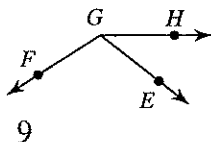
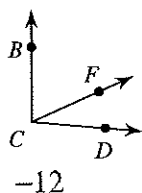


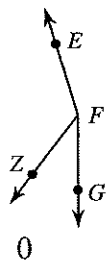
- 11) $m\angle HGF = 16x + 4$, $m\angle EGF = 110^\circ$,
and $m\angle HGE = 3x + 11$. Find x .



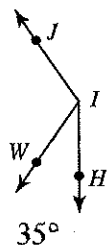
- 13) $m\angle FCD = x + 41$, $m\angle BCF = x + 78$,
and $m\angle BCD = 95^\circ$. Find x .



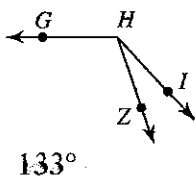
- 15) $m\angle GFZ = 38^\circ$, $m\angle ZFE = 2x + 125$,
and $m\angle GFE = x + 163$. Find x .



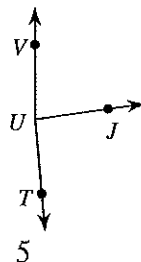
- 17) Find $m\angle HIW$ if $m\angle WIJ = 10x$,
 $m\angle HIJ = 145^\circ$, and $m\angle HIW = 2x + 13$.



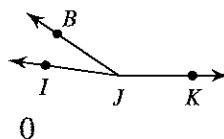
- 19) $m\angle ZHG = 11x - 1$, $m\angle IHZ = 24^\circ$,
and $m\angle IHG = 12x + 13$. Find $m\angle IHG$.



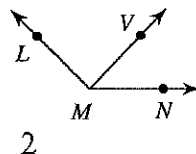
- 12) $m\angle VUT = 175^\circ$, $m\angle VUJ = 17x - 3$,
and $m\angle JUT = 17x + 8$. Find x .



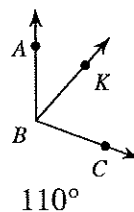
- 14) Find x if $m\angle BJK = 146 + 2x$,
 $m\angle IJK = 172^\circ$, and $m\angle IJB = 2x + 26$.



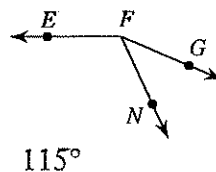
- 16) Find x if $m\angle LMN = 135^\circ$,
 $m\angle LMV = -1 + 45x$, and $m\angle VMN = 23x$.



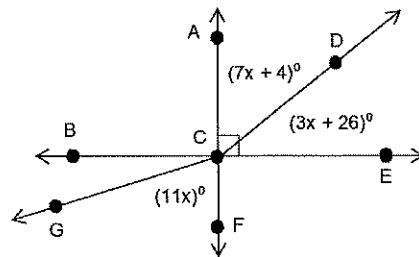
- 18) $m\angle ABC = 17x + 8$, $m\angle ABK = 42^\circ$,
and $m\angle KBC = 12x - 4$. Find $m\angle ABC$.



- 20) $m\angle GFN = 4x + 10$, $m\angle NFE = 14x + 3$,
and $m\angle GFE = 157^\circ$. Find $m\angle NFE$.



Example 2: Solve for x and find $m\angle GCF$



Example 3: Find the measures of two supplementary angles if the measure of the larger angle is 31° bigger than the smaller angle.

$$\begin{aligned} L + S &= 180 \\ S + 31 &= L \\ S + 31 + S &= 180 \\ 2S + 31 &= 180 \\ 2S &= 149 \\ S &= 74.5 \\ L &= 105.5 \end{aligned}$$

Example 4: Find the measures of two complementary angles if the difference in size between the two angles is 21° .

$$\begin{aligned} S + L &= 90 \\ L - S &= 21 \\ L + L - 21 &= 90 \\ 2L - 21 &= 90 \\ 2L &= 111 \\ L &= 55.5 \\ S &= 34.5 \end{aligned}$$

Example 5: Find the measures of two supplementary angles if one angle is one-fourth the measure of the other.

$$\begin{aligned} S &= \frac{1}{4}L \\ 4S &= L \\ S + L &= 180 \\ S + 4S &= 180 \\ 5S &= 180 \\ S &= 36 \\ L &= 144 \end{aligned}$$

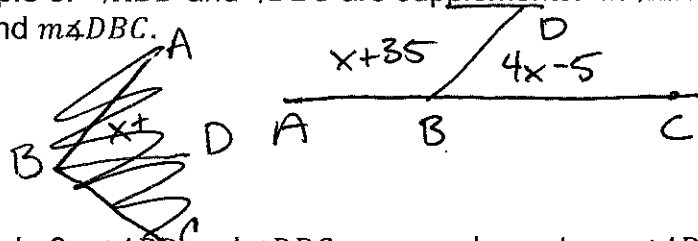
Example 6: The measure of an angle is 10 more than 3 times the size of its complement. Find the measures of both angles.

$$\begin{aligned} L &= 3S + 10 \\ L + S &= 90 \\ 3S + 10 + S &= 90 \\ 4S + 10 &= 90 \\ 4S &= 80 \\ S &= 20 \\ L &= 70 \end{aligned}$$

Example 7: The measure of an angle is 62 less than 10 times the size of its supplement. Find the measures of both angles.

$$\begin{aligned} X &= 10Y - 62 \\ X + Y &= 180 \\ 10Y - 62 + Y &= 180 \\ 11Y - 62 &= 180 \\ 11Y &= 242 \\ Y &= 22 \\ X &= 158 \end{aligned}$$

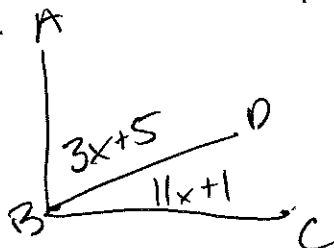
Example 8: $\angle ABD$ and $\angle DBC$ are supplements. $m\angle ABD = x + 35$ and $m\angle DBC = 4x - 5$. Solve for x and find $m\angle DBC$.



$$\begin{aligned} x + 35 + 4x - 5 &= 180 \\ 5x + 30 &= 180 \\ 5x &= 150 \\ x &= 30 \end{aligned}$$

$\angle ABD = 65$
 $\angle DBC = 115$

Example 9: $\angle ABD$ and $\angle DBC$ are complements. $m\angle ABD = 3x + 5$ and $m\angle DBC = 11x + 1$. Solve for x and find $m\angle ABD$.



$$\begin{aligned} 3x + 5 + 11x + 1 &= 90 \\ 14x + 6 &= 90 \\ 14x &= 84 \\ x &= 6 \end{aligned}$$

$\angle ABD = 23$
 $\angle DBC = 67$