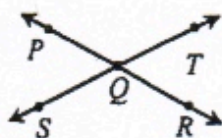


USING ALGEBRA

u127 VN

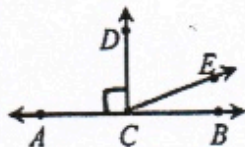
10. If $m\angle PQT = (3x + 47)^\circ$ and $m\angle SQR = (6x - 25)^\circ$, find the measure of $\angle SQR$.



$$\begin{aligned} 3x + 47 &= 6x - 25 \\ 47 &= 3x - 25 \\ 72 &= 3x \\ x &= 24 \end{aligned}$$

$$\begin{aligned} m\angle SQR &= 6(24) - 25 \\ &= 119^\circ \end{aligned}$$

11. If $\overline{AB} \perp \overline{CD}$, $m\angle DCE = (7x + 2)^\circ$ and $m\angle ECB = (x + 8)^\circ$, find the measure of $\angle DCE$.



$$\begin{aligned} 7x + 2 + x + 8 &= 90 \\ 8x + 10 &= 90 \\ 8x &= 80 \\ x &= 10 \end{aligned}$$

$$\begin{aligned} m\angle DCE &= 7(10) + 2 \\ &= 72^\circ \end{aligned}$$

12. If $m\angle KNM = (8x - 5)^\circ$ and $m\angle MNJ = (4x - 19)^\circ$, find the measure of $\angle KNM$.



$$\begin{aligned} 8x - 5 + 4x - 19 &= 180 \\ 12x - 24 &= 180 \\ 12x &= 204 \\ x &= 17 \end{aligned}$$

$$\begin{aligned} m\angle KNM &= 8(17) - 5 \\ &= 131^\circ \end{aligned}$$

13. If $m\angle DEG = (5x - 4)^\circ$, $m\angle GEF = (7x - 8)^\circ$, $m\angle DEH = (9y + 5)^\circ$, find the values of x and y .



$$5x - 4 + 7x - 8 = 180$$

$$12x - 12 = 180$$

$$12x = 192$$

$$\boxed{x = 16}$$

$$7(16) - 8 = 9y + 5$$

$$104 = 9y + 5$$

$$99 = 9y$$

$$\boxed{y = 11}$$

14. $\angle R$ and $\angle S$ are complementary angles. If $m\angle R = (12x - 3)^\circ$ and $m\angle S = (7x - 2)^\circ$, find $m\angle R$.

$$12x - 3 + 7x - 2 = 90$$

$$19x - 5 = 90$$

$$19x = 95$$

$$x = 5$$

$$m\angle R: 12(5) - 3 = \boxed{57^\circ}$$

15. $\angle P$ and $\angle Q$ are supplementary angles. If $m\angle P = (4x + 1)^\circ$ and $m\angle Q = (9x - 3)^\circ$, find $m\angle Q$.

$$4x + 1 + 9x - 3 = 180$$

$$13x - 2 = 180$$

$$13x = 182$$

$$x = 14$$

$$m\angle Q: 9(14) - 3 = \boxed{123^\circ}$$

16. $\angle 1$ and $\angle 2$ form a linear pair. The measure of $\angle 2$ is six more than twice the measure of $\angle 1$. Find $m\angle 2$.

$$m\angle 1 = x$$

$$m\angle 2 = 2x + 6$$

$$2x + 6 + x = 180$$

$$3x = 174$$

$$x = 58$$

$$m\angle 2: 2(58) + 6 = \boxed{122^\circ}$$

17. $\angle J$ and $\angle K$ are complementary angles. The measure of $\angle J$ is 18 less than the measure of $\angle K$. Find the measure of each angle.

$$m\angle K = x$$

$$m\angle J = x - 18$$

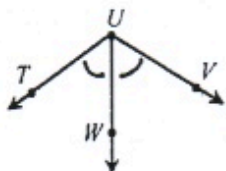
$$x + x - 18 = 90$$

$$2x = 108$$

$$x = 54$$

$$\boxed{\begin{matrix} m\angle K = 54^\circ \\ m\angle J = 36^\circ \end{matrix}}$$

18. If $\overline{UW}$ bisects $\angle TUV$, $m\angle TUW = (13x - 5)^\circ$ and $m\angle WUV = (7x + 31)^\circ$, find the value of x .

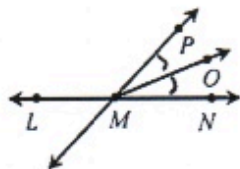


$$13x - 5 = 7x + 31$$

$$6x = 36$$

$$\boxed{x = 6}$$

19. If $\overline{MO}$ bisects $\angle PMN$, $m\angle PMN = 74^\circ$ and $m\angle OMN = (2x + 7)^\circ$, find the value of x .

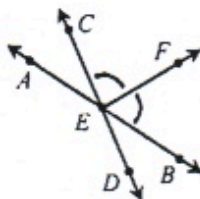


$$2x + 7 = 37$$

$$2x = 30$$

$$\boxed{x = 15}$$

20. If $\overline{EF}$ bisects $\angle CEB$, $m\angle CEF = (7x + 21)^\circ$ and $m\angle FEB = (10x - 3)^\circ$, find the measure of $\angle DEB$.



$$7x + 21 = 10x - 3$$

$$24 = 3x$$

$$x = 8$$

$$m\angle CEF = 7(8) + 21 = 77$$

$$m\angle DEB = 180 - 2(77) = \boxed{26^\circ}$$