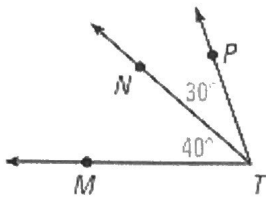


Angle & Segment Relationships

Angle Addition Postulate: If point D lies in the interior of $\angle ABC$, then $m\angle ABD + m\angle DBC = m\angle ABC$.

a. Find the measure of $\angle PTM$:

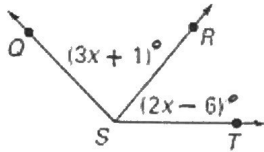


$$m\angle MTN + m\angle NTP = m\angle PTM$$

$$40 + 30 = 70$$

$$m\angle PTM = 70^\circ$$

b. Given $m\angle QST = 135^\circ$, find $m\angle QSR$.



$$m\angle QSR + m\angle RST = m\angle QST$$

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

$$5x - 5 = 135$$

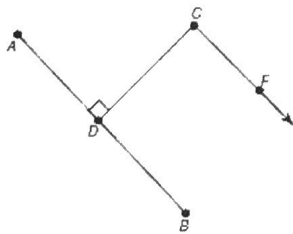
$$5x = 140$$

$$x = 28$$

$$m\angle QSR = 3(28) + 1 = 85^\circ$$

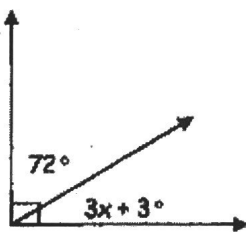
Perpendicular: Two lines, rays, or segments that intersect to form a 90° angle.

a. Name all the angles you know are right angles.



$\angle ADC$ and $\angle BDC$

b. Solve for x.



$$72 + 3x + 3 = 90$$

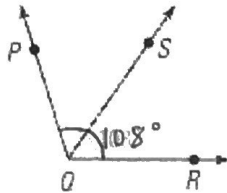
$$3x + 75 = 90$$

$$3x = 15$$

$$x = 5$$

Angle Bisector: A ray that divides an angle into two congruent angles (two angles with equal measure).

- a. \overline{QS} bisects $\angle PQR$. Find $m\angle PQS$.

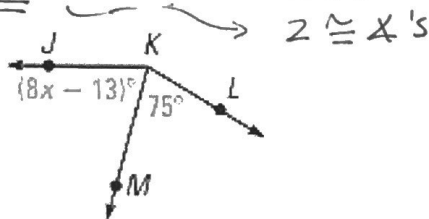


$$\angle PQS \cong \angle SQR$$

$$\text{If } m\angle PQR = 108, \text{ then } \frac{108}{2} = 54^\circ$$

$$m\angle PQS = 54^\circ$$

- b. \overline{KM} bisects $\angle JKL$. Find the value of x .

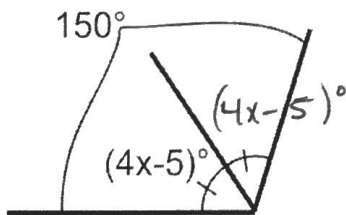


$$2 \cong x's \quad 8x - 13 = 75$$

$$8x = 88$$

$$x = 11$$

- c. Solve for x .



2 ways:

$$\textcircled{1} \quad 4x - 5 + 4x - 5 = 150$$

$$8x - 10 = 150$$

$$8x = 160$$

$$x = 20$$

$$\textcircled{2} \quad \frac{150}{2} = 75$$

$$4x - 5 = 75$$

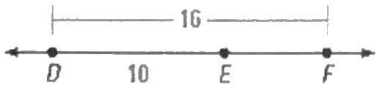
$$4x = 80$$

$$x = 20$$

Segment Relationships

Segment Addition Postulate: If point B is on \overline{AC} , and between points A and C, then $\overline{AB} + \overline{BC} = \overline{AC}$.

a. Use the diagram to find \overline{EF} .



$$\overline{DE} + \overline{EF} = \overline{DF}$$

$$10 + x = 16$$

$$x = 6$$

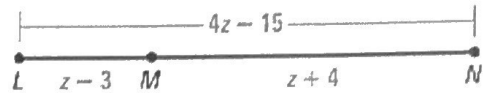
b. Write an expression for \overline{AC} .



$$\overline{AB} + \overline{BC} = \overline{AC}$$

$$x+2 + 7x-3 = 8x-1$$

c. Find the value of z.



$$\overline{LM} + \overline{MN} = \overline{LN}$$

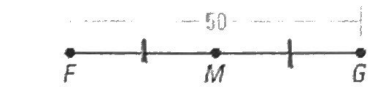
$$z-3 + z+4 = 4z-15$$

$$2z+1 = 4z-15$$

$$\begin{array}{r} 2z+1 = 4z-15 \\ +15 \quad -2z \\ \hline 16 = 2z \\ 8 = z \end{array}$$

Midpoint: Point that divides the segment into two congruent segments.

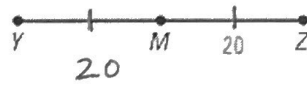
a. Find \overline{FM} and \overline{MG} .



$$\frac{50}{2} \overline{FM} = 25$$

$$\overline{MG} = 25$$

b. Find \overline{YM} and \overline{YZ} .



$$\overline{YM} = 20$$

$$\overline{YZ} = 40$$

c. T is the midpoint of \overline{QR} . Solve for x.



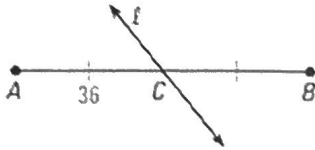
$$4x-10 = 78$$

$$4x = 88$$

$$x = 22$$

Segment Bisector: A line, line segment, or ray that divides the line segment into two line segments of equal length.

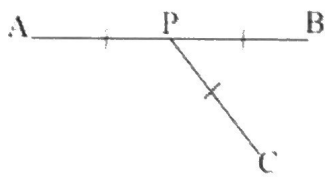
a. Find \overline{CB} and \overline{AB} .



$$m\overline{CB} = 36$$

$$m\overline{AB} = 36 + 36 = 72$$

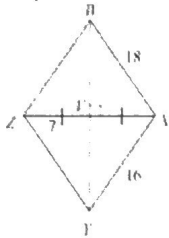
b. Determine if you have enough information to determine if \overline{PC} is the segment bisector of \overline{AB} . Explain why or why not.



yes - \overline{PC} bisects \overline{AB} because it creates 2 equal segments.

Perpendicular Bisector: A line, line segment, or ray that intersects at the midpoint of a line segment at a 90 degree angle.

a. Determine if you have enough information to determine if \overline{WY} is the perpendicular bisector of \overline{ZX} . Explain why or why not.



yes b/c ① a right angle was formed
 ② 2 equal segments were created.