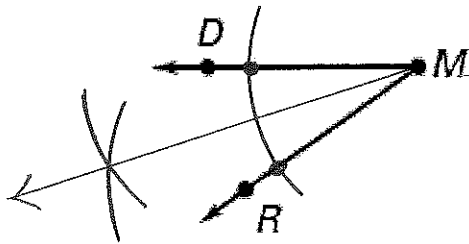
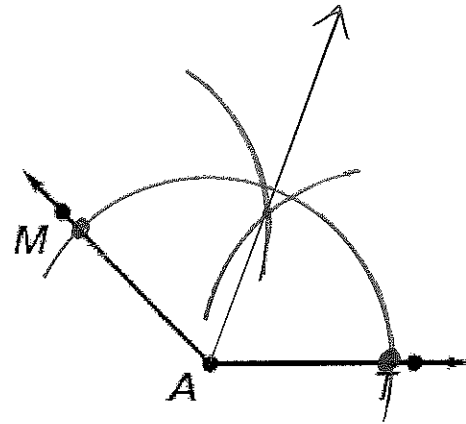
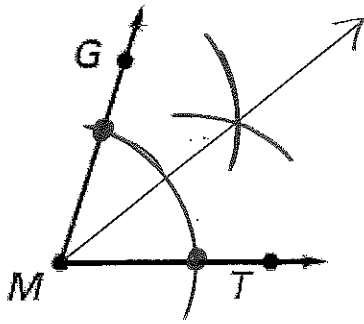


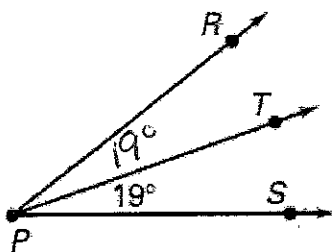
An **angle bisector** is a ray that divides an angle into two adjacent angles that are congruent.

**EXAMPLE 1** Bisecting an Angle



**EXAMPLE 2** Finding Angles Measures

1.

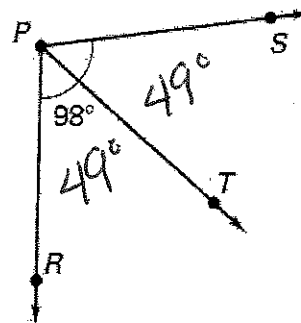


$$m \angle TPS = \frac{19^\circ}{\quad}$$

$$m \angle RPT = \frac{19^\circ}{\quad}$$

$$m \angle RPS = \frac{38^\circ}{\quad}$$

2.



$$m \angle SPR = \frac{98^\circ}{\quad}$$

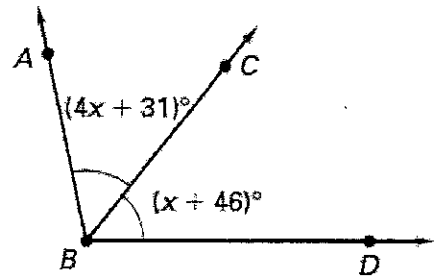
$$m \angle SPR = \frac{98^\circ}{\quad}$$

$$m \angle TPR = \frac{49^\circ}{\quad}$$

**EXAMPLE 3****Finding the Measure of an Angle**

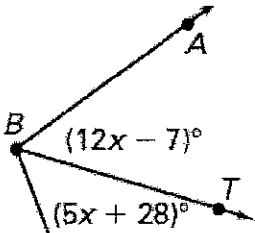
In the diagram,  $\vec{BC}$  bisects  $\angle ABD$ . Solve for  $x$ .

$$\begin{array}{r} 4x+31 \\ -x \\ \hline 3x+31 \\ -31 \\ \hline 3x = 15 \\ \frac{3x}{3} = \frac{15}{3} \quad x = 5 \end{array}$$

**Exercises for Example 2**

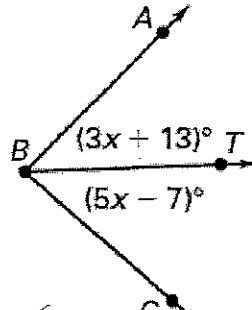
$\vec{BD}$  bisects  $\angle ABC$ . Find the value of  $x$ .

3.



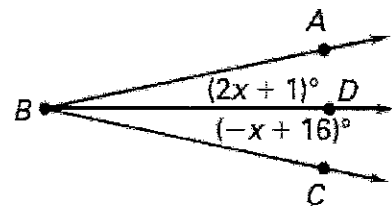
$$\begin{array}{r} 12x-7 \\ -5x \\ \hline 7x-7 \\ +7 \\ \hline 7x = 28 \\ \frac{7x}{7} = \frac{28}{7} \\ x = 4 \end{array}$$

4.



$$\begin{array}{r} 3x+13 \\ -5x-7 \\ \hline -2x-14 \\ +7 \\ \hline -2x-7 \\ +7 \\ \hline -2x = 0 \\ \frac{-2x}{-2} = \frac{0}{-2} \\ x = 0 \end{array}$$

5.



$$\begin{array}{r} 2x+1 \\ +x \\ \hline 3x+1 \\ -1 \\ \hline 3x = 16 \\ \frac{3x}{3} = \frac{16}{3} \quad x = \frac{16}{3} \end{array}$$

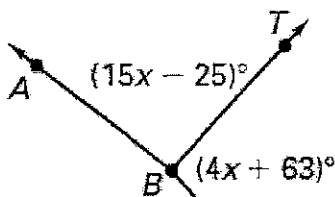
**EXAMPLE 3**

$$x = 5$$

$$10 = x$$

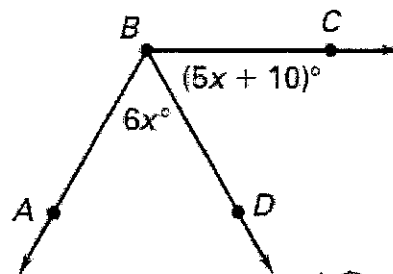
TOTD: Solve for  $x$  in each of the following:

6.



$$\begin{array}{r} 15x-25 \\ -4x \\ \hline 11x-25 \\ +25 \\ \hline 11x = 63 \\ \frac{11x}{11} = \frac{63}{11} \quad x = \frac{63}{11} \end{array}$$

7.



$$\begin{array}{r} 6x \\ -5x \\ \hline x \\ = 10 \end{array}$$