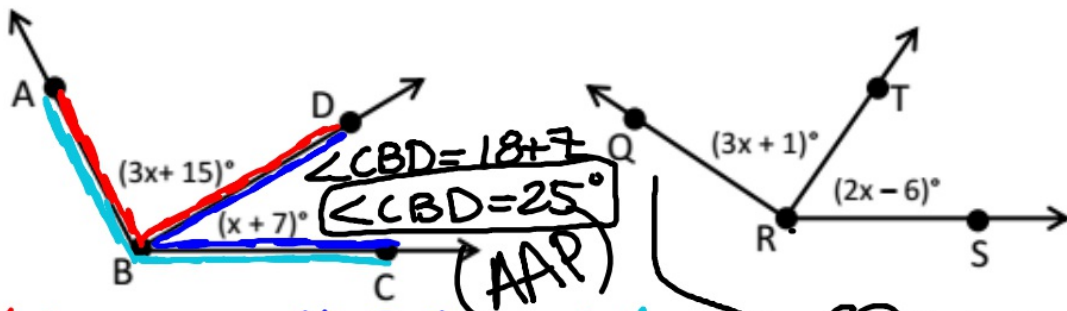


Angle Addition Postulate: (AAP)

If P is the interior of $\angle RST$, then $m\angle RST = m\angle RSP + m\angle PST$.

- 8 Given $m\angle ABC = 94^\circ$ find $m\angle CBD$. 9 Given $m\angle QRS = 135^\circ$, find $m\angle QRT$.



$$\angle ABD + \angle DBC = \angle ABC$$

(Substitution)

$$3x + 15 + x + 7 = 94$$

$$4x + 22 = 94$$

(CLT)

$$-22 \quad -22 \text{ (Subtraction)}$$

$$\frac{4x}{4} = \frac{72}{4} \text{ (Division)}$$

$$x = 18$$

$$\angle QRS + \angle TRS = \angle QRS$$

(AAP)

$$3x + 1 + 2x - 6 = 135$$

(Substitution)

$$5x - 5 = 135$$

(CLT)

$$5x = 140$$

(Addition)

$$\frac{5x}{5} = \frac{140}{5}$$

(Division)

$$x = 28$$

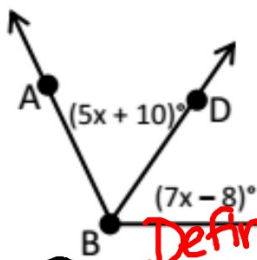
$$QRT = 85$$

$$84 + 1 = 85$$

In the diagram $\overrightarrow{BD}$ bisects $\angle ABC$. Find $m\angle ABC$.

→ cuts the angle in half (=)

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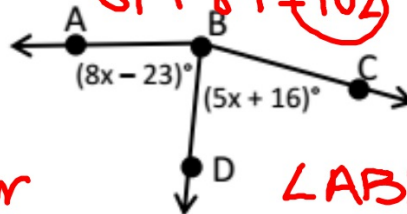


Definition of Bisector

$$\begin{aligned} \widehat{ABD} &= \widehat{DBC} && \text{Substitution} \\ 5x + 10 &= 7x - 8 && \text{Addition} \\ +8 &+8 && \text{Subtraction} \\ 5x + 18 &= 7x && \text{Division} \\ -5x &-5x && \\ 18 &= 2x && \\ \frac{18}{2} &= \frac{2x}{2} && \\ \boxed{x=9} &&& \end{aligned}$$

$$\begin{aligned} (5(9) + 10) + (7(9) - 8) &= \widehat{ABC} \\ 55 + 55 &= \widehat{ABC} \\ \boxed{\widehat{ABC} = 110} &&& \end{aligned}$$

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$$\begin{aligned} 81 + 81 &= 162 \\ 5(13) + 16 &= 81 \\ x &= 13 \end{aligned}$$

$$\angle ABD = \angle DBC$$

$$\begin{aligned} 8x - 23 &= 5x + 16 \\ -5x &-5x && \text{(CLT)} \end{aligned}$$

$$\begin{aligned} 3x - 23 &= 16 && \text{Addition} \\ +23 &+23 \end{aligned}$$

$$\begin{aligned} 3x &= 39 && \text{Division} \\ \overline{3} &\overline{3} \\ \boxed{x=13} &&& \end{aligned}$$