

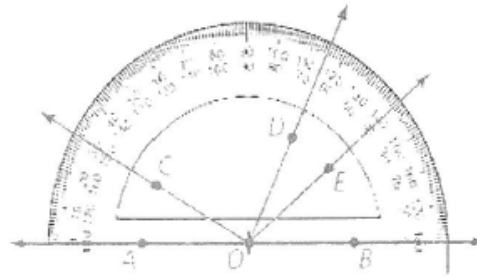
In Exercises 13–16, find the angle measure. Then classify the angle.

13.  $m\angle AOC = 30^\circ$  ACUTE

14.  $m\angle BOD = 65^\circ$  ACUTE

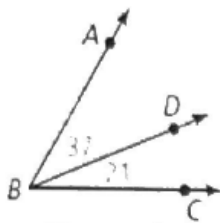
15.  $m\angle COD = 85^\circ$  ACUTE

16.  $m\angle EOD = 25^\circ$  ACUTE



In Exercises 17–20, find the indicated angle measure.

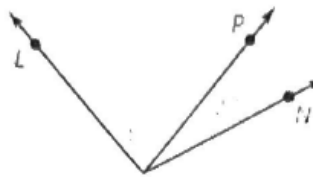
17. Find  $m\angle ABC$



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

$$(37) + (21) = 58^\circ$$

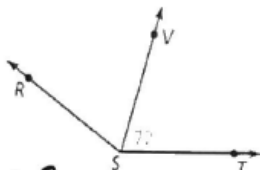
18. Find  $m\angle LMN$



$$\angle LMP + \angle PMN = \angle LMN$$

$$(85) + (23) = 108^\circ$$

19.  $m\angle RST = 114^\circ$ . Find  $m\angle RSU$ .

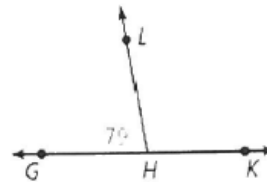


$$\angle RSU + \angle VST = \angle RST$$

$$(x) + (72) = 114$$

$$x = 42^\circ \text{ so, } \angle RSU = 42^\circ$$

20.  $\angle GHK$  is a straight angle. Find  $m\angle LHK$



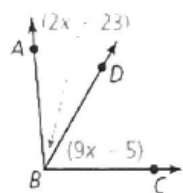
$$\angle GHL + \angle LHK = \angle GHK$$

$$(79) + (x) = 180$$

$$x = 101^\circ$$

In Exercises 21–26, find the indicated angle measures.

21.  $m\angle ABC = 95^\circ$ . Find  $m\angle ABD$  and  $m\angle DBC$ .



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

$$(2x + 23) + (9x - 5) = 95$$

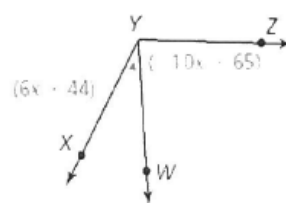
$$11x + 18 = 95$$

$$x = 7$$

$$m\angle ABD = 2x + 23 = 2(7) + 23 = 14 + 23 = 37^\circ$$

$$m\angle DBC = 9x - 5 = 9(7) - 5 = 63 - 5 = 58^\circ$$

22.  $m\angle XYZ = 117^\circ$ . Find  $m\angle XYW$  and  $m\angle WYZ$ .



$$m\angle XYW = 6x + 44 = 6(-2) + 44 = -12 + 44 = 32^\circ$$

$$m\angle WYZ = 85^\circ$$

$$m\angle XYW + m\angle WYZ = m\angle XYZ$$

$$(6x + 44) + (10x - 65) = 117$$

$$-4x + 109 = 117$$

$$x = -2$$

23.  $\angle LMN$  is a straight angle. Find  $m\angle LMP$  and  $m\angle NMP$ .

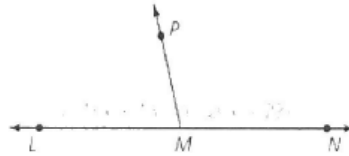
$$\angle LMP + \angle PMN = \angle LMN$$

$$(-16x + 13) + (-20x + 23) = 180$$

$$x = -4$$

$$\begin{aligned} m\angle LMP &= -16(-4) + 13 \\ &= 64 + 13 \\ &= 77^\circ \end{aligned}$$

$$\begin{aligned} m\angle PMN &= -20x + 23 \\ &= -20(-4) + 23 \\ &= 80 + 23 \\ &= 103^\circ \end{aligned}$$



24.  $\angle ABC$  is a straight angle. Find  $m\angle ABX$  and  $m\angle CBX$ .

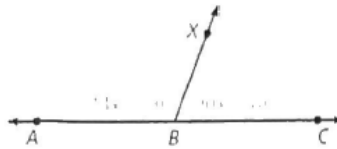
$$\angle ABX + \angle XBC = \angle ABC$$

$$(14x + 70) + (20x + 8) = 180$$

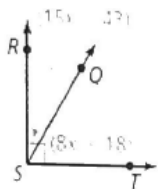
$$x = 3$$

$$\begin{aligned} m\angle ABX &= 14x + 70 \\ &= 14(3) + 70 \\ &= 42 + 70 \\ &= 112^\circ \end{aligned}$$

$$\begin{aligned} m\angle CBX &= 20x + 8 \\ &= 20(3) + 8 \\ &= 60 + 8 \\ &= 68^\circ \end{aligned}$$



25. Find  $m\angle RSQ$  and  $m\angle TSQ$ .



$$\angle RST = \angle RSQ + \angle TSQ$$

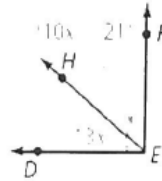
$$90 = (15x - 21) + (18x - 18)$$

$$x = 5$$

$$m\angle RSQ = 32^\circ$$

$$m\angle TSQ = 58^\circ$$

26. Find  $m\angle DEH$  and  $m\angle FEH$ .



$$\angle DEF = \angle DEH + \angle FEH$$

$$90 = (10x - 21) + (3x)$$

$$x = 3$$

$$m\angle DEH = 39^\circ$$

$$m\angle FEH = 51^\circ$$

In Exercises 27 – 30,  $\overline{QS}$  bisects  $\angle PQR$ . Use the diagram and the given angle measure to find the indicated angle measures.

27.  $m\angle PQS = 63^\circ$ . Find  $m\angle RQS$  and  $m\angle PQR$ .

$$m\angle RQS = 63^\circ$$

$$m\angle PQR = 126^\circ$$

28.  $m\angle RQS = 71^\circ$ . Find  $m\angle PQS$  and  $m\angle PQR$ .

$$m\angle PQS = 71^\circ$$

$$m\angle PQR = 142^\circ$$

29.  $m\angle PQR = 124^\circ$ . Find  $m\angle PQS$  and  $m\angle RQS$ .

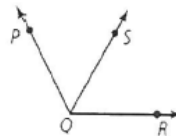
$$m\angle PQS = 62^\circ$$

$$m\angle RQS = 62^\circ$$

30.  $m\angle PQR = 119^\circ$ . Find  $m\angle PQS$  and  $m\angle RQS$ .

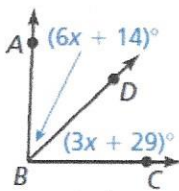
$$m\angle PQS = 59.5^\circ \text{ or } 59\frac{1}{2}^\circ$$

$$m\angle RQS = 59.5^\circ \text{ or } 59\frac{1}{2}^\circ$$



In Exercises 19–22,  $\overline{BD}$  bisects  $\angle ABC$ . Find  $m\angle ABD$ ,  $m\angle CBD$ , and  $m\angle ABC$ .

19.



$$6x + 14 = 3x + 29$$

$$3x = 15$$

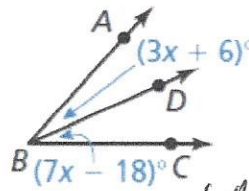
$$x = 5$$

$$m\angle ABD = 6(5) + 14 = 44$$

$$m\angle CBD = 3(5) + 29 = 44$$

$$m\angle ABC = 88$$

20.



$$3x + 6 = 7x - 18$$

$$24 = 4x$$

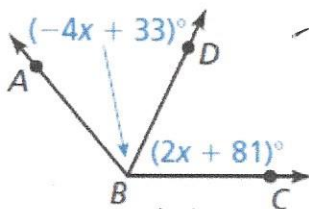
$$x = 6$$

$$m\angle ABD = 3(6) + 6 = 24$$

$$m\angle CBD = 7(6) - 18 = 24$$

$$m\angle ABC = 48$$

21.



$$-4x + 33 = 2x + 81$$

$$-6x = 48$$

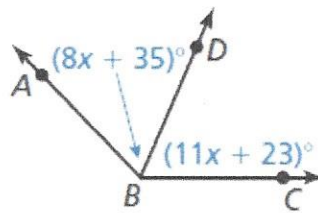
$$x = -8$$

$$m\angle ABD = -4(-8) + 33 = 65$$

$$m\angle CBD = 2(-8) + 81 = 65$$

$$m\angle ABC = 130$$

22.



$$8x + 35 = 11x + 23$$

$$12 = 3x$$

$$x = 4$$

$$m\angle ABD = 8(4) + 35 = 67$$

$$m\angle CBD = 11(4) + 23 = 67$$

$$m\angle ABC = 134$$