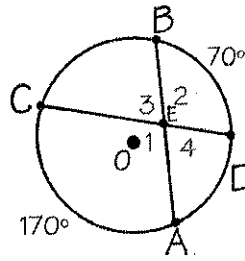


Geometry
Arcs and Chords

Name: Kay
Date: _____

New: Angles formed by Two Chords

Angle Formed Inside by Two Chords =
 $\frac{1}{2}$ the sum of intercepted arcs.
 $\frac{\text{Arc} + \text{Arc}}{2} = \angle$

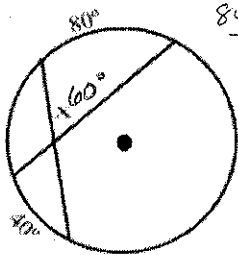


$$m\angle BED = \frac{70 + 170}{2} = \frac{240}{2} = 120^\circ$$

$$\left. \begin{matrix} m\angle 1 = m\angle 2 \\ m\angle 3 = m\angle 4 \end{matrix} \right\} = \text{vertical angles}$$

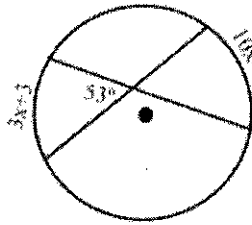
Examples

1. $x = 60^\circ$



$$\frac{80 + 40}{2} = \frac{120}{2} = 60^\circ$$

2. $x = 9$



$$\frac{10x - 14 + 3x + 3}{2} = 53$$

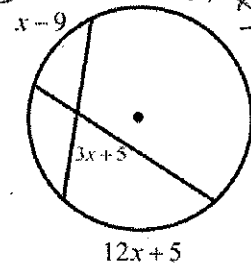
$$\frac{13x - 11}{2} = 53$$

$$13x - 11 = 106$$

$$13x = 117$$

$$x = 9$$

3. $x = 2$



$$\frac{x - 9 + 12x + 5}{2} = 3x + 5$$

$$13x - 4 = 6x + 10$$

$$7x = 14$$

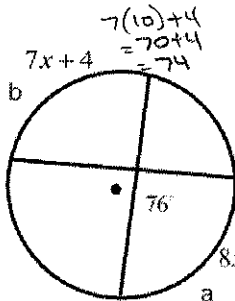
$$x = 2$$

2) $\frac{7x + 4 + 8x - 2}{2} = 76$

$$15x + 2 = 152$$

$$15x = 150$$

$$x = 10$$



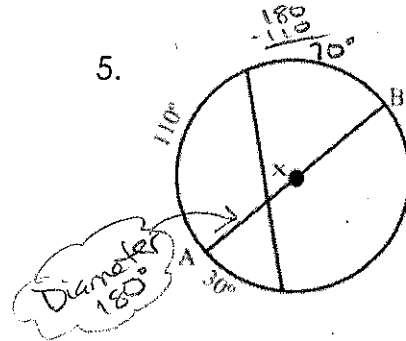
$$x = 10$$

$$a = 78^\circ$$

$$b = 74^\circ$$

$$8x - 2 = 8(10) - 2 = 80 - 2 = 78$$

5.

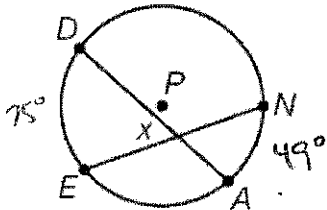


$$x = 50^\circ$$

$$\frac{70 + 30}{2} = \frac{100}{2} = 50^\circ$$

You Try!

1. In circle P shown below, $m\widehat{DE} = 75^\circ$ and $m\widehat{NA} = 49^\circ$. Find the value of x.

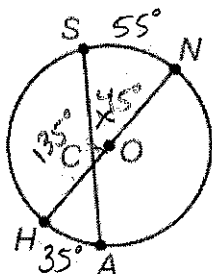


$$\frac{75 + 49}{2} = x$$

$$\frac{124}{2} = x$$

$$x = 62^\circ$$

2. In circle O shown below, $m\widehat{SN} = 55^\circ$ and $m\widehat{HA} = 35^\circ$. Find $m\angle SCH$.



$$\frac{55 + 35}{2} = x$$

$$\frac{90}{2} = x$$

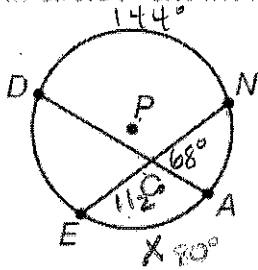
$$45^\circ = x$$

$$\frac{180}{2} = 90$$

$$90 - 45 = 45$$

$$135^\circ$$

3. In circle P shown below, $m\widehat{DN} = 144^\circ$ and $m\angle NCA = 68^\circ$. Find $m\widehat{EA}$.

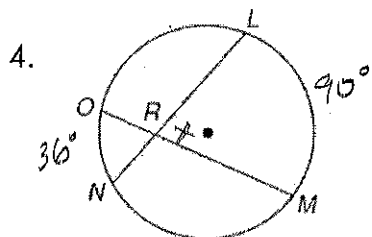


$$\frac{180 - 68}{2} = 112$$

$$\frac{144 + x}{2} = 112 \quad (2)$$

$$144 + x = 224$$

$$x = 80^\circ$$



$$m\widehat{LM} = 90^\circ$$

$$m\widehat{ON} = 36^\circ$$

$$m\angle LRM = \underline{63^\circ}$$

$$m\angle NRM = \underline{117^\circ}$$

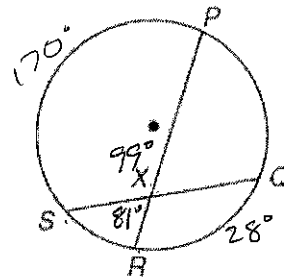
$$\frac{90 + 36}{2} = x$$

$$\frac{126}{2} = x$$

$$\boxed{63^\circ = x}$$

$$\frac{180 - 63}{2} = 117^\circ$$

5.



$$m\widehat{PS} = 170^\circ$$

$$m\widehat{QR} = 28^\circ$$

$$m\angle PXS = \underline{99^\circ}$$

$$m\angle SXR = \underline{81^\circ}$$

$$\frac{170 + 28}{2} = x$$

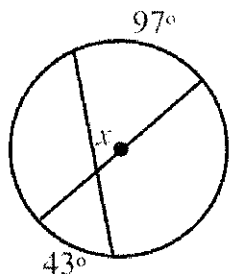
$$\frac{198}{2} = x$$

$$\boxed{99^\circ = x}$$

$$\frac{180 - 99}{2} = 81$$

More Practice...

1. Find x.

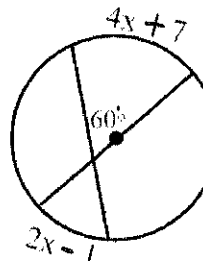


$$\frac{97 + 43}{2} = x$$

$$\frac{140}{2} = x$$

$$\boxed{x = 70^\circ}$$

2. Find x.



$$\frac{4x + 7 + 2x - 1}{2} = 60$$

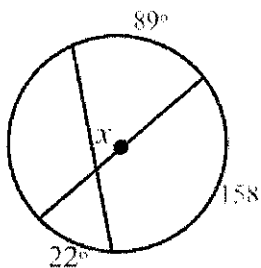
$$\frac{6x + 6}{2} = 60 \quad (2)$$

$$6x + 6 = 120$$

$$6x = 114$$

$$\boxed{x = 19}$$

3. Find x.

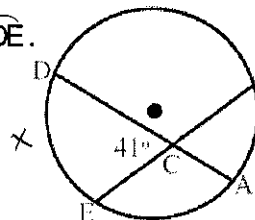


$$\frac{89 + 22}{2} = x$$

$$\frac{111}{2} = x$$

$$\boxed{55.5^\circ = x}$$

4. Find \widehat{DE} .



$$\frac{x + 57}{2} = 41 \quad (2)$$

$$x + 57 = 82$$

$$\boxed{x = 25^\circ}$$

5. In $\odot P$, $m\widehat{AB} = 68^\circ$ and $m\widehat{BG} = 18^\circ$. Find $m\angle ACF$.

$$\frac{68 + 18}{2} = \frac{86}{2} = \boxed{43^\circ}$$

