

Adjacent Angles

Given:

$$m\angle ADC = (6x - 8)^\circ$$

$$m\angle BDC = 21^\circ$$

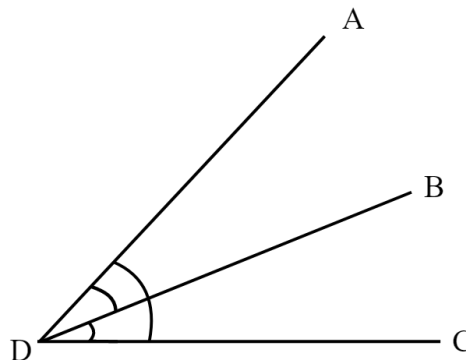
$$m\angle ADB = (4x + 1)^\circ$$

Find:

$$x = \underline{\hspace{2cm}}$$

$$m\angle ADC = \underline{\hspace{2cm}}$$

$$m\angle ADB = \underline{\hspace{2cm}}$$



The measure of the largest angle is the sum of the two smaller angles.

$m\angle ADC = m\angle ADB + m\angle BDC$ Substitute in the values for each angle

$$6x - 8 = 4x + 1 + 21$$

$$6x - 8 = 4x + \underline{1} + \underline{21}$$

Combine like terms

$$6x - 8 = 4x + 22$$

$$\underline{-4x} \quad \underline{-4x}$$

Do the inverse operation to move the variable to the right side of the equation

$$2x - 8 = 22$$

$$\underline{+8} \quad \underline{+8}$$

Do the inverse operation to move the constant to the left side of the equation

$$2x = 30$$

$$\underline{2x} = \underline{30}$$

$$\underline{2} \quad \underline{2}$$

Divide both sides by 2

$$x = 15$$

Now that we know the value of x , substitute the value into the expression for each angle.

$$x = 15$$

$$\begin{aligned} m\angle ADC &= (6x - 8)^\circ \\ &= 6(15) - 8 \\ &= 90 - 8 \\ &= 82^\circ \end{aligned}$$

$$\begin{aligned} m\angle ADB &= (4x + 1)^\circ \\ &= 4(15) + 1 \\ &= 60 + 1 \\ &= 61^\circ \end{aligned}$$