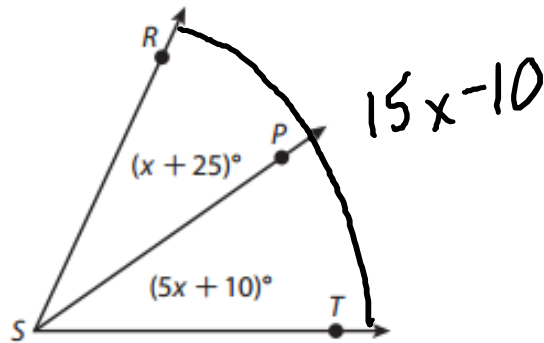


Warm-up Problems

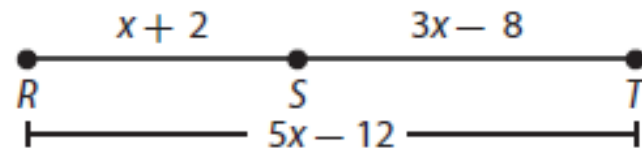
1) If $m\angle RST = 15x - 10$, solve for x .



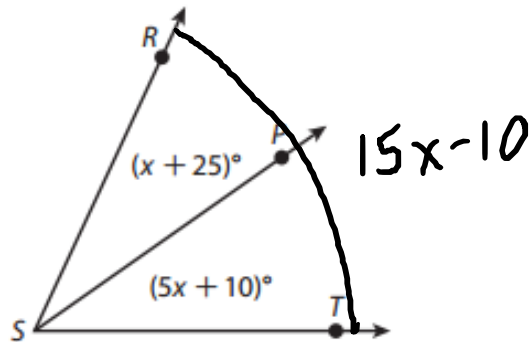
2) \overrightarrow{BD} bisects $\angle ABC$. If $m\angle DBC = 5x - 1$ and $m\angle ABD = 3x + 3$, solve for x . (Draw a picture first and label it correctly)

3) M is the midpoint of \overline{AB} . If $AM = 2x + 3$ and $MB = 4x - 5$, solve for x .

4) Solve for x .



1) If $m\angle RST = 15x - 10$, solve for x .



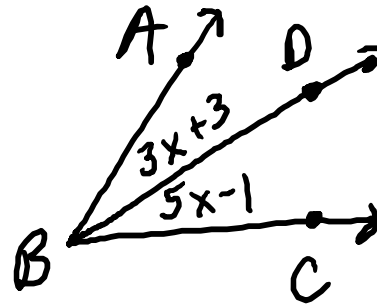
$$\underline{x + 25} + \underline{5x + 10} = 15x - 10$$

$$6x + 35 = 15x - 10$$

$$6x + 45 = 15x$$

$$\frac{45}{9} = \frac{9x}{9} \rightarrow \boxed{5 = x}$$

2) \overrightarrow{BD} bisects $\angle ABC$. If $m\angle DBC = 5x - 1$ and $m\angle ABD = 3x + 3$, solve for x . (Draw a picture first and label it correctly)



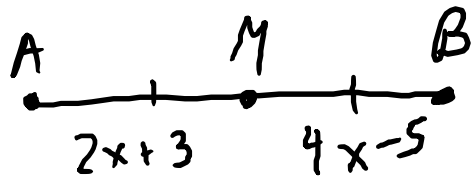
$$\cancel{3x} + 3 = 5x - 1$$

$$3 = 2x - 1$$

$$\frac{4}{2} = \frac{2x}{2}$$

$$\boxed{2 = x}$$

- 3) M is the midpoint of \overline{AB} . If $AM = 2x + 3$ and $MB = 4x - 5$, solve for x .



$$2x + 3 = 4x - 5$$

$$\begin{array}{r} 2x + 3 = 4x - 5 \\ -2x \quad -2x \\ \hline 3 = 2x - 5 \end{array}$$

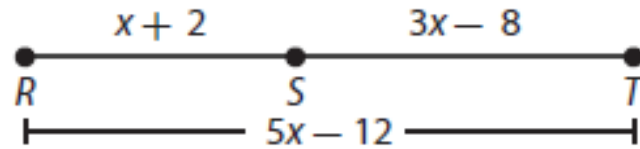
$$3 = 2x - 5$$

$$\begin{array}{r} 3 = 2x - 5 \\ +5 \quad +5 \\ \hline 8 = 2x \end{array}$$

$$\frac{8}{2} = \frac{2x}{2}$$

$$\boxed{4 = x}$$

- 4) Solve for x .



$$\underline{x+2} + \underline{3x-8} = 5x-12$$

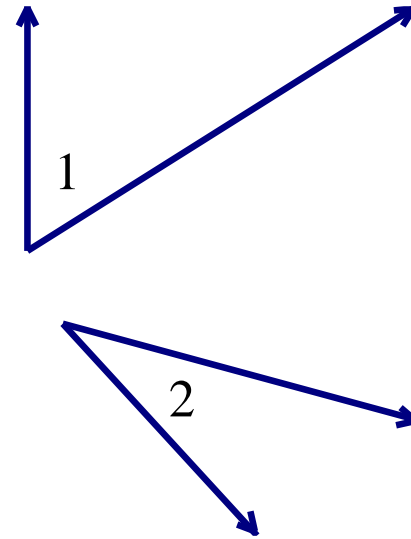
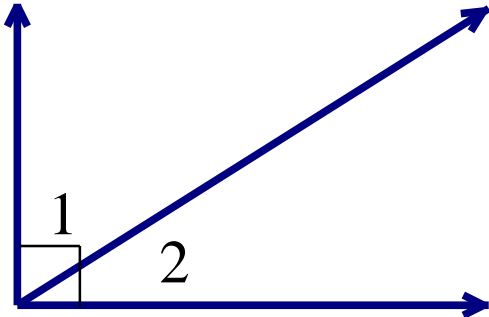
$$\begin{array}{r} \cancel{4x} - 6 = 5x - 12 \\ -4x \quad -4x \\ \hline -6 = x - 12 \end{array}$$

$$\begin{array}{r} -6 = x - 12 \\ +12 \quad +12 \\ \hline 6 = x \end{array}$$

$$\boxed{6 = x}$$

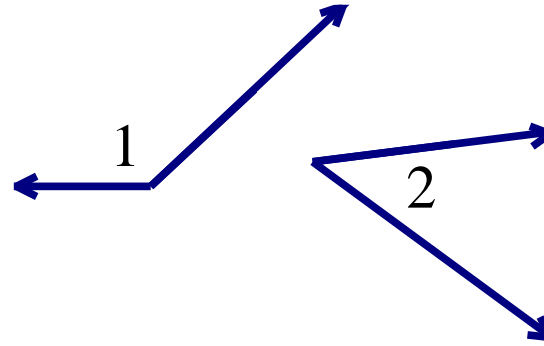
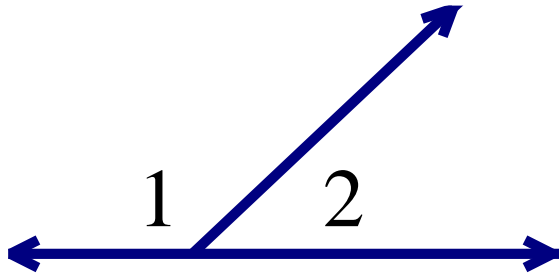
Angle Relationships

Def. Two angles whose measures have a sum of 90° are called complementary.



$$m\angle 1 + m\angle 2 = 90^\circ$$

Def. Two angles whose measures have a sum of 180° are called supplementary.



$$m\angle 1 + m\angle 2 = 180^\circ$$

Ex. $\angle A$ and $\angle B$ are supplementary. ^{whole = 180} If $m\angle A = 6x - 1$
and $m\angle B = 5x - 17$, find both measures.

$$\underline{\underline{6x - 1}} + \underline{\underline{5x - 17}} = 180$$

$$11x - \cancel{18} = 180$$
$$+18 \qquad +18$$

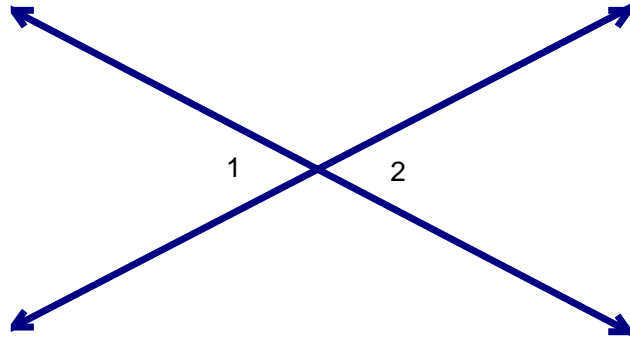
$$\cancel{11}x = \frac{198}{11}$$

$$x = 18$$

$$m\angle A = 6(18) - 1 = 107$$

$$m\angle B = 5(18) - 17 = 73$$

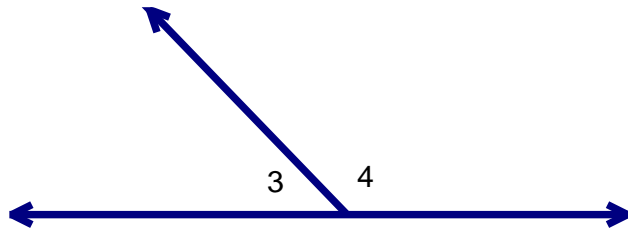
Def. Vertical angles are across from each other when two lines cross.



$$m\angle 1 = m\angle 2$$

Vertical angles are equal to each other.

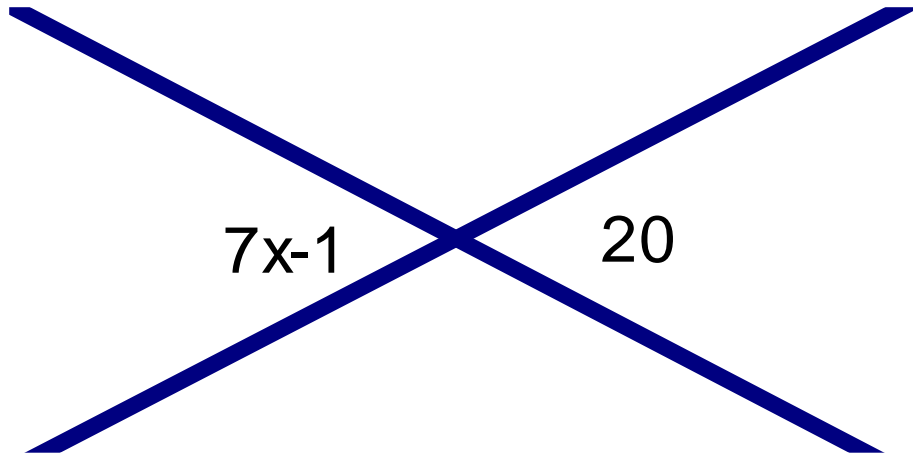
Def. Angles in a linear pair are next to each other and form a straight line.



$$m\angle 3 + m\angle 4 = 180^\circ$$

Angles that form
a linear pair are
supplementary.

Ex. Find x .

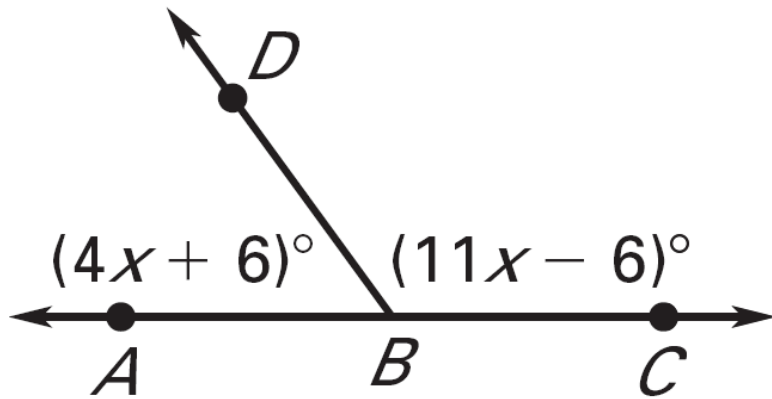


$$7x - 1 = 20$$

$$7x = \frac{21}{7}$$

$$x = 3$$

Ex. Find x .



$$\underline{4x} + \underline{6} + \underline{11x} - \underline{6} = 180$$

$$\cancel{\frac{15}{15}}x = \frac{180}{15}$$

$$\boxed{x = 12}$$