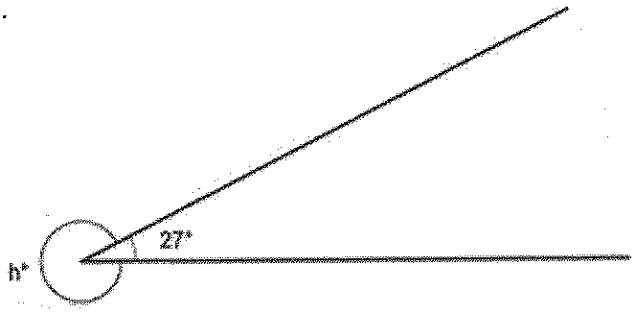
G4-M4-Lesson 11

Write an equation, and solve for the unknown angle measurements numerically.

1.



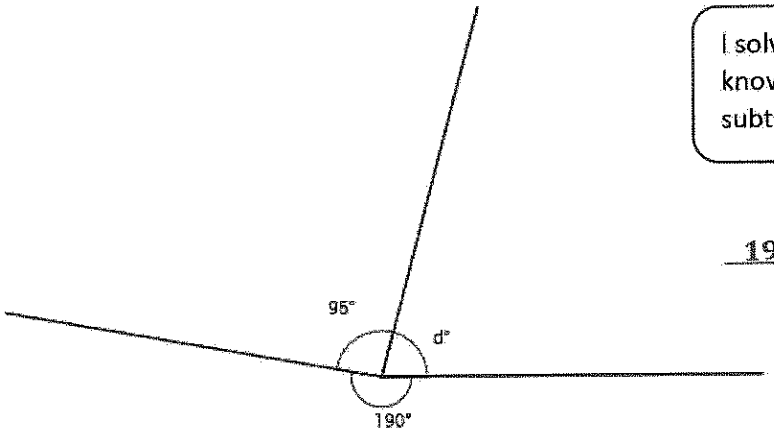
I know from Lesson 5 that a circle measures 360°. I solve for $h°$ by subtracting 27° from 360°.

$27° + 333° = 360°$

$h° = 333°$

$$\begin{array}{r} {}^{5}\,{}^{10} \\ 3\ \not{6}\ \not{0} \\ -\quad 2\ 7 \\ \hline 3\ 3\ 3 \end{array}$$

2.



I solve for $d°$ by adding together the known angle measures and then subtracting their sum from 360°.

$190° + 95° + 75° = 360°$

$d° = 75°$

$$\begin{array}{r} 1\ 9\ 0 \\ +\quad 9\ 5 \\ \hline {}^{1} \\ 2\ 8\ 5 \end{array}$$

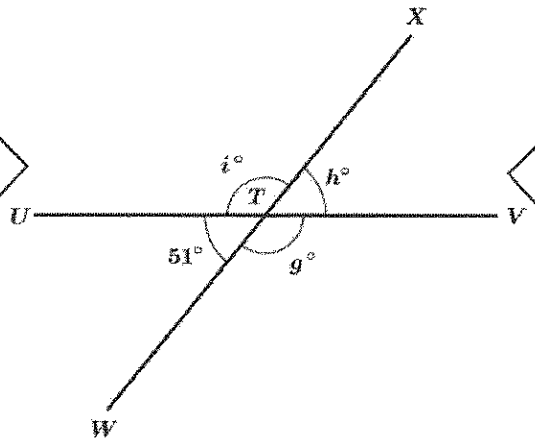
$$\begin{array}{r} {}^{2}\,{}^{15}\,{}^{10} \\ 3\ \not{6}\ \not{0} \\ -\ 2\ 8\ 5 \\ \hline 7\ 5 \end{array}$$

3. T is the intersection of $\overline{UV}$ and $\overline{WX}$. $\angle UTW$ is 51°.

$g° = \underline{129°}$ $h° = \underline{51°}$ $i° = \underline{129°}$

$129° + h° = 180°$
$h° = 51°$

$51° + i° = 180°$
$i° = 129°$



I can solve for $i°$ by thinking of its relationship to either $\overline{UV}$ or $\overline{WX}$. But I also notice that opposite angles measure the same for this figure.

I solve for $h°$ by thinking about the relationships of $\angle WTV$ and $\angle VTX$. Both angle measures add to 180° because they are on $\overline{WX}$.

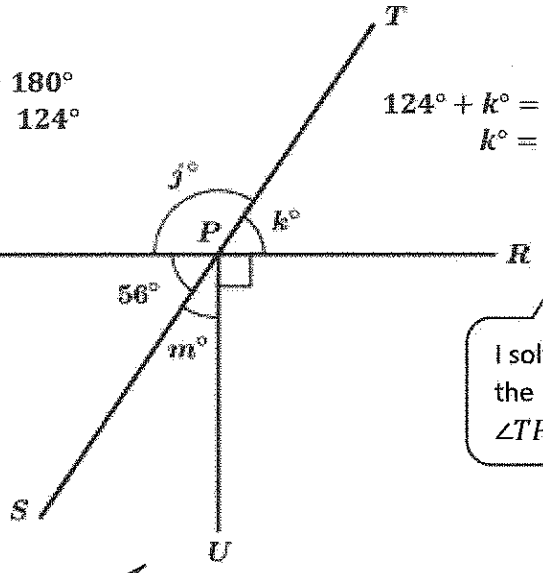
$51° + g° = 180°$
$g° = 129°$

I solve for $g°$ by thinking of its relationship to $\angle UTW$. $\angle UTV$ is a straight angle that measures 180°.

$$\begin{array}{r} \ \ 7\ \ 10 \\ 1\ \ \not{8}\ \ \not{0} \\ -\ \ \ 5\ \ 1 \\ \hline 1\ \ 2\ \ 9 \end{array}$$

4. P is the intersection of $\overline{QR}$, $\overline{ST}$, and $\overline{UP}$. $\angle QPS$ is 56°.

$j° =$ 124° $k° =$ 56° $m° =$ 34°



$56° + j° = 180°$
$j° = 124°$

$$\begin{array}{r} {\scriptstyle 7}\quad{\scriptstyle 10} \\ 1\ \not{8}\ \not{0} \\ -\quad 5\ 6 \\ \hline 1\ 2\ 4 \end{array}$$

I solve for $j°$ by thinking of the relationship $\angle SPQ$ and $\angle QPT$ have to $\overline{ST}$.

$124° + k° = 180°$
$k° = 56°$

$$\begin{array}{r} {\scriptstyle 7}\quad{\scriptstyle 10} \\ 1\ \not{8}\ \not{0} \\ -\ 1\ 2\ 4 \\ \hline 0\ 5\ 6 \end{array}$$

I solve for $k°$ by thinking of the relationship $\angle QPT$ and $\angle TPR$ have to $\overline{QR}$.

I solve for $m°$ by noticing that $\angle UPR$ is a right angle; therefore, $\angle UPQ$ is also a right angle.

$56° + m° = 90°$
$m° = 34°$

$$\begin{array}{r} {\scriptstyle 8}\quad{\scriptstyle 10} \\ \not{9}\ \not{0} \\ -\ 5\ 6 \\ \hline 3\ 4 \end{array}$$