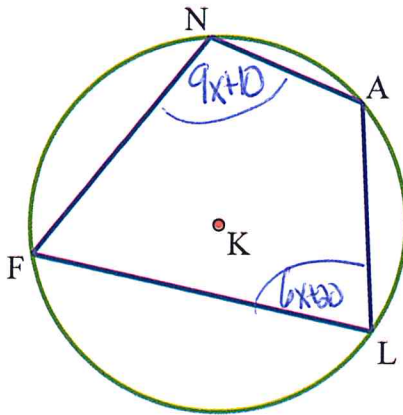
What is $m\angle ADC$?

- 1) 70°
- 2) 72°
- 3) 108°
- 4) 110°

$$\begin{aligned} x + 72 &= 180 \\ -72 & -72 \\ \hline x &= 108 \end{aligned}$$



5. In the diagram below, quadrilateral $FLAN$ is inscribed in circle K , $m\angle FNA = 9x + 10$ and $m\angle FLA = 6x + 20$. Find the measures of $m\angle FLA$.



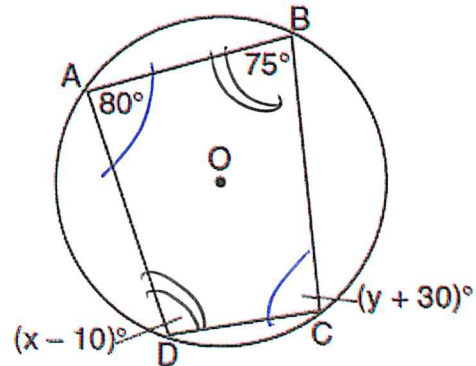
$$\begin{aligned} 9x + 10 + 6x + 20 &= 180 \\ 15x + 30 &= 180 \\ -30 & -30 \\ \hline 15x &= 150 \\ \frac{15x}{15} &= \frac{150}{15} \\ x &= 10 \end{aligned}$$

$$\begin{aligned} 6x + 20 \\ 6(10) + 20 \\ \hline 80^\circ \end{aligned}$$

6. Quadrilateral $ABCD$ is inscribed in circle O , as shown below.

If $m\angle A = 80^\circ$, $m\angle B = 75^\circ$, $m\angle C = (y + 30)^\circ$, and $m\angle D = (x - 10)^\circ$, 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 $y = 70$



$$\begin{aligned} 80 + y + 30 &= 180 \\ y + 110 &= 180 \\ -110 & -110 \\ \hline y &= 70 \end{aligned}$$

$$\begin{aligned} 75 + x - 10 &= 180 \\ x + 65 &= 180 \\ -65 & -65 \\ \hline x &= 115 \end{aligned}$$